

CRESCENTA VALLEY WATER DISTRICT

2700 FOOTHILL BOULEVARD
LA CRESCENTA, CALIFORNIA

To be held on
June 15, 2021 at 2:30 PM

Agenda for the Meeting of the Engineering Committee
of the Crescenta Valley Water District

Posted June 14, 2021 at 2:30 PM

TELECONFERENCING NOTICE

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Call to Order

Adoption of Agenda

Public Comment:

At this time, members of the public shall have an opportunity to address the Committee on items of interest that are within the subject matter jurisdiction of this Committee. This opportunity is non-transferable, and speakers are limited to three (3) minutes each. Under the provisions of the Brown Act, the Board is prohibited from taking action on items not listed on the agenda, except under certain circumstances.

Action Items

The public shall have an opportunity to comment on any action item as each item is considered by the Committee. This opportunity is non-transferrable, and speakers are limited to one two-minute (2) comment each.

1. Discussion of Radio Communication Feasibility Study
2. Project Update - FY 21/22 Capital Improvement Project
3. Project Cost Update - FY 20/21 Capital Improvement Project

Committee Member's Request for Future Agenda Items

Next Engineering Committee Meeting – July 20, 2021, at 2:30 pm

Adjournment

CRESCENTA VALLEY WATER DISTRICT

STAFF REPORT

Information Item No. 1

June 15, 2021

To: Engineering Committee
From: David S. Gould, P.E. – Director of Engineering
Subject: Discussion – SCADA Radio Communication Feasibility Study, Project E-1025

BACKGROUND:

CVWD's Supervisory Control and Data Acquisition (SCADA) system currently relies upon a radio communication network to transmit data to and from each site to the central SCADA system at the Glenwood Plant. This existing radio communication network, which was installed in 2011, is comprised of 27 radio sites and operates at the 900 MHz frequency.

In 2020, Operations observed radio communication network instability, which impacted CVWD operations. Several possibilities for this instability were periodical locking up of radios, radio failure due to the age of equipment and increased use of the 900 MHz frequency by neighboring entities. Additionally, on several occasions, outright transceiver failure has occurred.

Staff prepared a request for proposal for a feasibility study (study) with the objective to identify options for the installation of a new communication network. A contract was awarded to Systems Integrated (SI) to prepare the study to identify options for the installation of a new communication network. The new communication network will replace the existing radio network, including a new reliably communication system to replace the existing communication radio network for both site-to-base and site-to-site communication, redundancy within the communication network and compatibility with both the existing RTU's.

DISCUSSION:

SI began work in late 2020 by performing an inventory of CVWD's Radio & SCADA system and installing test radios that work on different radio frequencies to learn which frequency is best to use within CVWD's service area. SI coordinated with CVWD personnel to utilize a bucket truck to complete a radio assessment and analysis of the current radio network, which allowed SI to find network issues due to line-of-sight and oversaturation of the current 900MHz spectrum. SI also installed a monitoring software to monitor the strength of signal from each site.

The test radios were used for 3 – 4 months at a range of radio frequencies between 4.9 GHz to 5.8 GHz. The results showed a dramatic reduction in the number of radio communication failures and helped stabilize the system.

SI also provided CVWD with a SCADA Risk Assessment in respect to the American Water Works Association's Cybersecurity Recommendations and Best Practices that will be discussed at a future meeting. Finally, SI provides a current analysis of the system and suggestions for areas of improvement.

The results of the study, as shown on the attached configuration map, that we are looking at installing a three (3) tier redundancy system that includes 1) new radios that can transmit and receive at a high frequency range 2) two radios at each site in case one fails and 3) internet connections at the core sites (Shields, Main Office & Glenwood) to transfer data in case of radio or power failure.

Staff is working with APEX Manufacturing Solutions (SCADA consultant) on preparing a Request for Quote (RFQ) to qualified vendors for the installation of the radios, addition of two (2) foot diameter antennas and monitoring software. Staff will also be working with Highroad IT on the installation of the new internet connections.

Staff is planning to send out the RFQ in late July 2021 and to engage the vendor in early September 2021, as shown in the table below.

Preliminary Project Schedule:

SCADA Radio Communication Network Update Project E-1025		
Task	Start Date	End Date
Prepare Request for Quote	5/27/21	7/23/21
Pre-Design Mtg	6/8/21	6/8/21
Draft - RFQ & Site Maps	6/8/21	6/24/21
Follow up - Pre-Design Mtg	6/24/21	6/24/21
Design Team Meeting	6/24/21	7/1/21
Eng. Com. Meeting	6/15/21	6/15/21
IT - ISP Mtg	7/1/21	7/8/21
Complete & Send RFQ	7/8/21	7/23/21
Question & Clarification Period	7/23/21	8/6/21
Response to Questions & Clarification	8/6/21	8/13/21
Pre-Proposal Mtg	8/13/21	8/17/21
RFQ Due	8/17/21	9/1/21
Eng. Com. - Staff Report	9/1/21	9/3/21
Eng. Com. Meeting	9/3/21	9/7/21
Board - Staff Report	9/7/21	9/10/21
Board Meeting - Award	9/10/21	9/14/21
Kick Off Meeting	9/14/21	9/28/21
Design, Shop Drawing Submittals & Approval	9/28/21	12/21/21
Order/Delivery Equipment	12/21/21	2/7/22
Start Construction	2/7/22	2/11/22
End Construction & Testing	2/11/22	6/24/22
Punchlist	6/24/22	7/1/22

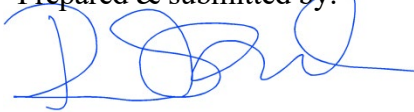
Project Cost Estimate:

Staff has estimated the cost in FY 21/22 CIP budget for purchasing the equipment and installation to be \$260,000 and is based on the preliminary cost estimate provided by SI.

RECOMMENDATION:

The recommendation to the Engineering Committee is for staff to proceed with preparing and sending out the RFQ in the next month. After receiving quotes, staff will make a presentation at a future Engineering Committee meeting for review and recommendation.

Prepared & submitted by:



David S. Gould, P.E.
Director of Engineering

Attachments:

1. Executive Summary - Radio Assessment/Proposal & SCADA Risk Assessment Final Report dated 5/27/21.
2. Preliminary Radio Communications Configuration



CRESCENTA VALLEY WATER DISTRICT

RADIO ASSESSMENT/PROPOSAL & SCADA RISK ASSESSMENT FINAL REPORT

SUBMITTED MAY 27, 2021

Prepared by:



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Table of Contents

Executive Summary.....	1
Radio Assessment	2
Site Survey Criteria.....	2
Frequency Review.....	2
Design Approach.....	2
Point to Point Sites (PTP)	2
Overview for PTP Core.....	3
Core Backbone PTP Links	4
Point-to-Point Recommendations	4
Point to Multipoint Sites (PTMP)	4
SHIELDS Repeater (PTMP).....	5
SHIELDS (PTMP)	6
Main Office (PTMP).....	8
Issues and Concerns.....	9
Results of the Test Radio Installation	9
Summary of Finding and Recommendations.....	9
Radio Proposal	11
Proposed Radio Network Diagram	12
Radio Quote	13
Risk Assessment.....	14
Open Items.....	14
Governance and Risk Management.....	14
Recommendations	14
Business Continuity and Disaster Recovery	15
Recommendations	15
Server and Workstation Hardening	15
Recommendations	17
Access Control.....	17
Recommendations	18
Application Security	18
Recommendations	19

Encryption	19
Recommendations	19
Data Security	20
Recommendation	20
Telecommunications, Network Security, and Architecture	20
Recommendations	20
Physical Security of PCS Equipment	21
Recommendations	21
Service Level Agreements (SLA)	22
Recommendations	22
Operations Security (OPSEC)	22
Recommendations	22
Cyber Informed Engineering	22
Recommendations	23
Education	23
Recommendations	23
Personnel Security	24
Recommendations	24
AWWA Cybersecurity Recommendation Recap	25
PCS & SCADA Recommendations	26
SCADA Software	26
Current State	26
Upgrade Software	26
New Software	26
PCS Recommendations	26
Appendix A: Cyber Asset Inventory Spreadsheet	28

Executive Summary

Systems Integrated (SI) submits to Crescenta Valley Water District (CVWD) the Radio Assessment and SCADA Risk Assessment and Recommendations Final Report.

