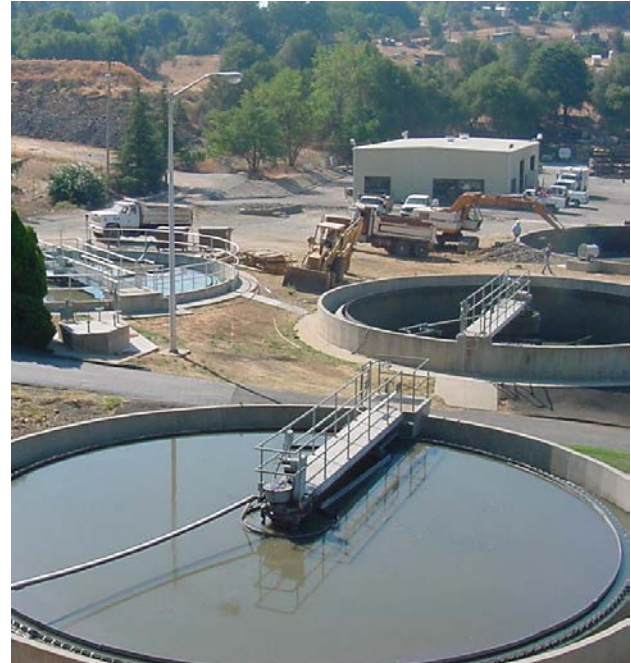




Tuolumne Utilities District

CAPITAL IMPROVEMENT PLAN

FY20-FY24



This page is intentionally left blank.

TABLE OF CONTENTS

1	Executive Summary	
1.1	Definition of Capital Improvement Plan	1-1
1.2	Purpose of CIP	1-1
1.3	Project Ranking and Selection Process	1-1
1.4	Overview of 5-Year CIP	1-2
1.5	Board Approval Process	1-3
2	Introduction	
2.1	District Facilities and Service Areas	2-1
2.2	Connection and Growth Trends	2-2
3	Overview of Project Development	
3.1	Types of Projects	3-1
3.2	Project Category – Water, Wastewater, General Fund	3-1
3.3	Project Development Considerations	3-1
3.3.1	Bundling	3-1
3.3.2	Phasing	3-1
3.3.3	Ranking	3-1
3.3.4	Selection	3-2
3.3.5	Allocation of Cost by Fiscal Year	3-2
3.4	Project Delivery Models	3-2
3.5	Project Cost Estimates	3-3
4	Project Ranking Criteria	
4.1	Discussion of Scoring and Ranking Process.....	4-1
4.1.1	Tier 1 Criteria – Mandatory Projects	4-1
4.1.2	Tier 2 Criteria – Necessary Projects	4-1
4.1.3	Tier 3 Criteria – Recommended Projects.....	4-2
4.1.4	Tier 4 Criteria – Desirable Projects.....	4-3
5	Water Projects	
5.1	Supply Projects	5-1
5.2	Treatment Projects	5-2
5.3	Storage Projects	5-2
5.4	Distribution Projects	5-3
6	Wastewater Projects	
6.1	Collection Projects	6-1
6.2	Treatment Projects	6-2
6.3	Reclamation Projects	6-2
7	General Fund (Districtwide Projects)	
7.1	Summary	7-1



8	Tables	
8A	Water Fund Projects by Fiscal Year	8-3
8B	Wastewater Fund Projects by Fiscal Year	8-5
8C	General Fund Projects by Fiscal Year	8-7
8D	5-Year Capital Outlay Schedule by Fiscal Year	8-9
9	Project Information Sheets	
9.1	Listing of Projects	9-1

Water Fund Projects

1. Cedar Ridge Upper Tanks Land Acquisition
2. Kennebec Tank Rehabilitation
3. Pedro Y Intersection Utility Relocation
4. Cuesta Heights Water Storage and Distribution Improvements
5. Canyonview Pump Station Generator
6. Zelinsky Tank Abandonment
7. Tank Ventilation Improvements
8. Phoenix Lake Preservation and Restoration Plan
9. Algerine Slum Dam
10. Columbia Ditch- Bo Leonard's Shoot Flume
11. Columbia Ditch-Replace Pagaini Siphon (CEQA)
12. Columbia Ditch-Upper Shoot Flume
13. Columbia Ditch-Upper Spill #1
14. Eureka Ditch Flume #1 & #3 Repair
15. General Annual Ditch Improvements
16. Matelot Pipeline and Turbidity Station
17. Oneil Tunnel Repair
18. Phoenix Dam and Spillway Improvements
19. Shoot Flume at Miner's Shack
20. Shaws Flat Ditch-Pig Farm Flume
21. Shaws Flat Ditch-Spill #13
22. Eureka Ditch-Pipe Segments
23. Section 4 Siphon on RR Trestle
24. Cinder Block Tank Bypass
25. Jamestown Water Distribution Improvements
26. Sonora Water Distribution Improvements
27. Sonora WTP Land Acquisition and CEQA
28. Sonora WTP Preliminary Design
29. Rawhide Bridge Utility Relocation
30. Valley Vista Tank (TUD Cost Share)
31. Land Purchase for Mono Village to Scenic View Pump Station
32. Tuolumne City Water Main
33. Mono Vista Tank
34. Ranchos Poquitos Tanks and Pump Station Abandonment
35. Willow Springs Water Distribution Improvements
36. Techite Pipeline Replacement
37. Consolidate Scenic View and Phoenix Lake Park



- 38. Riddle Tank Abandonment
- 39. Comstock Tank Rehabilitation

Wastewater Fund Projects

- 40. Columbia JC Upper SPS Rehabilitation
- 41. Gibbs Interceptor Lining
- 42. Parrotts Ferry SPS Rehabilitation
- 43. Columbia Interceptor Lining
- 44. Star MHP SPS Control Panel
- 45. Phoenix Lake Park SPS New Overflow Sump
- 46. Willow Springs SPS Upgrades
- 47. Apple Valley SPS Relocation
- 48. Mono Village SPS Abandonment
- 49. Gold Springs SPS Overflow Sump
- 50. Ranchos Poquitos Interceptor Gaging Station Electrical Service
- 51. General Collection System Improvements
- 52. Parrotts Ferry FM Condition Assessment and ARVs
- 53. MiWuk SPS Rehabilitation
- 54. Hillcrest and Palemone Sewer
- 55. Standard SPS Rehabilitation
- 56. Nikki Court SPS Improvements
- 57. General Collection System Lining
- 58. RWWTP Design and Permitting
- 59. RWWTP Interim Improvements
- 60. Feasibility Study to Eliminate THWWTP
- 61. Reclamation System Groundwater Monitoring Workplan and Implementation
- 62. Reclamation System Irrigation Area Expansion

General Fund Projects

- 63. SCADA Improvements
- 64. Workspace Partitions
- 65. Flooring Replacement Project

Figures and Maps

2A	Raw Water System Map	2-7
2B	Treated Water System Map	2-9
2C	Wastewater System Map	2-11
2D	Reclamation System Map	2-13
5A	Locations of Water Fund Projects	5-5
5B	Funding Distribution – Water	5-7
6A	Locations of Wastewater Fund Projects	6-5
6B	Funding Distribution – Wastewater	6-7



Tables

2A	Tuolumne County Demographic Data	2-3
2B	Number of New Connections Added by Year	2-4
8A	Water Fund Projects by Fiscal Year	8-3
8B	Wastewater Fund Projects by Fiscal Year	8-5
8C	General Fund Projects by Fiscal Year	8-7
8D	5-Year Capital Outlay Schedule by Fiscal Year	8-13



Section 1: Executive Summary

1.1 Definition of Capital Improvement Plan “CIP”

A Capital Improvement Plan, or CIP, is a short-range plan, usually four to ten years, which identifies capital projects and equipment purchases, provides a planning schedule and identifies options for financing the plan. (Wikipedia)

The District's CIP is a five year fiscal plan. The District's Board of Directors adopts the first year of the CIP and approves the entire five-year plan in concept. The CIP is a “rolling document” with older projects dropping out of the plan and new projects being added each year. The Board approves the CIP annually with the adoption of its budget.

1.2 Purpose of CIP

The CIP is a foundational document that guides the District's capital investments. The plan identifies projects, substantiates projects, prioritizes projects, establishes an implementation schedule, and identifies funding mechanisms.

It also serves as a tool to communicate to the public the financial needs of the District and is an integral component of rate development.

1.3 Project Ranking and Selection Process

Projects were submitted by staff and ranked by a committee. The ranking criteria are explained in greater detail in Section 4.

Tier 1 Criteria (Mandatory Projects)

Regulatory Requirement
Safety Obligation
Outside Funding Already Secured
Failure Likely

Tier 2 Criteria (Necessary Projects)

Improves Operational Efficiency
Replacement Due to End of Useful Life
Facility Developed in Conjunction with a Project Proponent

Tier 3 Criteria (Recommended Projects)

Increase Capacity
Board Policy Driven
Increases an Asset's Useful Life



Tier 4 Criteria (Desirable Projects)

Improve Reliability

Improves Level of Service

Coordination with Project Proponent or Other Local Agency

The tiers summarized above were not the ultimate factors in determining if a project was included in the CIP. Other factors that were considered were: cost, ability to bundle with other projects, phasing, complexity, affordability, likelihood of receiving a grant, and public support.

1.4 Overview of 5-Year CIP

This 5-Year CIP proposes **\$24,754,518 in Water Fund** projects (including Capital Outlay) to:

- Replace approximately 50,000 linear feet of water mains
- Dredge over 300,000 cubic yards of sediment from Phoenix Lake
- Construct 3 new storage tanks
- Consolidate or abandon 10 storage tanks
- Rehabilitate 3 storage tanks
- Construct or improve 2 new pump stations
- Replace/Improve 3 shoot flumes
- Rehabilitate 1 small dam
- Rehabilitate Phoenix Dam
- Purchase 17 acres of land to construct a new Sonora WTF
- Conduct preliminary design on a new Sonora WTF

Some notable water projects include the Phoenix Lake Preservation and Restoration Plan to restore as much as 300 acre-feet of usable capacity to the Reservoir and to improve water quality. The \$6.2M project is being funded by nearly \$5M in grants from Proposition 84.

The Cuesta Heights project will allow the District to consolidate storage in three existing tanks into one new tank. The project will also eliminate two pump stations. The project cost is approximately \$2.7M phased over 5 fiscal years.

The Consolidation of Scenic View and Phoenix Lake Park project is a multi-year multi-phase project that will involve constructing a pipeline from Ridgewood Estates down Phoenix Lake Road to connect the Upper Basin Water System to the Scenic View and Phoenix Lake Park Water Systems. This will allow for the abandonment of the Scenic View WTP, the Phoenix Lake Park Well and Booster Pump System, along with tanks at both sites.