Since 1977, Systems Integrated has been providing engineering services for the design and implementation of solutions for the automated control of infrastructure - water, power and transportation. We have always designed our control systems (SCADA) to be distributed, which required us to design the associated communication networks to be capable of transporting high volumes of data, reliably and securely. As the demands of communication networks continue to expand (i.e. more bandwidth; higher speeds; video and ensuring QOS), Systems Integrated's expertise of designing and successfully deploying large scale communication networks using wireless technology (licensed/unlicensed) has become a premier aspect of our engineering services. Our ability to link together various technologies (i.e. fiber, copper, wireless radio, satellite, cellular, IoT, etc.) within a communication network, benefits customers in that new technologies can be integrated into their solution. For example, IoT is one of the newer wireless technologies that have been introduced which provides an alternative to the carrier based cellular network. This solution provides the same level of reliability as the cellular system but is typically ½ of the monthly cost.

Systems Integrated's communications networks are designed to be cybersecure and meet the North American Electric Reliability Corporation (NERC) CIP current standards; NIST SP 800-82 R2 Industrial Control Systems Security, and FIPS 140-2, etc. Additionally, SI has received various certifications from Department of Homeland Security's Cybersecurity and Infrastructure Security Agency (CISA), and we have third party certifications for compliance with SCADA cybersecurity as well as critical infrastructure design.

SI coordinated with CVWD personnel to utilize a bucket truck to complete a radio assessment and analysis of the current radio network. In certain scenarios, SI immediately determined network issues due to line-of-sight whereas other scenarios are due to oversaturation of the current 900MHz spectrum.

SI deployed a couple 5GHz radios to create a solid network link to enhance the existing 900MHz radios. Since the test deployment, CVWD has found that the number of timeouts and network disruptions has dramatically decreased. SI recognizes CVWD's desire of network redundancy and offers a few options to create a robust and resilient backbone to enhance network communications to the Tesco RTUs and Allen Bradley equipment.

Additionally, SI provide CVWD with a SCADA Risk Assessment in respect to the American Water Works Association's Cybersecurity Recommendations and Best Practices. SI completed an on-site inventory assessment and analysis of the current Process Control System network and cyber assets. SI provides current analysis of the system and suggestions for areas of improvement.

Systems Integrated hopes the assessment and recommendations will empower Crescenta Valley Water District to make informative and data-driven decisions to improve and install sustainable solutions for the Process Control System.

Radio Assessment

Site Survey Criteria

- Bucket Truck with a functional radio to validate if the site can see repeater site.
- Analyze site to see if mast structure can support radio system.
 - Panel antenna
 - Radio with Dish antenna (Sites requiring higher gain)
- The purpose of the Radio survey was to validate viable RF links to the sites. In some cases, better results would be expected during the permanent installation.
- For example, during the survey a 10-degree panel was used at the Repeater. For the final installation, a 60-degree panel will allow for better coverage.

Frequency Review

- The 900MHz frequency is very polluted.
 - Edison Power poles
 - Multipoint – reduced throughput for 900MHz traffic
 - Susceptible to all 900MHz interference
 - After moving the Core Backbone and other links to 5GHz, there was an immediate improvement to the existing 900MHz.
- 5GHz also polluted, but able to work in select channels.
- 4.9GHz is viable alternative solution but is a limited spectrum.
- 3GHz now open for FCC PTP.
 - 3.55 - 3.65 (cost to file)
- 10 or 23GHz open for FCC PTP (cost to file, cost of equipment)
- Multi-frequency solution

Design Approach

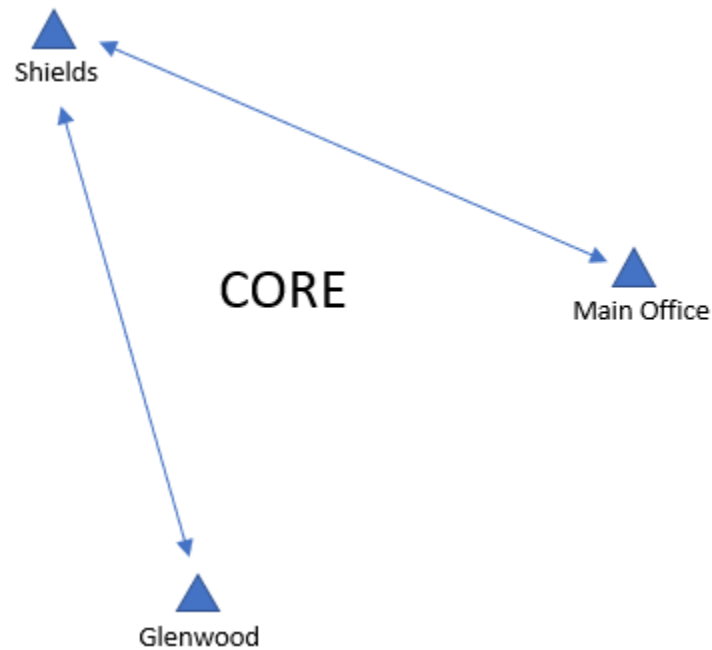
- Systems Integrated (SI) took the design approach (as proposed in the response to the RFP) to provide a combination of Point to Point and Point to Multipoint links.
- Point to Point links would be used to interconnect the primary sites.
- Point to Multipoint links would be used at repeater sites to access individual sites.

Point to Point Sites (PTP)

- One pair of radios is used to pass data between two points.
- Advantages:

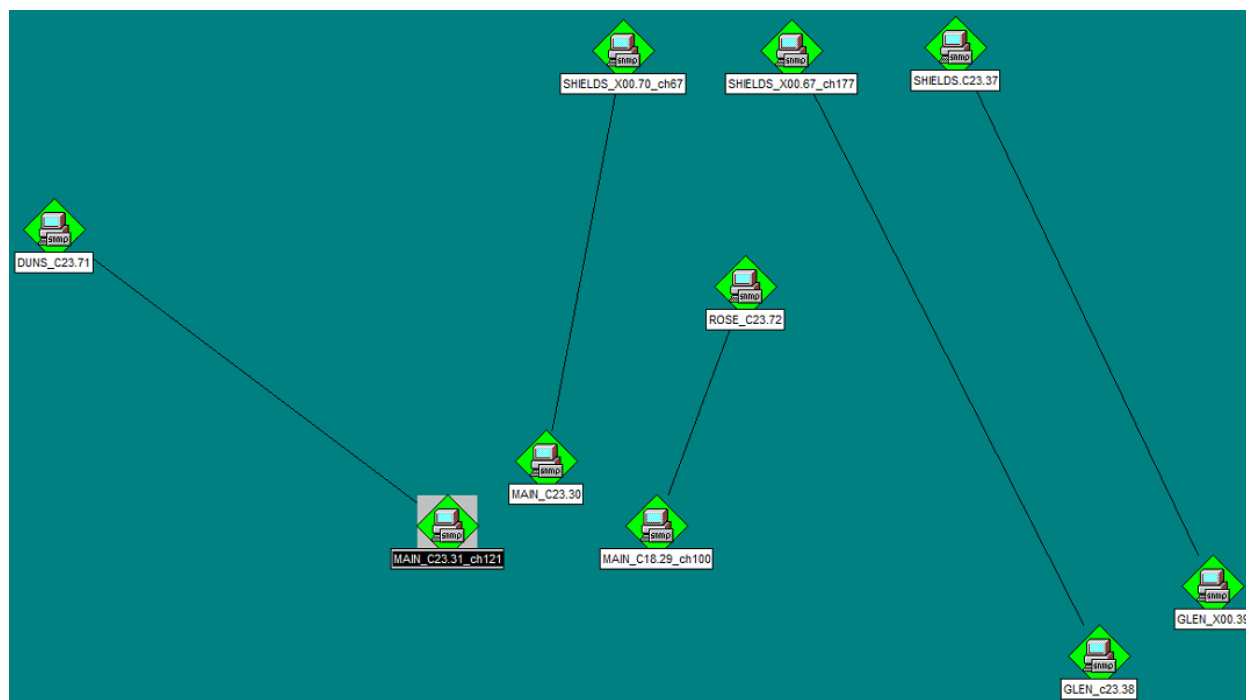
- Higher overall throughput for the RF link.
- Can be installed as a redundant pair with automatic fail over
- Disadvantages:
 - Cost

Overview for PTP Core



- For the Point to Point, existing 5GHz is viable with high gain dishes.
- To future proof the network, we would recommend considering Licensed or Registration based frequencies:
 - 4.9GHz (recommend we file for license)
 - 3.5-3.65
 - 10GHz
 - 18GHz
 - 23GHz

Core Backbone PTP Links



What's currently in place today:

- Point to Point link between Shields and Glenwood.
 - Backup link in place in case of failure.
- Point to Point link between Shields and Main Office
- 2 x Point to Multipoint Radios installed at Main office.
 - Dunsmore
 - Rosemont

Point-to-Point Recommendations

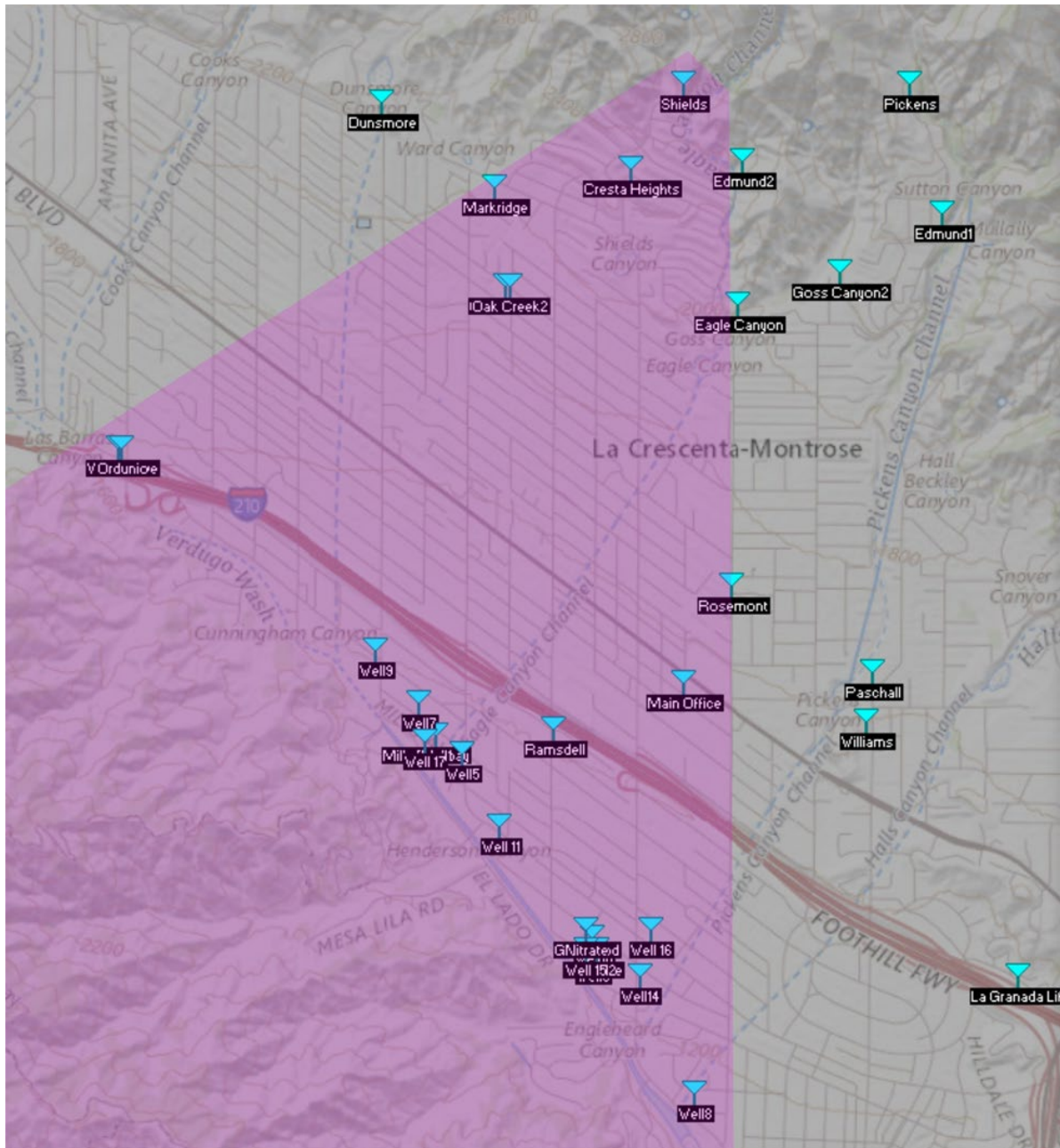
- 2-foot dish antennas be installed at all Point-to-Point sites:
 - Increase signal to noise (improve overall throughput)
 - Ensure that the antenna masts can support the dish antennas (wind load)
- Install for each point-to-point link either a single radio pair or redundant repeater pair (high reliability)
- Design to provide 20 to 100 Mbps throughput.
- Consider licensed frequencies.

Point to Multipoint Sites (PTMP)

- Point to Multipoint sites have one base connected to multiple subscribers.

- Advantages:
 - Less equipment (better utilization of the frequency band).
- Disadvantages:
 - Total data throughput is divided by all of the subscribers.