The Willow Springs Distribution Improvements includes replacement of approximately 25,000 linear feet of leaky, undersized, galvanized steel pipe that has a very high maintenance factor.

This 5-Year CIP proposes **\$9,471,618 in Sewer Fund** projects (including Capital Outlay) to:

- Replace approximately 5,000 linear feet of gravity sewer main
- Conduct trenchless rehabilitation on approximately 25,000 linear feet of gravity sewer mains
- Rehabilitate or Improve 9 sewer pump stations
- Construct 1 new sewer pump station
- Abandon 1 existing sewer pump station by constructing gravity sewer main
- Complete design and permitting for new Regional Wastewater Treatment Facility
- Develop 40 acres of dry year land bank in the Regional Reclamation System.

Some notable sewer projects include the relocation and replacement of the existing Apple Valley sewer pump station that is currently adjacent to Chicken Creek and is susceptible to flooding.

The RWWTP Design and Permitting Project will provide complete plans and permits to allow the District to aggressively seek outside funding to construct the project.

This 5-Year CIP proposes **\$323,344 in General Fund** projects (General Fund expenses are allocated in proportion to the number of customers, with 70% associated with Water and 30% associated with Sewer):

- Supervisory Control and Data Acquisition Improvements
- Workspace Partitions (Cubicles)
- Flooring Replacement for the Centralized Office Facility

1.5 Board Approval Process

Staff present the draft CIP in a Board Workshop format and then the CIP is adopted in conjunction with the Strategic Plan and the annual Fiscal Year Budget.

This page is intentionally left blank.



Section 2: Introduction

2.1 District Facilities and Service Areas

Tuolumne Utilities District (“TUD” or “District”) provides raw water, treated water, sewer, septage, and reclaimed water services to customers throughout Tuolumne County and the City of Sonora. The District has approximately 13,441¹ residential, commercial, and wholesale treated water accounts and an additional 587¹ untreated or raw water accounts. Sewer service is provided to 6,024 residential and commercial accounts. In addition, the District provides regional sewer services to subscriber agencies such as the Jamestown Sanitary District (reclamation) and the Twain Harte Community Services District (treatment and reclamation).

To provide these necessary services to our customers the District owns and operates 11 water systems and 5 wastewater systems. The water and wastewater systems are self-supporting enterprises and costs are accounted for separately under the water enterprise fund and the wastewater enterprise fund, respectively. The District also provides both retail and wholesale water and wastewater services to the community.

The District currently has an estimated treated water service population of approximately 30,800² with approximately 2,000 additional people served through wholesale service to the Muller Water Company, Sleepy Hollow Water Users Association, Sonora Meadows Mutual Water Company, and the Sonora Water Company.

An estimated 24,000 people benefit from the District’s wastewater collection, treatment, and/or reclamation service. Virtually every residence in the County that is not connected to public sewer relies on the District to process septage originating from septic tanks and from portable toilets.

Tuolumne County’s current population is estimated to be approximately 54,248³. Since the District is the primary water and sewer service provider to the business and commercial centers of the County, nearly everyone in Tuolumne County benefits, in some degree, from the District’s services.

Raw Water System

Approximately 95% of the water the District distributes originates from the South Fork Stanislaus River and is impounded in PG&E’s Lyons and Strawberry Reservoirs. PG&E owns and operates a canal and flume system to convey water from Lyons Reservoir to the Phoenix Powerhouse. The District owns and operates a total of 70.4⁴ miles of ditch, flume, pipe, and tunnel infrastructure that diverts water from the PG&E system at various locations. The District’s raw water conveyance system serves a variety of customer types and uses, including agricultural/irrigation water, ditch domestic use, commercial and industrial, resale, and raw water supply to other treated water agencies such as the Twain Harte Community Services District. The system also supplies water to 10 of the District’s own surface water treatment facilities. Raw

¹ TUD Operations Report (August 27, 2019)

² Urban Water Management Plan Update 2015

³ 2017 US Bureau of the Census Population Estimates Program

⁴ Ditch Sustainability Project 2012

water storage is provided in Phoenix Lake and an assortment of smaller impoundments. See Fig. 2A at the end of this section for a map of the District's Raw Water System.

Treated Water System

The water system includes various water storage and conveyance facilities, transmission pipelines, treatment facilities, pump stations, and distribution pipelines. The District operates and maintains 4 water reservoirs, 14 treatment plants, 78 treated water storage tanks, 51 transfer and booster pump stations, 70.4 miles of raw water transmission facilities through a system of ditches, flumes, pipes, and tunnels, and 330 miles of potable water distribution pipelines. In respect to the water enterprise fund, the District, in addition to its retail customer base, provides wholesale water to the following entities: Muller Water Company, Sonora Meadows Water Company, Sonora Water Company, and the Sleepy Hollow Water Company and also provides emergency backup water supply to some local mobile home parks. The District's Columbia Water System is also the sole water source to CalFire's Columbia Air Attack Base. See Fig. 2B at the end of this section for a map of the District's Treated Water System.

Wastewater System

The wastewater system provides wastewater collection and treatment services, as well as reclaimed water distribution for agricultural uses. The collection system is composed of approximately 140 miles of pipeline ranging in size from 2-inch diameter up to 18-inch diameter and 29 sewer pumping stations. The District operates and maintains one primary level treatment facility and one secondary level regional treatment facility. Treated wastewater effluent is stored in Quartz Reservoir (1,616 acre-feet) and is distributed for agricultural uses on 672 acres of lands around the Jamestown area. The District is tasked with complying with State imposed Waste Discharge Requirements, other various permit requirements, and a consent decree. The Consent Decree will expire in 2021. The District is in full compliance with its obligations and has completed a video inspection of its entire collection system. As a result of those inspections the District is engaged in an aggressive campaign of repairs, replacements, and pipeline rehabilitation. See Fig. 2C and Fig. 2D at the end of this section for maps of the District's Wastewater and Reclamation Systems.

2.2 Connection and Growth Trends

Like many other rural counties in the foothills of the Sierra Nevada mountain range, most of the land (80 percent) in Tuolumne County is owned by government agencies. The two major areas of public land are sections of Yosemite National Park and the Stanislaus National Forest.⁵ As of 2018 the estimated population of Tuolumne County was 54,539⁶ which is spread over approximately 2,021 square miles.⁷ Included within the above population figure are the inhabitants of the City of Sonora with an estimated population of 4,903. Since 2010, Tuolumne County's estimated population has declined approximately 1.5%. Much of this decline was the result of out-migration, as the County lost an average of 103 net

⁵ California County-Level Economic Forecast, 2014-2040, September 2014 prepared by The California Economic Forecast, Santa Barbara, CA for the Economic Analysis Branch, Office of State Planning, California Department of Transportation, Sacramento, CA, page 217

⁶ United States Census Bureau, Quick Facts 2018

⁷ United States Census Bureau, Quick Facts 2018

migrants per year.⁸ Table 1 below provides a breakdown by percentage of the current makeup of the county's population. There are, on the order of, 22,267 households identified within the County which equates to roughly 2.27 persons per household.⁹ The Median Household Income (MHI) in Tuolumne County is estimated to be \$54,325.¹⁰ (Note that there are areas that meet the State Water Board's criteria for disadvantaged, with an annual MHI that is less than 80% of the statewide average.)

Table 2A - Tuolumne County Demographic Data

2018 Census Data – U.S. Census Bureau	Percentage
White	90.3%
Black or African American	2.0%
American Indian and Alaska Native	2.3%
Asian	1.4%
Native Hawaiian and Other Pacific Islander	0.3%
Two or More Races	3.6%
Total	100%

Tuolumne County has a civilian labor force of 26,200 people and a civilian unemployment rate of 4.1%.¹¹ The largest industries in the county are leisure services, education and healthcare services, wholesale and retail trade, and government. Together, these sectors account for about 75 percent of all wage and salary jobs. Between 2014 and 2019, the largest job gains are expected to occur in manufacturing, wholesale and retail trade, education and healthcare, professional services, and government.

Past population trends do not correlate well to growth in active water service connections within the District. Since 1993, the majority of the District's growth in water services was associated with acquisition of pre-existing private/mutual water companies. Since 1993, the District added 4,352 connections. Of those, 2,121 (49%) were categorized as non-acquisition growth and 2,231 (51%) were associated with acquisition/merger growth. Non-Acquisition growth since 1993 has averaged about 0.88% annually. Much of the District's current water infrastructure demands stem from the District's past acquisition of private and mutual water companies, whose facilities were not constructed to standard and were not designed to accommodate future growth.

Tuolumne County adopted a General Plan Update in 2019 that included a 0.61% annual growth rate and established distinct communities to guide and encourage in-fill growth. Within the Distinctive Communities Growth Scenario each community contains a well-defined, cohesive, and compact community built around an appropriately-scaled urban core and community gathering places. The size of each community is based on a locally defined urban development boundary area as well as a defined community.¹² Based on

⁸ California County-Level Economic Forecast, 2014-2040, September 2014 prepared by The California Economic Forecast, Santa Barbara, CA for the Economic Analysis Branch, Office of State Planning, California Department of Transportation, Sacramento, CA, page 217

⁹ United States Census Bureau, Quick Facts 2013

¹⁰ United States Census Bureau, Quick Facts 2009-2013

¹¹ Union Democrat Article, July 20, 2018

¹² Proposed Amendments to the Introduction of the Tuolumne County General Plan, Introduction, Page II

historical growth rates over the long term, the City of Sonora anticipates its resident population will reach between 5,144 and 5,948 individuals by 2020, an increase of between 480 and 1,284 individuals.¹³

For projected non-acquisition growth, the District relies on the new development anticipated by Tuolumne County and the City of Sonora under their General Plans in assessing the infrastructure needs within its service areas. In addition, new development is charged connection (impact) fees to contribute toward their proportional share of capital improvement costs and the rates charged to new customers help offset rising operation and maintenance costs. The General Plans provide guidance in determining the appropriate or desirable locations for growth, thereby preventing an unnecessarily scattered pattern of development, which often results in extraordinary demands on public services and above average public service costs. In addition, the District also uses recent historical new service connection information to forecast anticipated growth within its service areas. Other factors that influence growth in both water and sewer connections include, well failures or septic system failures. The recent drought impacted over 200 wells in the County and has resulted in over 30 new treated water connections to the District's water system. Table 2B below provides a breakdown of new water and wastewater service connections to the District since January 2008. The annual average number of new connections over this time period has been 34 water connections and 22 wastewater connections. With anticipated average annual population growth to be less than 400 people county-wide through the year 2040, and not all of the growth occurring within the District's service areas, rate-payer revenue instead of new development must be relied on to address the capital, operating and maintenance costs associated with providing water and wastewater services to District customers.

To minimize the impact of the capital project costs on the District's users, the District attempts to finance its eligible capital projects in part via a combination of State and/or Federal loans and grants which are administered by the State Water Resources Control Board (SWRCB), California Department of Water Resources (DWR), the United States Department of Agriculture (USDA) and other funding agencies. It should be pointed out that most of the District's proposed capital improvement projects will not be eligible for grant funding. As a recipient of various Federal and State loans and grants the District is obligated to comply with the granting agencies program guidelines and contract provisions. The guidelines require that recipients of these grants and/or loans establish a system of user charges that recovers operations, maintenance, and replacement costs from users on a basis proportionate to use. These guidelines and State law also require a fair and equitable apportioning of costs based on customer type.

Table 2B - Number of New Connections Added By Year

Year	Area	Water	Sewer
2008	County	51	34
	City	5	5
	Total	56	39
2009	County	20	20
	City	2	2
	Total	22	22

¹³ City of Sonora General Plan, Volume 1: Goals, Policies, Implementation Programs & Background, Adopted: May 30, 2007, Land Use - page 5

2010	County	24	18
	City	10	10
	Total	34	28
2011	County	14	9
	City	1	1
	Total	15	10
2012	County	16	14
	City	3	3
	Total	19	17
2013	County	16	11
	City	0	0
	Total	16	11
2014	County	29	9
	City	2	3
	Total	31	12
2015	County	51	23
	City	4	4
	Total	55	27
2016	County	55	21
	City	5	4
	Total	60	25
2017	County	24	11
	City	4	2
	Total	28	13
2018	County	33	14
	City	3	2
	Total	36	16
	Total	372	220

This page is intentionally left blank.



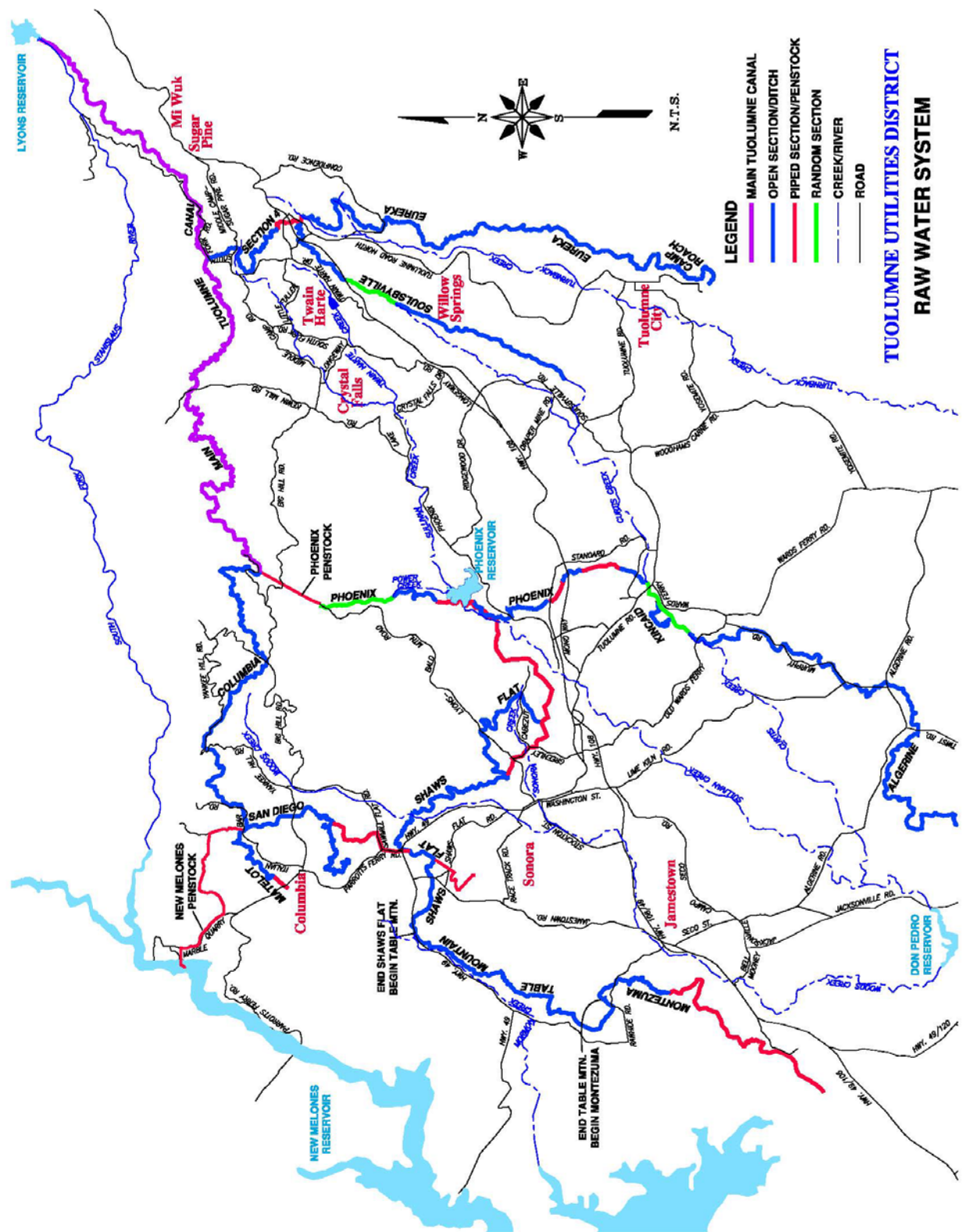


Figure 2A

This page is intentionally left blank.



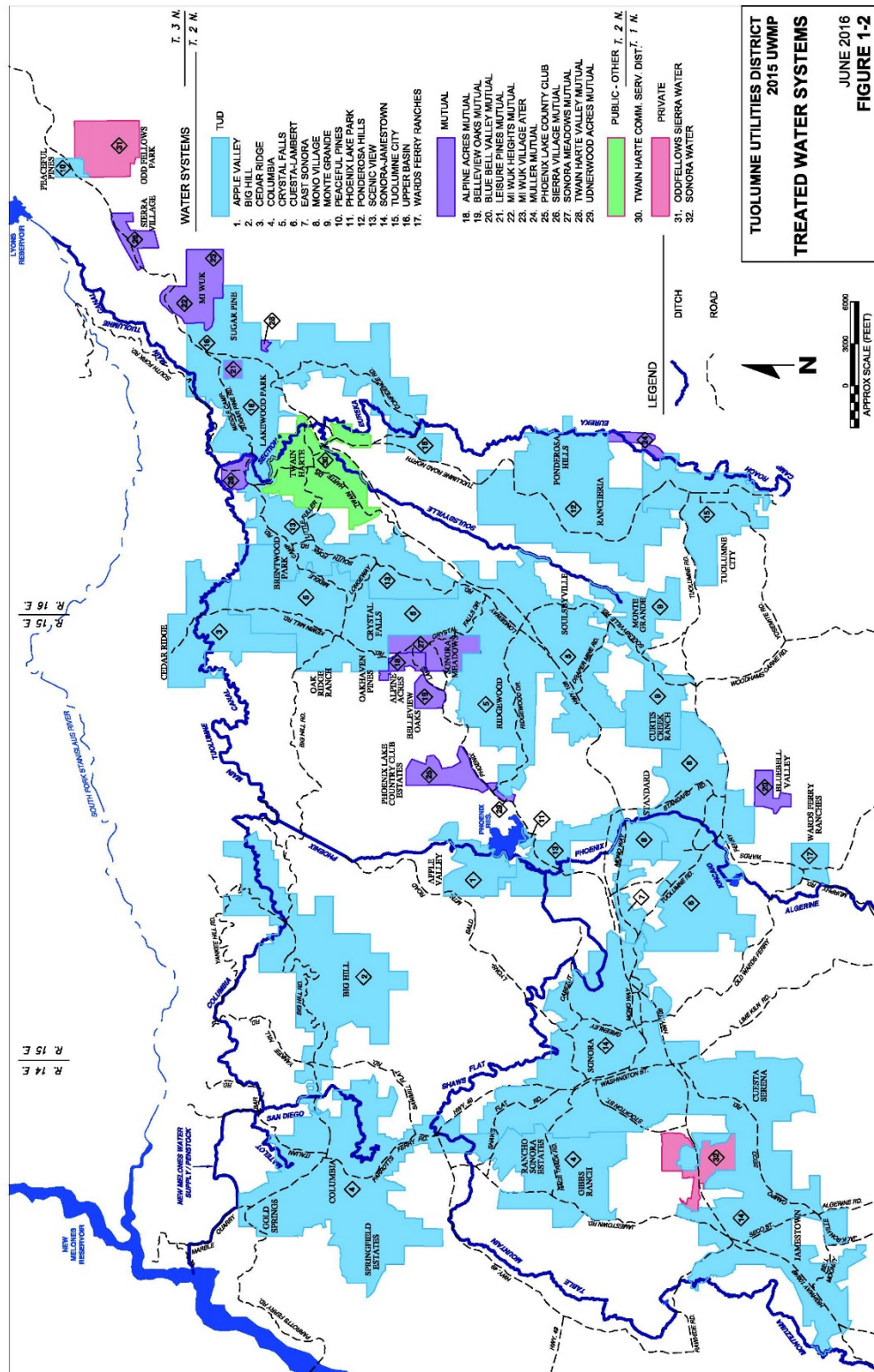


Figure 2B

This page is intentionally left blank.