SHIELDS Repeater (PTMP)



- 1 x 60-degree Sector to cover Ordunio to Well 8.

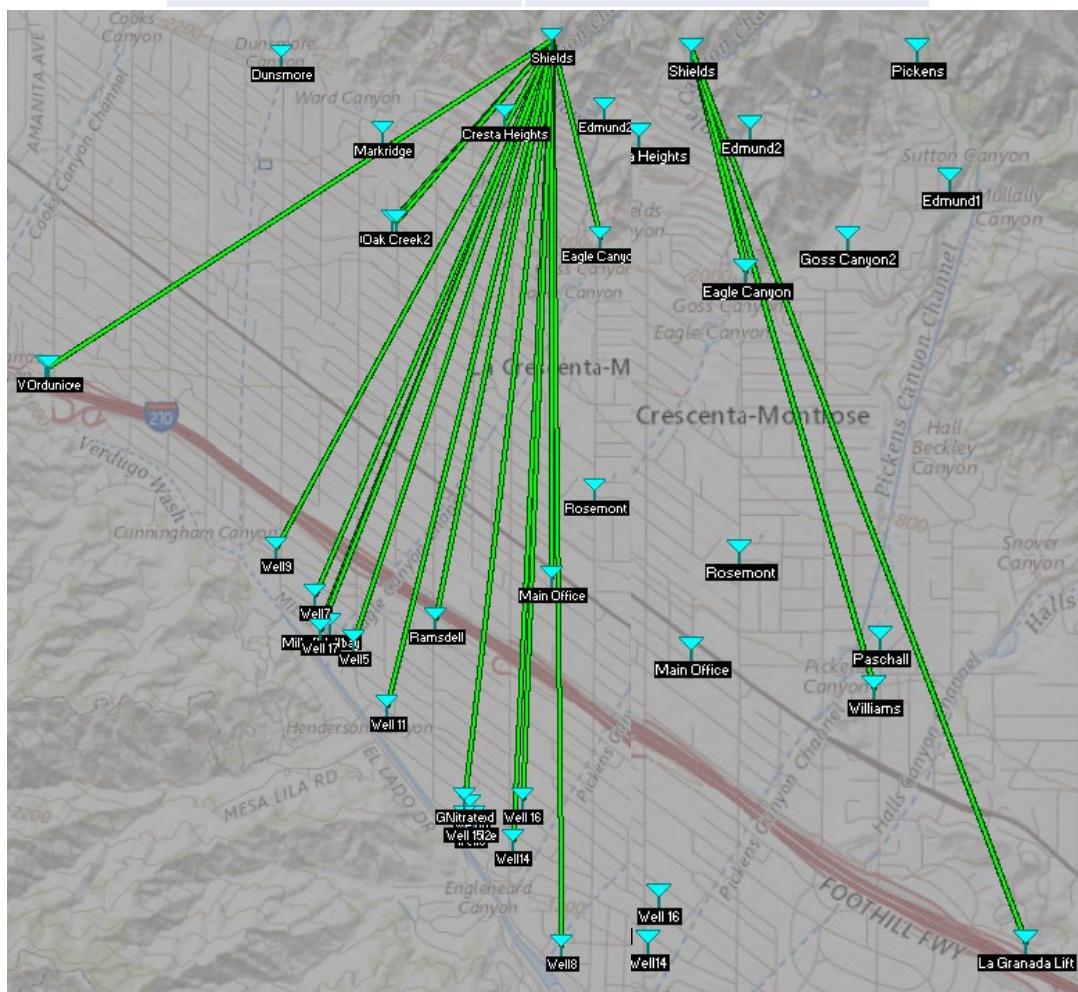
- All sites have good line of sight to Shields, some trees may be in path, but signals levels have high margins.

Location	Measured Receive Level
Ordunio	-69dBm
Well 7	-75dBm
Well 9	-70dBm
Mills Forebay	-68dBm
Well 1	-78dBm
Well 5	-75dBm
Well 11	-72dBm
Ramsdell	-72dBm
Well 14	-78dBm
Well 16	-75dBm
Well 17	-72dBm
Well 8	-75dBm

SHIELDS (PTMP)

- 1 x 10-degree Panel to cover Williams, Paschall, Eagle Canyon and La Granada Lift.
- Pickens not able to see Shields or Main Office, recommended to Repeat Link through Edmund 1. (store and forward)

Location	Measured Receive Level
Williams	-64dBm
Paschall	-65dBm
La Granada Lift	-75dBm
Eagle Canyon	-58dBm
Well 14	-62dBm
Well 16	-60dBm



Main Office (PTMP)

- 2 x 60-degree Sector recommended to cover remote well sites.
- 1 x 23-dBi Panel to link to Markridge (Proposed)

Location	Measured Receive Level
Markridge	-74dBm
Rosemont (online)	-69dBm
Eagle Canyon	-72dBm
Goss Canyon 2	-74dBm
Edmund 1	-78dBm



Point to Multipoint Recommendations

- 2 x 60-degree Sector at Shields (Well sites)
- 1 x 10-degree Panel at Shields (Williams, La Granada)
- 1 x 10-degree Panel at Main Office (Markridge)
- All remote sites would install High gain 23-dBi integrated antenna radio
- Recommendations based upon both “paper” RF Surveys (provided as part of the RFP response) and Physical RF surveys conducted at local sites.
 - Changes may be implemented based on final installation or performance of actual link.
- Redundant radio option available for critical sites if no ISP or backup route is available.

Issues and Concerns

- Maintenance – may require bucket truck.
- May want to consider more robust radio mast infrastructure.
- We did not expand our scope to use other towers around Crescenta Valley, although this would be a viable option.
- To avoid Single link outages to the core, we recommend our redundant radio solution as proposed in our original RFP response.
- Monitoring – having monitoring in place, we were able to isolate network issues and ensure uptimes. We recommend having monitoring in place.

Results of the Test Radio Installation

- Low latency
- Reliable performance
- Communication failures significantly reduced or eliminated.
- Phoenix radio reboots have almost been eliminated as 900MHz congestion has been reduced.

Summary of Finding and Recommendations

- Based on our initial testing and analysis, many improvements can be quickly implemented to ensure reliability and higher capacity.
- Radio survey as part of our proposal looks viable for the rest of the remote sites.
- We determined there are 2 Core backbone links, for higher capacity (throughput) we recommend 2' dishes.
 - (Glenwood to Shield, Shields to Main Office).
 - May need to add additional tower infrastructure to support 2' Dish at Glenwood and Main Office.

- We determined all but 1 site can be picked up with the 3 proposed repeater sites.
 - Alternate 1 hop repeater site proposed.
- Licensed Radio may be solution for Core backbone and for futureproofing.

Radio Proposal

The following attachments are the proposed network layout and the cost for the equipment (including labor).