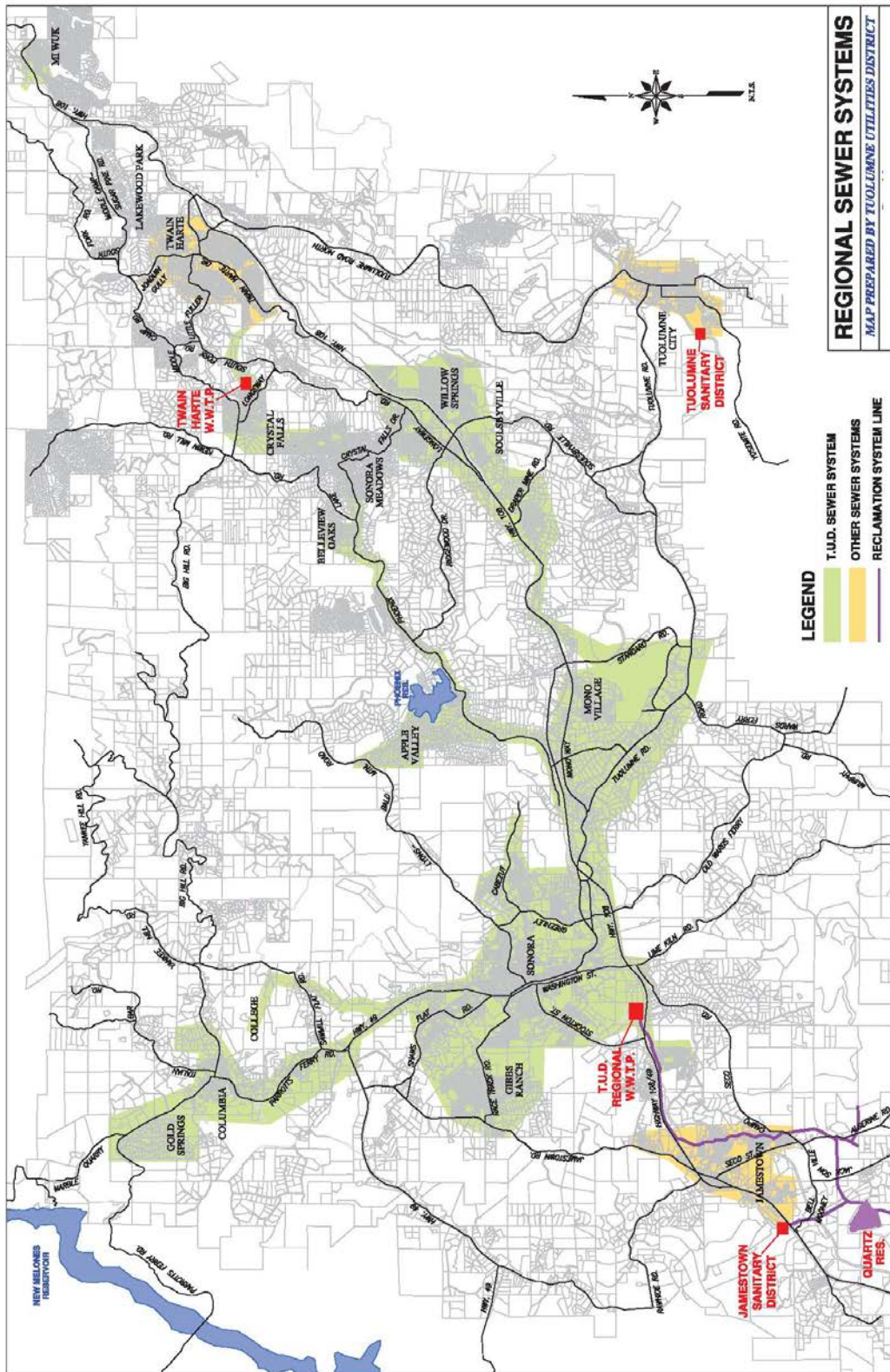


Figure 2C

This page is intentionally left blank.



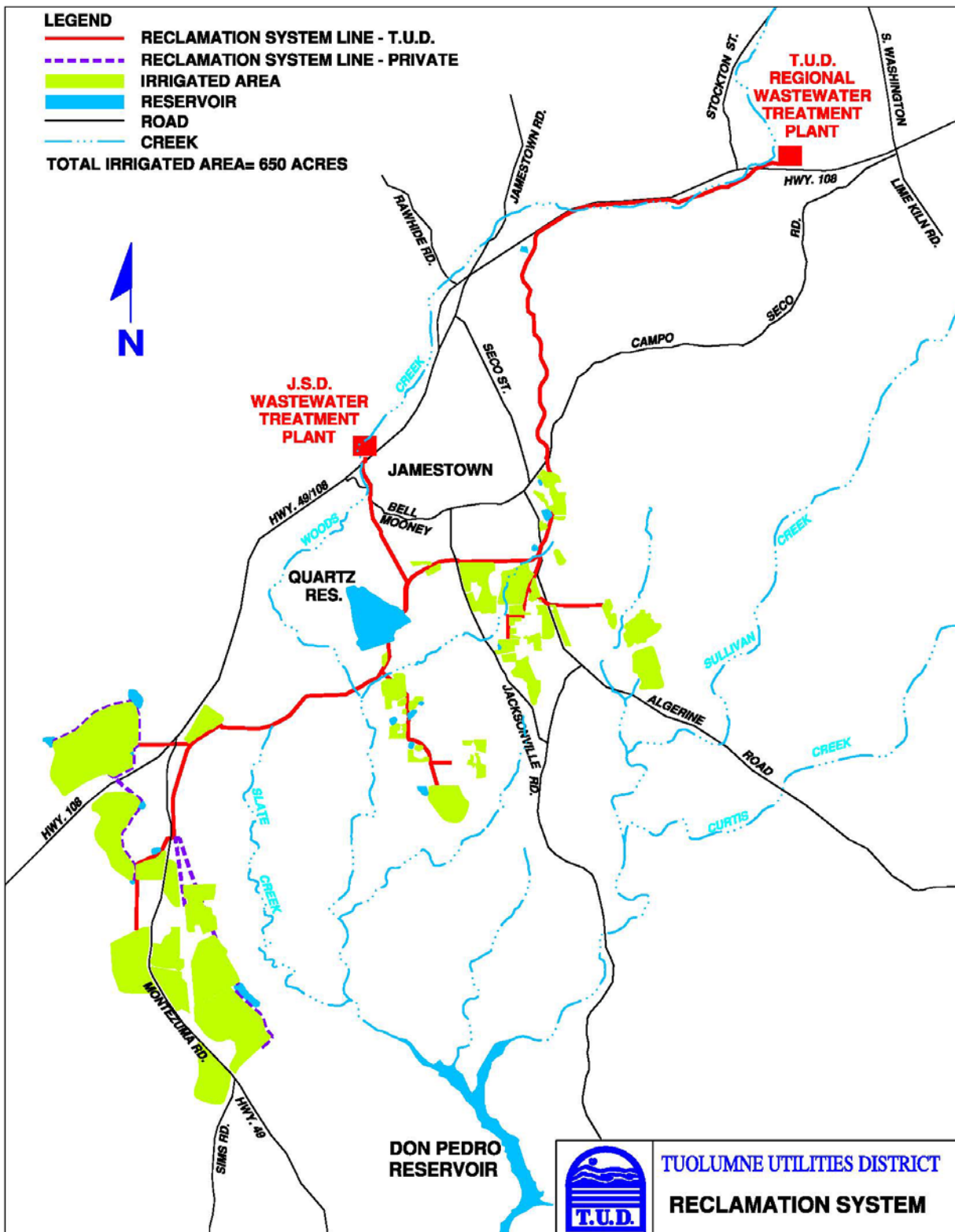


Figure 2D

This page is intentionally left blank.



Section 3: Overview of Project Development

3.1 Types of Projects

This CIP distinguishes between two types of projects: 1) Capital, and 2) Capital Outlay. A “capital” project is usually a construction project, or a study, or an equipment investment that has a value greater than \$50,000. A “capital outlay” is an investment, typically in equipment or parts, that is less than or equal to \$50,000, with an exception for vehicle purchases. Vehicle purchases that are greater than \$50,000 are still considered a capital outlay expense.

3.2 Project Category

Projects are categorized by the fund in which they are associated. There are three distinct funds representing water, wastewater, and general. General fund projects are projects that benefit both water and wastewater customers. These types of projects include trucks or heavy equipment that serve both water and wastewater maintenance needs. Also, improvements to customer billing software or improvements to TUD’s centralized office facility would be considered a General Fund project.

3.3 Project Development Considerations

3.3.1 Bundling

When appropriate, smaller projects have been combined to create larger multi-phased projects when they share associated objectives and benefits and may be located in the same geographical area. The purpose of “bundling” projects to create larger projects is to simplify the CIP and the corresponding budget, so as to not have hundreds of small projects. Another benefit is that bundled projects increase the number of beneficiaries and improve the ability to market the project and to possibly secure grants or other financing.

3.3.2 Phasing

Projects are phased to spread out resources over several fiscal years. Phasing is also a natural result of carrying out complex projects that have specific sequencing needs. By phasing projects, it allows for a smoothing of funding demands. It also gives District staff time to acquire land or easements, achieve environmental and permitting compliance, search for funding, and allocate labor in order to complete the project within a reasonable timeframe. Projects in this CIP have been divided into phases in such a manner that phases provide “stand alone” benefits and Board commitment to fund one phase does not inherently commit the Board to approve subsequent phases.

3.3.3 Ranking

District staff have identified over \$70 million dollars in recommended capital improvements. Staff recognize that the community cannot fund this level of investment, nor could staff administer and

carryout this amount of projects. Consequently, a ranking criteria was established and applied to prioritize projects. The ranking process was also essential in defining the problem and vetting the proposed solution. A more thorough description of the ranking process is included in Section 4 of this document.

3.3.4 Selection

The ranking process discussed above was intended to be as objective as possible. Despite characterizing numerous projects as “mandatory” or “necessary”, the reality is that there will not be enough funds to complete all of these projects. Some highly ranked projects demonstrate great need but are very expensive and/or only benefit a small number of customers. After creating a master list of projects by their respective rank, staff collaborated to reduce the project list to a manageable suite of projects that are reasonable from a funding standpoint and where the District has the institutional capacity to deliver. Other projects that didn’t rank as high were elevated into the CIP on the basis of Board preference or because there was the potential to realize significant operational efficiencies.

The CIP is a “rolling” document and will be updated each year as part of the budgeting process. The ranking of individual projects will be reevaluated and may change each year as a result of shifts in regulations, shifts in project competitiveness for grants, shifts in Board priorities, or to respond to anticipated infrastructure failure.

3.3.5 Allocation of Cost by Fiscal Year

The cost to implement the CIP will strongly influence the revenue demands of the District and subsequent calculation of rates needed to fund the improvements and the corresponding operations and maintenance. The timing and distribution of costs reflects a conscious effort on the part of the staff to smooth out revenue demands, comply with deadlines stipulated in grant or loan funding agreements, provide adequate time to seek financing or to achieve environmental compliance and secure necessary permits, and lastly to address those infrastructure needs that are most urgent and have a potential for failure in the near term.

3.4 Project Delivery Models

The District has several models it employs for project delivery. The District has its own engineering department and construction/maintenance departments. Most of the District’s infrastructure needs can be satisfied through utilizing its own forces for both design and construction. This approach has proven to be the most cost effective in the past; however, as work-loads increase it will be necessary for the District to rely on more consultants and outside contractors to complete projects. It will be extremely important to strategically select which projects are most economical to construct in-house versus through outside contracting.

As a general rule, the District endeavors, to a great extent, to design and construct with its own forces. A fully utilized engineering staff is a cost effective alternative to engineering consultants as staff’s fully burdened rates are less than most engineering consultants. Furthermore, the use of an

outside consultant still requires significant staff time to manage the consultant and to respond to consultant requests for information.

The District has demonstrated that its construction crew saves the District money because it takes advantage of the synergy between the engineering department and the construction crew. As a result, designs can be simplified, bidding and contract management is eliminated, change orders are not an issue, prevailing wages do not apply, contractor profit and overhead are not applicable, and it more fully utilizes the District's fleet of heavy equipment (i.e. backhoes, excavators, dump trucks, etc.) that would be needed, regardless, because they are essential to maintenance related tasks.

One ancillary benefit of having both internal engineering and construction capacity is that, on occasion, grant programs will fund force account work. In this case, the District can utilize grant funds to subsidize labor costs.

A great example of the benefits to having engineering and construction capabilities is demonstrated in the way in which the District undertakes storage tank replacements. Engineering staff prepare grading, underground, and tank foundation plans. Construction staff builds access roads, grade the site, and excavate for the tank foundation. Then engineering staff bid the project to a tank contractor. The contractor is responsible only for erecting the tank. This hybrid approach has been proven to be very cost effective. Contractors have testified to the District that they are unaware of a more efficient way to construct these types of projects.

3.5 Project Cost Estimates

Detailed cost estimates have been prepared for every project in the CIP. These are "pre-design" level estimates that will be refined once design is complete. Since there is a limited amount of information available to craft the cost estimate, contingencies of between 10%-25% have been added to the project cost based on potential for the project scope to change or for the unit costs to be greater than originally anticipated. Since this is a 5-year CIP, the cost for projects undertaken in years 2-5 will be impacted by inflation. Rather than apply inflation to each project separately, the contingencies have been increased to account for inflation.

The cost estimates take into account who will design and/or construct the improvement. If the project will be designed by a consultant, an additional design fee of between 7.5%-12% is added depending upon project design complexity. If the project is constructed by a contractor then the "out of pocket" expense to the District is inflated by 20%-30% to account primarily for prevailing wages and the potential for change orders.

This page is intentionally left blank.



Section 4: Project Ranking Criteria

4.1 Discussion of Ranking Process

Each capital project is assigned to a specific tier as described below.

4.1.1 Tier 1 Criteria (Mandatory Projects)

Regulatory Requirement: Projects that are required to be completed in order to maintain compliance with current or pending regulations or to respond to a documented violation. Projects that meet these criteria must be able to demonstrate that they are essential to maintain compliance and that the project addresses a past violation or a deficiency created by a new regulation. Supporting documentation may include newly issued permits, inspection reports from regulatory agencies, Cease and Desist Orders, Notices of Violations, etc. Also included in this category are conditions of any legal settlements.

Safety Obligation: Projects that would be required to maintain compliance with OSHA or that put District staff or the public at physical risk. Potential risk of property damage does not qualify as a safety obligation. The project must address a very real hazard. Documentation supporting these types of projects may include inspection reports from Cal OSHA, provisions of the MOU between the District and the Union, or documented violations of the Health and Safety Code.

Outside Funding Already Secured: These are projects where the TUD Board has already executed a funding agreement, secured a loan, or has by resolution already committed funds to the project. Supporting documentation includes, Board Resolutions, Funding Agreements, Letters of Commitment from the Grantor, or loan closing documentation.

Failure Likely: Projects that address a real concern that specific infrastructure would likely fail within the next five years. This designation is supported by maintenance history logs, photographs, staff testimonial, or by 3rd party inspection reports. Projects must eliminate or at least minimize the probability of failure or mitigate the impacts when a failure occurs.

4.1.2 Tier 2 Criteria (Necessary Projects)

Increases Operational Efficiency: These are projects that directly reduce labor, materials, equipment, or utilities while allowing the District to maintain or improve upon its level of service. Although, not mandatory, necessary, or recommended; these projects are desirable because they translate to cost savings for the rate payer and/or they allow the District to invest more in the District with the same amount of revenue. Examples of projects that increase operational efficiency include consolidation of water treatment plants, where less water treatment operators would be needed. Another example could include installation of remote read meters so that less meter reading labor would be needed to carryout customer billings or replacing water mains that are prone to failure several times per year and result in after-hours callouts.

Replacement Due to End of Useful Life: These projects replace infrastructure that is beyond rehabilitation or salvaging. These projects involve replacing aging infrastructure, ideally before it reaches a level of degradation where “imminent failure” would be likely. In addition to age, other factors that go into determining when an item has reached the end of its useful life include failure to meet current codes or industry standards, or when an item no longer can perform the way in which it was designed.

Facility Developed in Conjunction with a Project Proponent: Projects of this type include facilities that need to be constructed in order to serve a specific development. A developer is required to mitigate their impacts by paying connection fees or by building, “up front”, the facilities needed to serve their development. On occasion, through long range planning the District may collaborate with the Developer to oversize facilities in order to allow for future consolidations or to provide capacity for anticipated growth. Since developers are usually under time and financial constraints to deliver a project, accommodating the developer’s schedule is considered a high priority of the District.

4.1.3 Tier 3 Criteria (Recommended Projects)

Increase Capacity: These types of projects increase the components of capacity. For water this includes supply, treatment, storage, and distribution. For wastewater this would include collection, treatment, and disposal. Project that increase capacity allow for the District to better serve its existing customer base while also preparing it to accommodate future growth in service connections.

Board Policy Driven: These projects are consistent with Board adopted policies that have been memorialized by resolution, memorandum of understanding, or another Board adopted document such as the Strategic Plan. Projects of this variety can take any form as long as it can be demonstrated that the further promote a Board goal or objective.

Increases an Asset’s Useful Life: Some infrastructure is not at risk of imminent failure and it also is not at the end of its useful life; however, with proper preventative maintenance the District can extend an asset’s useful life and delay future capital costs associated with full-fledged replacement. Projects of this type are typically rehabilitation projects, such as pipe lining, tank coatings, asphalt sealing, or filter media replacements.

4.1.4 Tier 4 Criteria (Desirable Projects)

Improve Reliability: Water and wastewater services are considered essential services and are important for health and human safety. Infrastructure is vulnerable to the impacts of natural disaster and the consequences of system failure can be tremendous (i.e. lack of water during a structure fire). These types of projects have the benefit of reducing the risk of failure and mitigating impacts to the District’s customers. In some cases these projects involve establishing redundant systems or they may remove some of the hazards that could result in a catastrophe. Examples of these types of projects could be looping waterlines or removing hazard trees beside a flume.

Improves Level of Service: These projects translate to an improved customer experience. Examples of these types of projects include projects that improve the taste and odor of treated water, or may streamline customer billing, or may enhance customer interaction with the District's website. Increases in fire flow and water pressure can also be considered improvements in level of service.

Coordination with Project Proponent or Other Local Agency: This criteria applies to projects where it would be prudent and fiscally responsible to the community to undertake the project at an accelerated schedule because of other external circumstances. For example, when the City and the County plan to overlay a roadway, the District has historically expedited its plans to install pipelines in that roadway well in advance of the infrastructure failing or before additional capacity is needed. This criteria differs from the Tier 2 criteria because the project, on its own, is not necessary to address any type of deficiency or because a developer has a specific schedule, but rather taken on by the District as good stewards of the public's resources.

This page is intentionally left blank.



Section 5: Water Projects

Summary

This 5-Year CIP includes \$24,754,518 in Water related improvements. Presently, the District has secured, or is in the process of securing, approximately \$2.7M in grant funding to offset the fiscal impacts to our customers. The projects identified in this CIP are spread out amongst the system areas of Supply, Treatment, Storage, and Distribution. The project locations and the breakdown of funding components are shown in Figures 5A and 5B at the end of this section.

5.1 Supply Projects

Water supply projects are projects that improve the raw water storage and conveyance facilities from the point of diversion from the PG&E system up to the intake to the water treatment plants. Much of the District's supply-side infrastructure was constructed during the Gold Rush era of the 1860's. Supply projects are focused on improving the District's ditch system through repairs to flumes, replacements of raw water pipes, lining of ditches, structural improvements to tunnels, and installing meters on raw water services. This CIP proposes \$8,734,520 in supply related capital improvements.

Supply projects benefit the District's entire water (raw and treated) customer base. Many of the projects in this CIP mitigate vulnerabilities in the ditch system due to failure associated with tree falls, landslides, flooding, wildland fire, and rock slides. The District has documented that significant amounts of water diverted from PG&E never reach District customers due to inefficiencies related to evaporation, seepage, and flow regulation. Some supply projects will, not only improve the reliability of the system, but they will reduce the District's overall water demand and free up water supply for other uses. Some notable supply projects include:

Phoenix Lake Preservation and Restoration Project

This is the single largest, by dollar value, funded project in the CIP. The total project cost is approximately \$6.2 M with approximately \$5.1M being funded by grants. The project involves dredging Phoenix Lake to restore up to 300 acre-feet of storage capacity, while improving water quality. Phoenix Lake is the primary water supply reservoir for the Sonora WTP, the District's single largest water treatment facility. The project has several phases with roughly 85% of the total cost being funded by grants from Proposition 84. The project is currently in the design and permitting phase. Construction is expected to begin in 2020.

Matelot Pipeline Project

Project will construct a water supply pipeline from the Matelot Reservoir directly to the Columbia WTP and bypass a section of the Matelot Ditch. This project is a staff priority because it will save as much as 300 acre-feet of water per year by matching the flow in the pipeline to the WTP demands. Currently, due to a lack of flow control in the Matelot ditch, the ditch is operated at a flow rate that greatly exceeds the demands of the WTP and consequently significant volumes of water flow by the WTP in excess of the amount needed by downstream customers.

The Columbia WTP is frequently required to achieve a higher level of water treatment because of bacteriological contamination originating in the Matelot Ditch. The Matelot pipeline would bypass sources of contamination and deliver cleaner water to the treatment plant. The project is estimated at approximately \$693,000 if constructed by an outside contractor.

5.2 Treatment Projects

Water treatment improvements are being proposed because some facilities have reached the end of their useful lives, regulations have become more stringent, and/or there is a desire by the District to consolidate its numerous small treatment facilities with larger, more efficient regional facilities. TUD operates 10 active surface water treatment plants. Not taking into account the Sonora WTP, which is the District's largest facility, the remaining 9 active water treatment plants serve, on average, about 900 connections per plant. Each facility requires an operator, has equipment that requires constant maintenance, and has its own set of regulations and reporting requirements. To maintain such a facility for such a small number of connections is grossly inefficient and not cost effective. Unfortunately, meaningful consolidation of facilities requires a large upfront cost because it would require constructing new regional treatment facilities and miles of transmission mains to interconnect each water system.