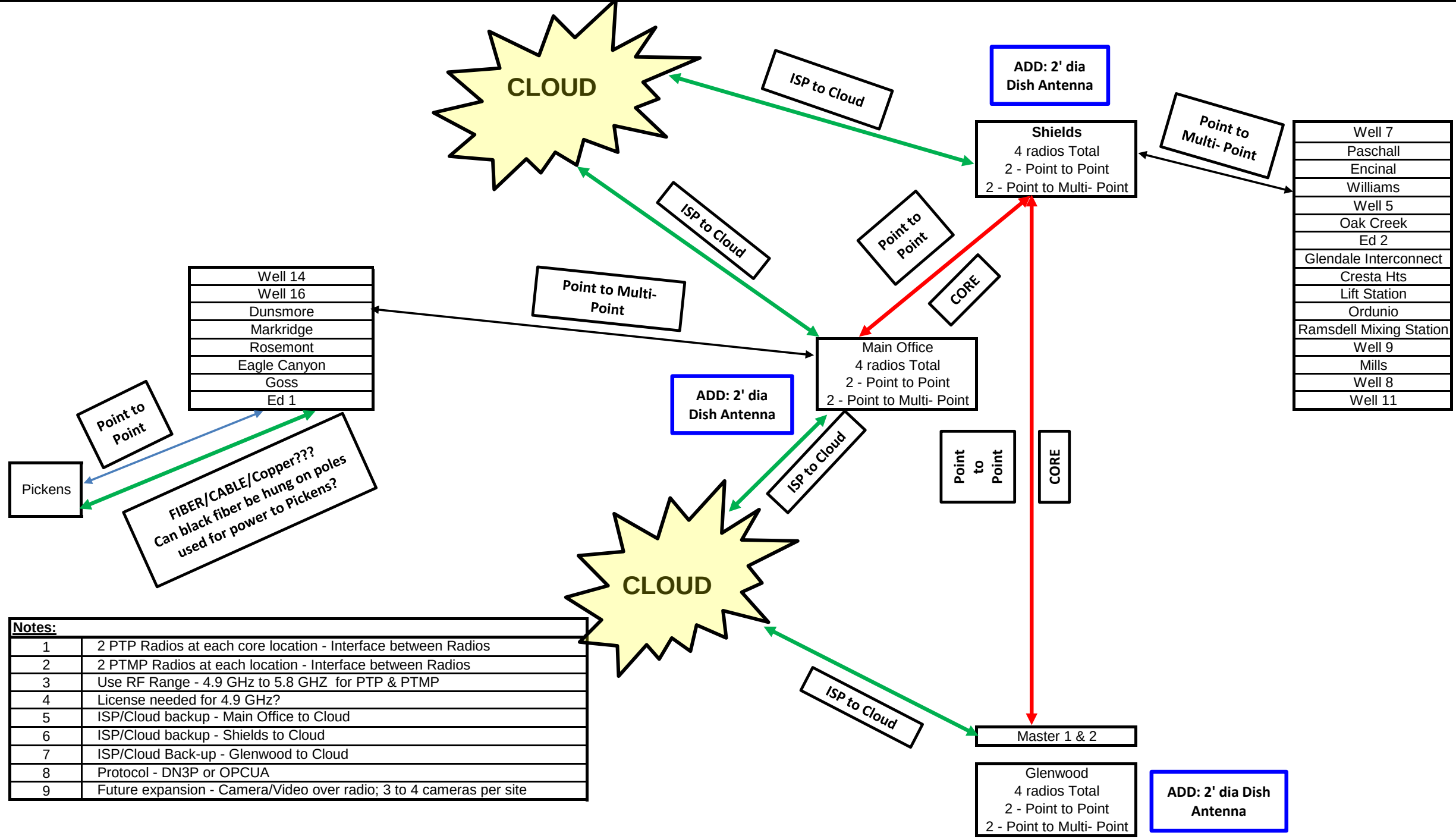
For the cost analysis, the following are the assumptions:

1. Will be using existing radio antenna masts. For sites that have two-foot dish antennas the radio mast may need to be re-enforced or a second antenna mast added (this has not been included in the cost).
2. The network has been subdivided with each repeater site being on its own layer 3 network (this is to support VPN using the ISP as an alternate routing function)
3. The radio equipment will be powered by the existing UPS power. If DC battery backup is required, it would be included as an add-on cost.
4. Cost includes the radios, antennas, ethernet cables and mounting equipment for each radio onto the existing antenna mast.
5. The redundancy cost assumes that all of the radios are being installed at the same time.
6. Cost includes all taxes.
7. Cost do not include prevailing wages with the assumption that replacement equipment is being provided. If Prevailing rates are required, total labor cost would be increased by 43%.
8. Cost of ISP connection (if any) isn't included.
9. For each ISP connection there is two public IP address made available to support the SCADA application.
10. For each repeater site a sonic wall is provided to allow remote management of the radios on that layer 3 segment.

Proposed Radio Network Diagram

The drawing attached was the bases for the material costing identified.

Crescenta Valley Water District
Preliminary Radio Communication Configuration



18-Feb-21

Radio	
Glenwood	Point to Point
Pickens Canyon Reservoir	Point to Point
Shields	Point to Point
Main Office	Point to Point
Mills	Point to Multi- Point
Ordunio	Point to Multi- Point
Encinal	Point to Multi- Point
Ramsdell Mixing Station	Point to Multi- Point
Well 5	Point to Multi- Point
Williams	Point to Multi- Point
Well 7	Point to Multi- Point
Well 8	Point to Multi- Point
Well 9	Point to Multi- Point
Paschall	Point to Multi- Point
Well 11	Point to Multi- Point
Rosemont	Point to Multi- Point
Oak Creek	Point to Multi- Point
Eagle Canyon	Point to Multi- Point
Markridge	Point to Multi- Point
Goss	Point to Multi- Point
Cresta Hts	Point to Multi- Point
Ed 1	Point to Multi- Point
Ed 2	Point to Multi- Point
Well 14	Point to Multi- Point
Glendale Interconnect	Point to Multi- Point
Dunsmore	Point to Multi- Point
Well 16	Point to Multi- Point
Lift Station	Point to Multi- Point
Sewer - Diverter Valve	Cell
	# Radios
Glenwood	4
Shields	4
Main Office	4
25 Other sites x 2 radios/site	50
Total	62

Radio Quote

The spreadsheet is a summary of cost by location.

Core Backbone	Radio/ 1' Dish		Radio/ 2' Dish		Radio/ Sector		VPN Router/ Switch
	Pri	Backup	Pri	Backup	Pri	Backup	
Glenwood			1	1	2	2	1
Shields			2	2	2	2	1
Main Office			1	1	2	2	1

Remote Sites	Radio/ 1' Dish		Radio/ 2' Dish		Radio/ Sector		VPN Router/ Switch
	Pri	Backup	Pri	Backup	Pri	Backup	
Pickens Canyon Res	1	1					
Mills	1	1					
Ordunio	1	1					
Encinal	1	1					
Ramsdell Mixing Station	1	1					
Well5	1	1					
Williams	1	1					
Well 7	1	1					
Well 8	1	1					
Well 9	1	1					
Paschall	1	1					
Well 11	1	1					
Rosemont	1	1					
Oak Creek	1	1					
Eagle Canyon	1	1					
Markridge	1	1					
Goss	1	1					
Cresta Hts	1	1					
Edmund 1	2	2					
Edmund 2	1	1					
Well 14	1	1					
Glendale Interconnect	1	1					
Dunsmore	1	1					
Well 16	1	1					
Lift Station	1	1					
Sewer - Diverter Valve	1	1					