Sonora WTF Land Acquisition and Preliminary Design

The District endeavors to replace the Sonora WTP, which was constructed in the 1920's with upgrades in the 1950's and 1970's. The District hired a consultant to conduct a study to site the new facility. This CIP would fund the acquisition of the land at the preferred site and would also include CEQA compliance for the purchase. Once the land is secured, a consultant will be hired to develop 30% design plans and a detailed cost estimate that will serve as the basis for submitting grant applications. The CIP does not include funding for construction. Construction will be contingent upon securing grants and/or low interest loans.

5.3 Storage Projects

The District owns and operates over 78 treated water storage tanks. In similar fashion to the treatment facilities, the median tank size is 150,000 gallons. It simply is not feasible, nor economically viable, for the District to collect a water rate that is sufficient to properly maintain all of these facilities. The "path forward" to achieve a sustainable water system will be to consolidate facilities. Although tanks may appear to be infrastructure that demands very little labor and maintenance costs, the reality is that tanks should be dived, cleaned, and inspected on a 5-year cycle. Each tank costs about \$3,000-\$4,000 to dive clean and inspect. Every 15 years the tanks should be blasted and recoated at a cost that can range from \$50,000 for the smallest tanks to over \$400,000 for the larger tanks. This 5-Year CIP proposes \$4,339,483 in storage improvements.

Cuesta Heights Water Storage Tank

A 600,000 gallon tank will be constructed at the proposed Cuesta Heights Development. The supply and distribution pipelines have already been constructed and the access road and tank pad have been graded. The tank, once operational, will consolidate 3 tanks that are in a state of disrepair; 420K tank, Gopher tank, and Saratoga tank.

Mono Vista Tank

The Mono Vista Tanks are situated at a strategically important location that can receive water from 3 different water treatment plants and distribute water to multiple service areas and downstream tanks. The District currently has 2 bolted steel tanks. The largest tank was inspected and has nearly 100% coatings failure. It is beyond repair and must be replaced. The project has already been bid and awarded. Construction will begin in September 2019.

5.4 Distribution Projects

The District's distribution system is comprised of over 330 miles of pipeline ranging in size from 2-inch to 18-inch. In contrast to other communities that saw rapid expansion during the last 20 years, a large percentage of the District's distribution infrastructure is in excess of 50 years old. Pipeline materials vary between cast iron, steel, asbestos cement, PVC, techite, permastran, and galvanized. Entire neighborhoods are served by galvanized or steel pipelines that are 2-inch and 4-inch in diameter, are unreliable, and do not provide adequate fire flow. Although the District would like to embark on an aggressive campaign to replace the distribution systems of entire neighborhoods; the cost seems "out of reach" at this point. As a compromise, this CIP targets specific segments of pipeline that are chronically experiencing mainline breaks and are in areas that effect many of our customers.

Distribution system improvements constitute the largest share of capital improvements to the water system. This 5-Year CIP proposes \$13,922,435 in distribution improvements. There are two especially noteworthy projects.

Consolidation of Scenic View and Phoenix Lake Park Water Systems

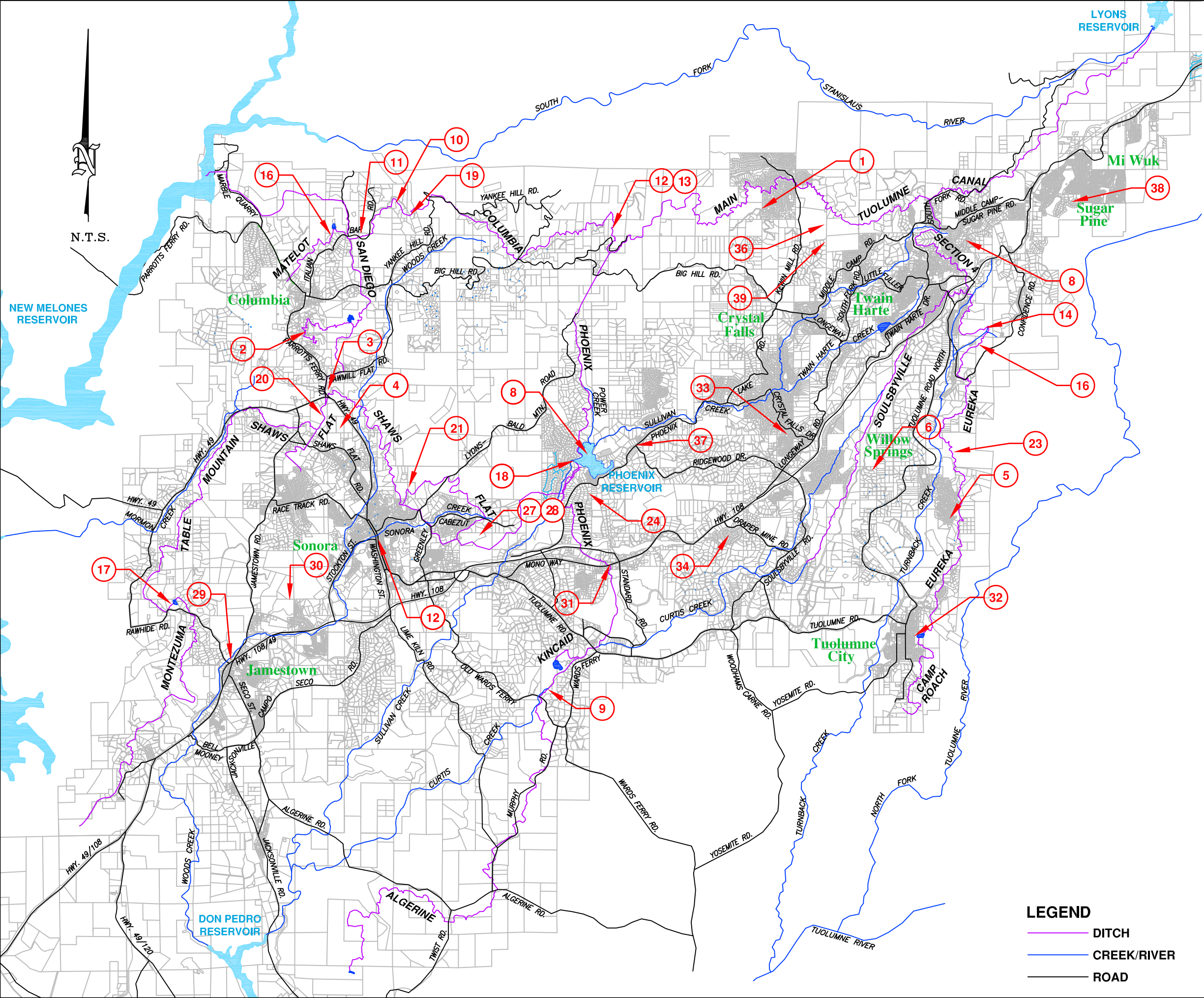
The project will involve extending a water main from the Upper Basin Water System in Ridgewood Estates down Phoenix Lake Road to intertie the Phoenix Lake Park and Scenic View Water Systems. By providing water from Upper Basin, the District will be able to abandon the Scenic View WTP, clearwell, and pump station, the Phoenix Lake Park well, filter, tank, and pump station, as well as the Sommette pump station.

The project is would be carried out over three fiscal years at an estimated cost of approximately \$2,600,000.

Techite Pipeline Replacement

Techite pipe, a proprietary name, was in production from 1973 to 1980. It is a composite material made of fiberglass, polyester resin, and sand. Most water districts that have this pipe in their

system have already implemented a replacement program. The pipe is prone to catastrophic failure. In the case of TUD, the transmission line leaving the Crystal Falls WTP (TUD's second largest treatment facility) is Techite. District staff respond to breaks on the Techite pipeline on at least an annual basis. This project would replace the entire segment of Techite pipeline in two phases and at a cost of approximately \$1,650,000.



- SITE SPECIFIC PROJECTS**
- 1

CEDAR RIDGE UPPER TANKS LAND ACQUISITION
- 2

KENNEBEC TANK REHABILITATION
- 3

PEDRO Y UTILITY RELOCATION
- 4

CUESTA HEIGHTS WATER DISTRIBUTION IMPROVEMENTS
- 5

CANYONVIEW PUMP STATION GENERATOR
- 6

ZELINSKY TANK ABANDONMENT
- 8

PHOENIX LAKE PRESERVATION/RESTORATION PROJECT
- 9

ALGERINE SLUM DAM REPAIR
- 10

COLUMBIA DITCH (BO LEONARDS) SHOOT FLUME
- 11

COLUMBIA DITCH REPLACE PAGANI SIPHON (CEQA)
- 12

UPPER COLUMBIA SHOOT FLUME
- 13

UPPER COLUMBIA SPILL #1
- 14

EUREKA DITCH FLUME #1 & #3 REPAIR
- 16

MATELOT PIPELINE AND TURBIDITY STATION
- 17

ONEIL TUNNEL REPAIR
- 18

PHOENIX DAM AND SPILLWAY IMPROVEMENTS
- 19

SHOOT FLUME AT MINER'S SHACK
- 20

SHAWS FLAT DITCH FLUME AT PIG FARM
- 21

SHAWS FLAT DITCH FLUME AT SPILL #13
- 23

SECTION 4 DITCH SIPHON ON RR TRESTLE
- 24

CINDER BLOCK TANK ABANDONMENT
- 27

SONORA WTP LAND ACQUISITION AND CEQA
- 28

SONORA WTP PRELIMINARY DESIGN
- 29

RAWHIDE BRIDGE UTILITY RELOCATION
- 30

VALLEY VISTA TANK
- 31

LAND ACQUISITION FOR SCENIC VIEW PUMP STATION
- 32

TUOLUMNE CITY WATER MAIN REPLACEMENT
- 33

MONO VISTA TANK
- 34

RANCHOS POQUITOS TANK AND PS ABANDONMENT
- 36

TECHITE PIPELINE REPLACEMENT
- 37

CONSOLIDATE SCENIC VIEW AND PHOENIX LAKE PARK
- 38

RIDDLE TANK ABANDONMENT
- 39

COMSTOCK TANK REHABILITATION

- DISTRICT WIDE PROJECTS**
- 7

TANK VENTILATION IMPROVEMENTS
- 15

GENERAL DITCH IMPROVEMENTS
- 22

EUREKA DITCH PIPE SEGMENTS
- 25

JAMESTOWN AREA WATER DISTRIBUTION IMPROVEMENTS
- 26

SONORA WATER DISTRIBUTION IMPROVEMENTS
- 35

WILLOW SPRINGS WATER DISTRIBUTION IMPROVEMENTS

TUOLUMNE UTILITIES DISTRICT

**CIP WATER/RAW WATER
PROJECTS EXHIBIT MAP**

SEPT. 2019

This page is intentionally left blank.



Figure 5B - Funding Distribution

Water

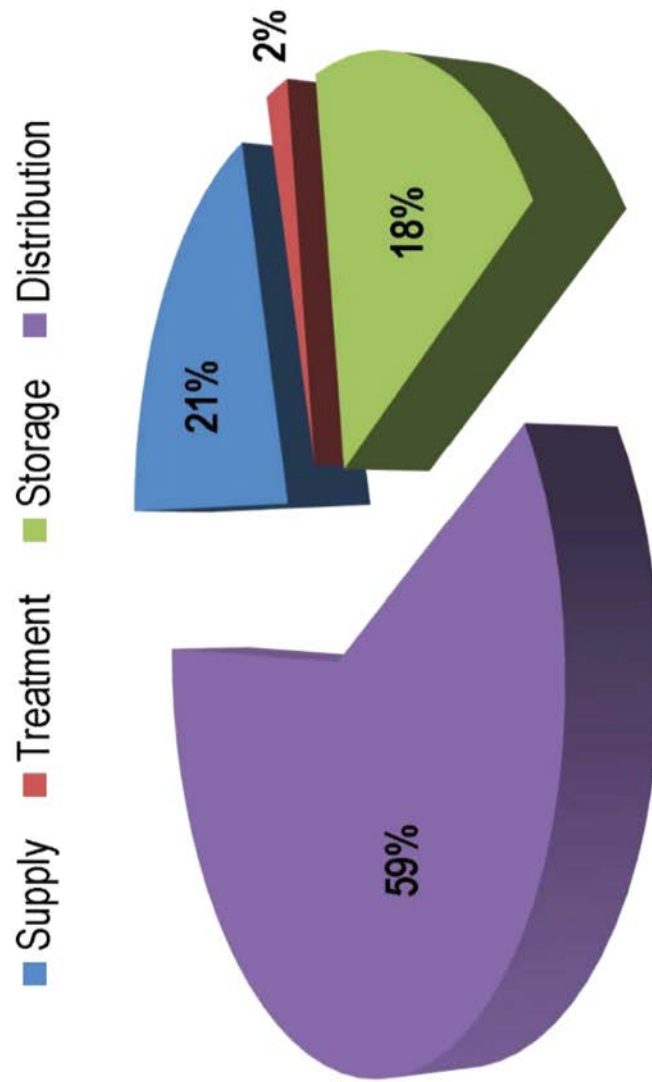


Figure 5B

This page is intentionally left blank.



Section 6: Wastewater Projects

Summary

This 5-Year CIP includes \$9,471,618 in Wastewater related improvements. The projects identified in this CIP are spread out amongst the system areas of Collection, Treatment, and Reclamation. The project locations and the breakdown of funding components are shown in Figures 6A and 6B at the end of this section.

6.1 Collection Projects

Wastewater collection projects improve the infrastructure that transports wastewater from the customer's home or business to the wastewater treatment facility. In contrast to the District's water distribution system, which is very fragmented and decentralized, the District's wastewater collection system was regionalized in the 1970's. Regionalization involved constructing a new treatment facility in Sonora and sewer trunk lines from Sonora out to the surrounding areas of Columbia, East Sonora, Mono Vista, Ranchos Poquitos, Standard, Twain Harte, and Willow Springs. Many agencies whose service areas have experienced significant population growth in the last few decades have been forced to upsize their collection systems in order to accommodate new development. TUD's situation is different in that most of the District's collection system reaches the end of its useful life before reaching its design capacity. This situation presents unique fiscal challenges. Since new development does not contribute a significant amount toward system upgrades, the rates must be sufficient to fund capital replacement at some future date.

Wastewater collection is highly regulated and there is a high degree of exposure and liability. In 2012, the California Sportfishing Alliance filed suit against the District citing sewer overflows that occurred between 2004 and 2009. The District entered into a Consent Decree with the California Sportfishing Alliance that stipulated a minimum of \$350,000 a year would be invested in collection system improvements through the year 2020.

The District owns and operates over 140 miles of collection system. Much of the system utilizes gravity to convey wastewater; however, due to the topography of the foothills, the District also owns and operates 29 sewer pump stations. Historically, the District has improved, rehabilitated, or replaced one sewer pump station per year and invested approximately \$200,000 per year in pipeline improvements. This 5-Year CIP builds upon that level of investment with additional funding for pipeline replacement and also for a trenchless rehabilitation technique known as cured-in-place pipe (CIPP). This 5-Year CIP proposes a total of \$5,703,343 in collection system improvements. Some notable collection system projects include:

Columbia Interceptor Lining

This project will install cured-in-place pipe within approximately 10,000 linear feet of 12-inch asbestos cement pipe between Columbia and Sonora. This area is known by District staff to be problematic for a number of reasons. The pipelines are frequently subject to corrosion in the crown of the pipe because of the age of the wastewater, formation of hydrogen sulfide gas, and also the presence of inverted siphons which impede the pipelines ability to properly vent gases. The project is estimated to cost approximately \$630,000.

Apple Valley Sewer Pump Station Relocation Project

This project will relocate a sewer pump station that is located adjacent to Chicken Creek and is prone to flooding. The new facility will also rectify on-going issues with pump performance and will incorporate new sumps. The cost of the project is estimated to be approximately \$305,000.

6.2 Treatment Projects

The District operates two treatment facilities. The Twain Harte Wastewater Treatment Plant is designed to provide a preliminary level of screening and solids removal before the flow is discharged into the Twain Harte Interceptor, which includes several segments of inverted siphon, the largest segment being over 2.2 miles in length. All wastewater is eventually treated at the Sonora Regional Wastewater Treatment Plant (SRWWTP).

The SRWWTP produces a California Title 22 secondary level effluent. In order to meet the Waste Discharge Requirements set forth by the California Regional Water Quality Control Board, the District employs conventional processes, including screening, primary clarification, trickling filtration, secondary clarification, and chlorine disinfection. The facility uses anaerobic digestion to produce a Class B bio solid that is disposed of by contract. The SRWWTP also has a septage receiving facility to serve the needs of greater Tuolumne County.

Treatment related projects are intended to improve the District's ability to meet its regulatory requirements in the most cost effective and efficient manner possible. With the current drought restrictions and with the State's mandated water use reduction of 20% by 2020, flows into the plant have been steadily dropping. Consequently, the plant has sufficient hydraulic capacity to accommodate anticipated future growth for many years to come. However, future improvements are in the areas of solids digestion, solids dewatering, and solids storage. The current fiscal year budget includes funding to conduct a study of the plant processes with the objective of identifying what process improvements could be made to address the deficiencies in solids handling. This 5-Year CIP has allocated \$1,694,090 toward treatment improvements.

Regional Wastewater Treatment Plant Improvements

This 5-Year CIP will fund approximately \$1,300,000 to complete design, environmental, and permitting for a new Regional Wastewater Treatment Facility. The existing RWWTP was constructed in the mid 1970's and while it has undergone limited improvements, the County has seen population growth and increases in septage loading. The current treatment processes are labor intensive and struggle to meet effluent limits. The District expects to be issued new effluent limits in the upcoming years and upgrades are needed to address deficiencies in treatment, disinfection, and solids digestion and dewatering. This project will fund the design and permitting of the new facilities and position the District to seek grants and low interest loans to fund the construction.

6.3 Reclamation Projects

Up until 2014, the District utilized two methods for disposing of its treated wastewater effluent. The preferred method was to reclaim the wastewater for irrigation use on approximately 672 acres of land used

primarily for cattle ranching. During years in which the District had more treated wastewater than there was irrigation demand, the District would release the excess into Woods Creek in accordance with an NPDES permit. The NPDES permit was on a 5-Year renewal cycle and each time the permit was renewed the requirements became more stringent. The last time the permit was issued, there were new effluent limits related to ammonia, copper, and zinc. The District determined that it could comply with the zinc limits through source control measures; however, compliance with the new ammonia and copper limits would require costly studies and upgrades to the treatment plant. Faced with a difficult decision, the District decided to invest in improvements to the reclamation system so that it would not need to discharge to Woods Creek except in years where the rainfall exceeded the 1:100 return period. In January 2014 the District's NPDES permit was rescinded.

Since 2005, the District has invested over \$3M toward purchasing 140 acres to site a new reclaimed water storage reservoir, installing irrigation systems on approximately 80 acres, and installing a floating pump system in Quartz Reservoir to utilize 150 acre-feet of reservoir storage that was previously inaccessible.

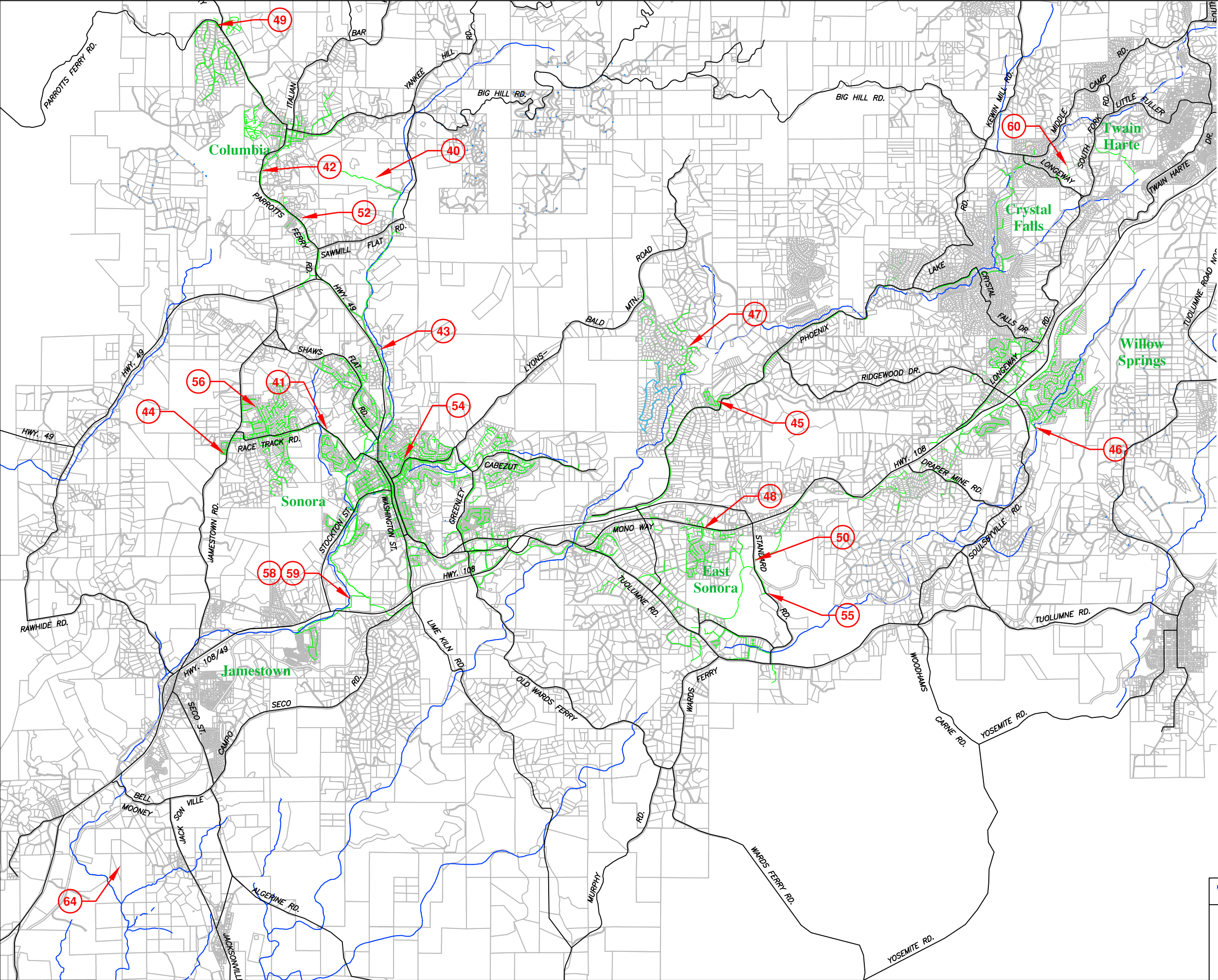
Presently, the reclamation system is well positioned to accommodate future growth. The current water balance identifies a need for approximately 40 additional acres of land to be available for irrigation following a 1:100 rainfall year, but this same 40 acres must be able to be fallowed during a normal to dry rainfall year. The District has already approached a local rancher about entering into a contract that would allow for the improvements to be made while maintaining operational flexibility depending upon the previous year's rainfall. In addition, the District recently executed an agreement with the Tuolumne Band of MeWuk to provide reclaimed water to the Teleli Golf Course. A total of \$1,398,685 in reclamation improvements are being proposed in this 5-Year CIP.