Remote Sites	27	27					
Core Backbone			4	4	6	6	3

Costs Breakdown	Radio/ 1' Dish		Radio/ 2' Dish		Radio/ Sector		VPN Router/ Switch	Total Costs Non- redundant	Total Costs Redundant
Costs/ea	\$1,500.00		\$2,200.00		\$1,800.00		\$2,000.00		
Total Costs	\$40,500.00	\$40,500.00	\$8,800.00	\$8,800.00	\$10,800.00	\$10,800.00	\$6,000.00	\$66,100.00	\$126,200.00
Configuration/ Installation									
Costs/ ea	\$2,500.00	\$1,000.00	\$3,000.00	\$1,500.00	\$2,500.00	\$1,000.00	\$1,000.00		
Total Labor Costs	\$67,500.00	\$27,000.00	\$12,000.00	\$6,000.00	\$15,000.00	\$6,000.00	\$3,000.00	\$97,500.00	\$136,500.00
								\$163,600.00	\$262,700.00

CRESCENTA VALLEY WATER DISTRICT

STAFF REPORT

Information Item No. 2

June 15, 2021

To: Engineering Committee
From: David S. Gould, P.E. – Director of Engineering
Subject: Update for FY 21/22 Capital Improvement Project Budget and Consultants

BACKGROUND:

Staff has been discussing the draft FY 21/22 Capital Improvement Project (CIP) budget with respect to the Long-Term Infrastructure and Funding Roadmap, including future financing through bonds and/or PayGo. The Board has tentatively agreed to the FY 21/22 CIP budget, and the following is an update of projects and status of design.

DISCUSSION:

There are several CIP projects that need the assistance of outside consultants to begin design services so that construction could start earlier this year (November 2021) instead of starting after January 2022 as shown in the projects listed below:

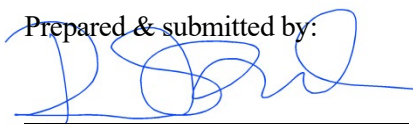
1. Design consultant for the new pipelines on the 2800 to 3100 Blocks of Los Olivos; 3200 Block of Alabama 4700 & 4800 Blocks of Cheryl & 3300 Block of Thelma St.
a. Request for Proposal sent to 7 consulting firms and due July 7, 2021.
2. Design consultant for a new Pressure Reducing Station & Rehabilitation of the Ramsdell Mixing Station.
a. Design awarded to Cannon Corporation.
3. Design consultant for the steel reservoir rehabilitation at Edmund #2.
a. Staff working on Request for Proposal.
4. Design consultant for the replacement of SCADA communication radio network.
a. See Staff Report
5. Design consultant for the replacement of SCADA Equipment, Programing & Integration.
a. Staff working on Request from Proposal.
6. Consultant to assist operations staff with conversion, monitoring and standard operating procedures for the conversion to chloramines.
a. Staff working on Request from Proposal.
7. Consultant to prepare the Wastewater Master Plan, including Wastewater Treatment Plant Feasibility Study.
a. Staff working on preliminary scope of work.
8. Consultant to assist in GIS mobile deployment.
a. Staff working on scope of Work.

Staff is planning to bring to future Board meetings the consultant award of contract for approval. The RFP will also include a statement that the District can stop design if the final CIP budget is revised, or the specific project is cancelled. Staff is estimating about \$250,000 to \$300,000 of consulting fees will be spent prior to the October 2021 approval of the CIP budget.

RECOMMENDATION:

Staff is recommending to the Engineering Committee that staff move forward with preparing and awarding design consultant contracts prior to the final adoption of the FY 21/22 CIP Budget.

Prepared & submitted by:



David S. Gould, P.E.
Director of Engineering

CRESCENTA VALLEY WATER DISTRICT

STAFF REPORT

Information Item No. 3

June 15, 2021

To: Engineering Committee
From: David S. Gould, P.E. – Director of Engineering
Subject: Project Update – June 2021 - FY 20/21 Water Capital Improvement Program

BACKGROUND:

The Board approved the FY 20/21 Water Budget at the June 9, 2020, meeting with \$2.3M available for CIP projects. The Board also agreed to pursue refinancing CVWD's existing bond debt and requesting additional funding, totaling \$5M available for FY 20/21 CIP. The \$5M Bond process was completed on September 15, 2020.

DISCUSSION:

The following is the **June 2021** update of the progress and schedule for the FY 20/21 CIP projects. Project costs are shown on the attached Updated Project Cost Summary:

1. **Steel Reservoir Rehabilitation – Rosemont Reservoir** – This project is for the structural repairs and re-coating of the reservoir interior to maintain the District's water storage capacity and to increase the life expectancy of the steel tank.
Progress: Construction is complete, reservoir back in service & finalize project costs
2. **Annual Pipeline Replacement** – This project is for the replacement of steel pipelines that are at least 50-years old or older in a timely manner.
 - A. **Project 1 & 2:** Replacement of 4-inch & 6-inch pipelines on the 2400 & 2500 Blocks of Janet Lee (Project 1), and the 4300 Block of Rosemont (Project 2).
Progress: Construction is complete, pipelines are back in service & finalize project costs
 - B. **Projects 3:** Replacement of 8-inch pipeline on the 3400 & 3500 Blocks of Encinal (Project 3)
Progress: Construction is complete, pipelines are back in service & finalize project costs.
 - C. **Projects 4:** Replacement of 4-inch, 6-inch & 8-inch pipelines on the 4800 Block of Dyer, 2800 Block of El Caminito, 4800 Block of Glenwood, 2800 Block of Stevens and 2700 Block of Paraiso Way (Project 4).
Progress: Civiltec and staff completed the design and project was awarded to Brkich Construction.
Project Schedule: On Schedule
 - June 7, 2021 – Begin Construction
 - September 2021 – Anticipate work to be completed.
3. **Local Hazard Mitigation Plan** - CVWD awarded a grant from Cal OES and FEMA to prepare a Local Hazard Mitigation Plan (LHMP) to address high priority hazards related to its water and sewer systems during a drought, energy shortage/outage, wildfire, earthquake, terrorism or cyber-attack. The total grant amount to prepare a local hazard mitigation plan is \$165,000, with \$125,000 grant funding from FEMA and \$40,000 funding from CVWD.
Progress: Tetra Tech finalizing Draft LHMP, Steering Committee Meeting #8 on 6/23/21 and information updated regularly on CVWD's website.
Project Schedule: On Schedule
 - June 21, 2021 – Draft review by CVWD
 - July 13 – July 27, 2021 – Public Comment Period
 - July 2021 – LHMP submitted to Cal OES.
 - September 2021 – Grant Applications due

4. **New Emergency Generator at La Granada Sewer Lift Station** – Installation of a new emergency electrical generator at the sewer lift station.

Progress: Cannon and staff have completed the design and project was awarded to Affordable Generator Services.

Project Schedule: Behind Schedule

- May 2021 – Submitted license agreement to LA County Parks & Recreation Dept. 6-week lead time for approval, Estimate approval – End of June 2021
- September 2021 – Anticipated delivery date for emergency generator & begin construction.

5. **Advanced Metering Infrastructure (AMI) Program** – This project has two (2) components: 1) replacement of ¾” & 1” meters with new Sensus iPERL “Smart Meters” in Pressure Zone 2, and 2) installation of the AMI network communication system.

Progress: Field crews have replaced around 537 ¾-inch & 1-inch, water meters for FY 20/21. Esource completed RFQ, and contract awarded to Aqua Metric for the AMI network communication system.

Project Schedule: On Schedule

- Completed AMI network communication system & installation of 100 meters.
- May 2021 – Completed discussion of Customer Engagement Platform with staff.
- July 2021 – Analysis of data and incorporating into customer billing system.
- July 2021 – Finalize Opt-Out policy for Board approval.

6. **Groundwater Well Rehabilitation** – This project is for the rehabilitation of Well 12, which was last rehabilitated in 2010.

Progress: The project design is complete, and the contract was awarded to Legend Pump.

Project Schedule: On Schedule

- June 2021 – Installation of new pump.
- July 2021 – Water quality testing and put back into service.

7. **Replacement of SCADA Communication Radio Network** – CVWD has an existing radio communication network that operates on the 900 MHz radio frequency. In the past year, the radio system has seen interference with other communication devices, and the equipment, which was installed 7 years ago, is nearing the end of its useful life and has been malfunctioning.

Progress: Award contract to Systems Integrated to prepare SCADA radio feasibility study (Study).

Project Schedule: On Schedule – See staff report

8. **New Pressure Reducing Valve (PRV) Station & Upgrade Ramsdell/Mayfield Mixing Station** – This project includes installing a new PRV station near the intersection of Mayfield Ave. and Ramsdell Ave. and upgrading the Ramsdell/Mayfield Mixing Station. The new PRV Station is needed to provide water from Zone 2 to Zone 1 when Encinal Reservoir and the Ramsdell/Mayfield Mixing Station are out of service. To meet the current FY 20/21 CIP schedule, staff will need assistance from a consulting firm to complete the specifications and advertise for bids.

Progress: Staff and Cannon have started on the design

Project Schedule: On Schedule

- June 2021 – Kick-off meeting with Cannon
- October 2021 – Advertise for Bids.

9. **Replacement of Supervisory Control and Data Acquisition (SCADA) System Upgrade** – CVWD has an existing SCADA system with RTU/PLCs that were installed at each of the District's facilities in 1996 that provides information on the status of the water system, controls for booster pump operation, and relays alarms to the System Operators. The upgraded SCADA system will include upgrading equipment, programing, and integration based on industry standards, which can be repaired and/or replaced by various consultants/contractors.
- Progress:** Staff is currently working on an assessment of the existing equipment and programing to prepare a request for proposal with a scope of work for a consulting firm.
- Project Schedule:** Behind Schedule.
- June & July 2021 – Continued working on Request for Proposal (RFP).
 - August 2021 – Review project with Engineering Committee.
10. **Stormwater Recharge Program** - Stormwater Recharge Project at Crescenta Valley County Park (CVC Park) includes the design and installation of a stormwater infiltration system within CVC Park that will direct stormwater from the Verdugo Wash into infiltration galleries for groundwater recharge. The focus will be to coordinate with the City of Los Angeles on stormwater rights.
- Progress:** Met with LADWP and staff working on alternatives about water rights.
- Project Schedule:** On Schedule
- August 2021 – Presentation to Engineering Committee on status of project.
11. **Rehabilitation Surge Tank at Glenwood** – This project is the rehabilitation of the surge tank at the Glenwood Operations Facility. A preliminary design was completed in 2017.
- Progress:** Project put on hold
12. **16-inch Manifold and Valve Replacement at Oak Creek Reservoir** – CVWD's operations staff observed a leak on the underside of the existing inlet/outlet pipeline manifold that joins Oak Creek #1 and #2 reservoirs. The inlet/outlet manifold was installed 1961 and is a critical junction point as it allows influent water to fill each reservoir.
- Progress:** Complete.
13. **Annual Booster Pump Replacement** – This project was originally planned to replace Markridge Booster 25. However, Booster B at Paschall was shut down due to what appears to be mechanical failure. Staff is working with the pump contractor that replaced the pump in 2018 to remove and replace the pump.
- Progress:** Complete
14. **Facility Improvement Program** – This project is for the installation of a new roof on the existing 70 ft diameter concrete reservoir at Encinal for material and equipment storage. Staff will be preparing an RFP for a consulting firm to perform the structural design of the new roof.
- Progress:** Complete

SUMMARY:

Attached for review is a summary of project costs including costs spent to date, cost committed to for the remainder of the year, and the total cost for each project.

Prepared & Submitted by:



David S. Gould, P.E.
Director of Engineering

FY 20/21 Capital Improvement Project Program Cost Update: 06/14/21	Recorded FY 19/20	Budget FY 20/21	<u>FY 20/21</u> Cost to date from 7/1/20 to 05/31/21	<u>FY 20/21</u> Cost Committed from 6/1/21 to 6/30/21	Projected FY 20/21
Capital Improvement Project Summary					
1. Water Supply	\$ 300,375	\$ 170,000	\$ 67,026	\$ 89,080	\$ 156,106
2. Water Storage	\$ 498,530	\$ 480,000	\$ 357,484	\$ 278,064	\$ 635,548
3A. Water Distribution - Pipeline	\$ 1,126,030	\$ 2,300,000	\$ 1,235,890	\$ 1,184,610	\$ 2,420,500
3B. Water Distribution - Other	\$ 10,892	\$ 710,000	\$ 128,153	\$ 99,016	\$ 227,169
4. Water Treatment	\$ 469,205	\$ -	\$ 54,073	\$ -	\$ 54,073
5. Technology	\$ 152,597	\$ 1,070,000	\$ 366,958	\$ 203,042	\$ 570,000
6. Public Safety/Emergency Response	\$ 5,810	\$ 165,000	\$ 95,400	\$ 69,600	\$ 165,000
7. Facilities & Planning	\$ -	\$ 105,000	\$ 3,956	\$ -	\$ 3,956
Capital Improvement Projects - Total	\$ 2,563,438	\$ 5,000,000	\$ 2,308,940	\$ 1,923,412	\$ 4,232,352
Bond Financing - CIP	\$ -	\$ 2,695,174	\$ 1,800,261	\$ 1,404,413	\$ 3,204,674
Water Fund Financing - CIP	\$ 2,563,438	\$ 2,304,826	\$ 508,680	\$ 518,998	\$ 1,027,678
Total Financing - CIP	\$ 2,563,438	\$ 5,000,000	\$ 2,308,940	\$ 1,923,412	\$ 4,232,352

FY 20/21 Capital Improvement Project Program Cost Update: 06/14/21		Recorded FY 19/20	Budget FY 20/21	<u>FY 20/21</u> Cost to date from 7/1/20 to 05/31/21	<u>FY 20/21</u> Cost Committed from 6/1/21 to 6/30/21	Projected FY 20/21
1. Water Supply						
A. Groundwater Water Supply						
i. Well Rehabilitation						
	Well 7 Rehabilitation	\$ 102,696				
	Well 16 Rehabilitation	\$ 103,713				
	Well 11 Rehabilitation	\$ 14,694	\$ -	\$ 56,106	\$ -	\$ 56,106
	Well 12 Rehabilitation		\$ 95,000	\$ 8,385	\$ 86,615	\$ 95,000
ii. New Wells						
	Re-Activate Well 2 - Construction	\$ 79,272				
iii. Groundwater Basin Recharge						
	Stormwater Recharge Project at CVC Park - Planning		\$ 75,000	\$ 2,535	\$ 2,465	\$ 5,000
WS Total		\$ 300,375	\$ 170,000	\$ 67,026	\$ 89,080	\$ 156,106
2. Water Storage						
A. Reservoir Rehabilitation						
i. Steel Reservoir Re-Coating/Roof/Vents Rehabilitation						
	Markridge	\$ 498,530	\$ -	\$ 367	\$ -	\$ 367
	Rosemont		\$ 480,000	\$ 301,936	\$ 278,064	\$ 580,000
	Oak Creek - 16" Manifold Repair		\$ -	\$ 55,181	\$ -	\$ 55,181
WS Total		\$ 498,530	\$ 480,000	\$ 357,484	\$ 278,064	\$ 635,548
3. Water Distribution						
A. Pipeline Replacement						
	3200 & 3300 Blocks of Brookhill	\$ 623,009				
	4700 & 4800 Block of Pennsylvania	\$ 503,021				
	2400 & 2500 Block of Janet Lee - Project 1		\$ 538,000	\$ 529,682	\$ 33,069	\$ 562,750
	Project 2		\$ 280,000	\$ 35,452	\$ 269,298	\$ 304,750
	Project 3		\$ 707,000	\$ 500,258	\$ 249,742	\$ 750,000
	Project 4		\$ 775,000	\$ 170,499	\$ 632,501	\$ 803,000
	Annual Pipeline Replacement		\$ 2,300,000	\$ 1,235,890	\$ 1,184,610	\$ 2,420,500
C. Booster Pump System						
i. Annual Pump /Motor Replacement						
	Boosters - Glenwood 32 & 33	\$ 4,384	\$ -	\$ 85,951	\$ -	\$ 85,951
	Booster Replace - Booster B at Paschall		\$ 75,000	\$ 20,218	\$ -	\$ 20,218

FY 20/21 Capital Improvement Project Program Cost Update: 06/14/21		Recorded FY 19/20	Budget FY 20/21	<u>FY 20/21</u> Cost to date from 7/1/20 to 05/31/21	<u>FY 20/21</u> Cost Committed from 6/1/21 to 6/30/21	Projected FY 20/21
D. Pressure Reducing Stations						
	PRS - Zone 2 to Zone 1	\$ 6,508	\$ 150,000	\$ 21,984	\$ 58,016	\$ 80,000
i. Water Surge Control						
	Rehabilitation Surge Tank at Glenwood		\$ 35,000	\$ -	\$ -	\$ -
iii. Misc.						
	Upgrade - Ramsdell Mixing Station	\$ -	\$ 450,000	\$ -	\$ 41,000	\$ 41,000
WD Total		\$ 1,136,922	\$ 3,010,000	\$ 1,364,043	\$ 1,283,625	\$ 2,647,669
4. Water Treatment						
C. Disinfection - Convert to Chloramines						
	Conversion to Chloramination	\$ 469,205	\$ -	\$ 54,073	\$ -	\$ 54,073
WT Total		\$ 469,205	\$ -	\$ 54,073	\$ -	\$ 54,073
5. Technology						
A. Automated Meter Information (AMI) System						
	AMI - 3/4" to 1" - Smart Meters	\$ 83,590	\$ 50,000	\$ 45,954	\$ 54,546	\$ 100,500
	AMI - Communication		\$ 150,000	\$ 160,933	\$ 140,567	\$ 301,500
B. Supervisory Control and Data Acquisition (SCADA)						
	Communication Radio Network		\$ 260,000	\$ 71,101	\$ 1,899	\$ 73,000
	SCADA Replacement - Design	\$ 69,007				
	SCADA Replacement - Installation		\$ 610,000	\$ 88,970	\$ 6,030	\$ 95,000
TECH Total		\$ 152,597	\$ 1,070,000	\$ 366,958	\$ 203,042	\$ 570,000
6. Public Safety/Emergency Response						
	Dunsmore/Pickens - Seismic Sensors	\$ 5,810				
D. Miscellaneous						
	FEMA Local Hazard Mitigation Plan		\$ 165,000	\$ 95,400	\$ 69,600	\$ 165,000
SF/ER Total		\$ 5,810	\$ 165,000	\$ 95,400	\$ 69,600	\$ 165,000
7. Facilities & Planning						
	Roof for Old Encinal - Storage Bldg		\$ 105,000	\$ 3,956	\$ -	\$ 3,956
F & P Total		\$ -	\$ 105,000	\$ 3,956	\$ -	\$ 3,956
Capital Improvement Projects - Total		\$ 2,563,438	\$ 5,000,000	\$ 2,308,940	\$ 1,923,412	\$ 4,232,352

CRESCENTA VALLEY WATER DISTRICT

STAFF REPORT

Information Item No. 2

June 15, 2021

To: Engineering Committee
From: David S. Gould, P.E. – Director of Engineering
Subject: Update for FY 21/22 Capital Improvement Project Budget and Consultants

BACKGROUND:

Staff has been discussing the draft FY 21/22 Capital Improvement Project (CIP) budget with respect to the Long-Term Infrastructure and Funding Roadmap, including future financing through bonds and/or PayGo. The Board has tentatively agreed to the FY 21/22 CIP budget, and the following is an update of projects and status of design.

DISCUSSION:

There are several CIP projects that need the assistance of outside consultants to begin design services so that construction could start earlier this year (November 2021) instead of starting after January 2022 as shown in the projects listed below:

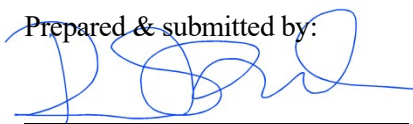
1. Design consultant for the new pipelines on the 2800 to 3100 Blocks of Los Olivos; 3200 Block of Alabama 4700 & 4800 Blocks of Cheryl & 3300 Block of Thelma St.
a. Request for Proposal sent to 7 consulting firms and due July 7, 2021.
2. Design consultant for a new Pressure Reducing Station & Rehabilitation of the Ramsdell Mixing Station.
a. Design awarded to Cannon Corporation.
3. Design consultant for the steel reservoir rehabilitation at Edmund #2.
a. Staff working on Request for Proposal.
4. Design consultant for the replacement of SCADA communication radio network.
a. See Staff Report
5. Design consultant for the replacement of SCADA Equipment, Programing & Integration.
a. Staff working on Request from Proposal.
6. Consultant to assist operations staff with conversion, monitoring and standard operating procedures for the conversion to chloramines.
a. Staff working on Request from Proposal.
7. Consultant to prepare the Wastewater Master Plan, including Wastewater Treatment Plant Feasibility Study.
a. Staff working on preliminary scope of work.
8. Consultant to assist in GIS mobile deployment.
a. Staff working on scope of Work.

Staff is planning to bring to future Board meetings the consultant award of contract for approval. The RFP will also include a statement that the District can stop design if the final CIP budget is revised, or the specific project is cancelled. Staff is estimating about \$250,000 to \$300,000 of consulting fees will be spent prior to the October 2021 approval of the CIP budget.

RECOMMENDATION:

Staff is recommending to the Engineering Committee that staff move forward with preparing and awarding design consultant contracts prior to the final adoption of the FY 21/22 CIP Budget.

Prepared & submitted by:



David S. Gould, P.E.
Director of Engineering