Dry Year Land Bank

This project is a suite of projects intended to increase irrigation areas within the system. One area is currently owned by a local rancher and would involve a pipeline extension and construction of a small pond. The other project would involve extending a pipeline to the Teleli Golf Course. The overall project cost is estimated at approximately \$1,307,460.

This page is intentionally left blank.





SITE SPECIFIC PROJECTS

- 40 COLUMBIA JC UPPER SPS REHABILITATION
- 41 GIBBS INTERCEPTOR LINING
- 42 PARROTTS FERRY SPS REHABILITATION
- 43 COLUMBIA INTERCEPTOR LINING
- 44 STAR MHP SPS CONTROL PANEL
- 45 PHOENIX LAKE PARK SPS OVERFLOW SUMP
- 46 WILLOW SPRINGS SPS UPGRADES
- 47 APPLE VALLEY SPS RELOCATION
- 48 MONO VILLAGE SPS ABANDONMENT
- 49 GOLD SPRINGS SPS OVERFLOW SUMP
- 50 RANCHOS POQUITOS INTERCEPTOR GAGING STA.
- 52 PARROTTS FERRY FM CONDITION ASSESSMENT
- 53 MIWUK SPS REHABILITATION (NOT SHOWN)
- 54 HILLCREST AND PALAMONE SEWER REPLACEMENT
- 55 STANDARD SPS REHABILITATION
- 56 NIKKI CT SPS IMPROVEMENTS
- 58 RWWTP DESIGN AND PERMITTING
- 59 RWWTP INTERIM IMPROVEMENTS
- 60 FEASIBILITY STUDY TO ELIMINATE THWWTP

DISTRICT WIDE PROJECTS

- 51 GENERAL COLLECTION SYS IMPROVEMENTS
- 57 GENERAL COLLECTION SYS LINING
- 61 RECLAMATION SYSTEM GROUNDWATER MONITORING WORKPLAN
- 62 RECLAMATION SYS. IRRIGATION AREA EXPANSION

LEGEND

- SEWER LINE
- ROAD



N.T.S.

TUOLUMNE UTILITIES DISTRICT

**CIP WASTEWATER
PROJECTS EXHIBIT MAP**

SEPT. 2019

This page is intentionally left blank.



**Figure 6B - Funding Distribution
Wastewater**

■ Collection ■ Treatment ■ Reclamation

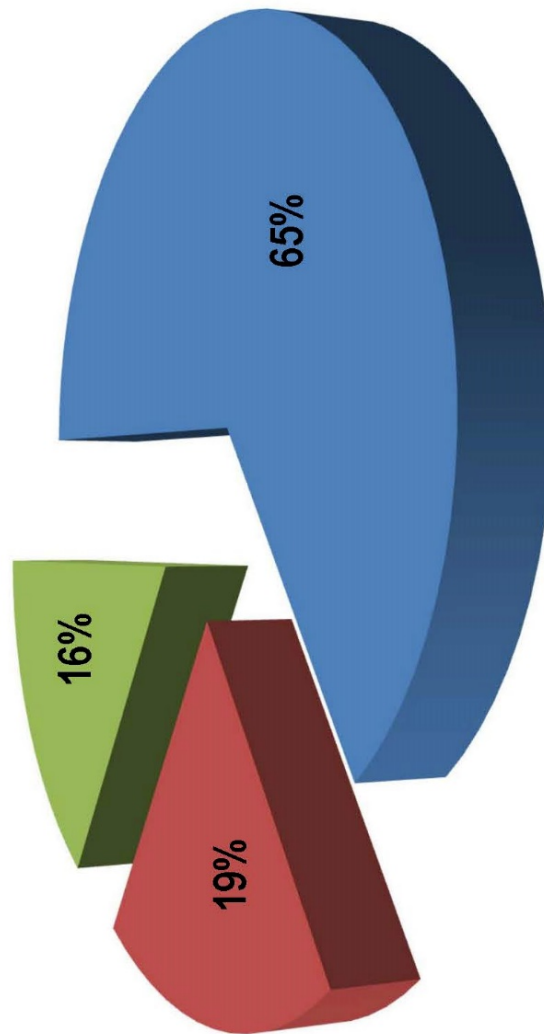


Figure 6B

This page is intentionally left blank.



Section 7: General Fund Projects

7.1 Summary

This 5-Year CIP includes \$323,344 in General related improvements, whose benefit is shared between both the District's water and wastewater customer base. All project costs are proportioned to District customers at a rate of 70% water and 30% wastewater. This allocation reflects the shared operations costs and is roughly equivalent to the proportion of the District's customers who receive water service versus sewer service. Some of the projects are described in more detail below.

SCADA Improvements

The District's current SCADA system is fragmented, slow, and is difficult to query for data and reports. The current SCADA system essentially functions as a glorified alarm system. Funding in this CIP will fund the initial deployment of a "hub and spoke" architecture to improve speed, reliability, and capability to expand data transfer.

Workspace Partitions

The reorganization of the Operations Department in late 2018 created two new superintendent level positions; Water Distribution Superintendent and Sewer Collections Superintendent. In addition, the General Manager reoriented office spaces in the Administration Building creating the need to construct cubicles in new locations.

Flooring Replacement Project

The District's central office complex was built in 2000 and currently still has the original flooring that has outlived its useful life expectancy and requires replacement. The existing flooring constitutes a tripping hazard for anyone navigating the buildings. District staff have explored various options for replacing the carpet and vinyl tiles and have consulted with flooring manufacturers and installers. For the administration building, carpeting is preferred over vinyl, concrete, or other hard surfaces because of its superior sound adsorption capability, cost, and overall ambiance. Carpeting can be furnished in rolls or in tiles. The District has selected carpet tiles because of ease of installation and the ability to remove and replace worn tiles in the future without needing to splice in large sections of rolled carpet. For the warehouse and operations buildings, it was decided that removing the vinyl tiles and polishing and sealing the original concrete surface would provide the most cost effective and durable flooring surface. The overall project includes approximately 15,000 square feet of flooring

This page is intentionally left blank.



Section 8: Capital Improvement Plan Tables

Table 8A	Water Fund Projects by Fiscal Year
Table 8B	Wastewater Fund Projects by Fiscal Year
Table 8C	General Fund Projects by Fiscal Year
Table 8D	5-Year Capital Outlay Schedule



This page is intentionally left blank.



TABLE 8A -WATER FUND CIP (FY20-24)

No.	Project Name	Water					Water				Project Total
		FYE20	FYE21	FYE22	FYE23	FYE24	Supply	Treatment	Storage	Distribution	
	Cedar Ridge Water System										
1	Cedar Ridge Upper Tanks Land Acquisition	\$ 40,000							\$ 40,000		\$ 40,000
	Columbia Water System										
2	Kennebec Tank- Rehab and new pressure zone		\$ 359,490		\$ 70,060	\$ 341,709			\$ 359,490	\$ 411,769	\$ 771,259
3	Pedro Y Intersection Utility Relocation	\$ 69,000								\$ 69,000	\$ 69,000
4	Cuesta Heights Water Storage and Distribution Improvements	\$ 940,000	\$ 821,150	\$ 878,900	\$ 33,000				\$ 1,851,900	\$ 821,150	\$ 2,673,050
	Ponderosa Water System										
5	Canyonview Pump Station - Generator	\$ 51,750								\$ 51,750	\$ 51,750
6	Zelinsky Tank Abandonment	\$ 51,000							\$ 51,000		\$ 51,000
	General Water System Improvements										
7	Tank Ventilation Improvements	\$ 311,000							\$ 311,000		\$ 311,000
	Raw Water System										
8	Phoenix Lake Preservation/Restoration Plan	\$ 283,375	\$ 566,750	\$ 283,375			\$ 1,133,500				\$ 1,133,500
9	Algerine Slum Dam Repair		\$ 80,500				\$ 80,500				\$ 80,500
10	Columbia Ditch (Lower) Bo Leonards Shoot Flume			\$ 6,000	\$ 85,250		\$ 91,250				\$ 91,250
11	Columbia Ditch (Lower) Replace Pagani Siphon CEQA Only					\$ 8,000	\$ 8,000				\$ 8,000
12	Columbia Ditch (Upper) Shoot Flume	\$ 162,500					\$ 162,500				\$ 162,500
13	Columbia Ditch (Upper) Spill #1	\$ 381,250					\$ 381,250				\$ 381,250
14	Eureka Ditch Flume #1 & #3 Repair	\$ 12,000	\$ 13,000				\$ 25,000				\$ 25,000
15	General Annual Ditch Improvements	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 500,000				\$ 500,000
16	Matelot Pipeline and Turbidity Station	\$ 346,800	\$ 346,800				\$ 693,600				\$ 693,600
17	Oneil Tunnel Repair	\$ 123,750					\$ 123,750				\$ 123,750
18	Phoenix Dam and Spillway Improvements	\$ 34,100	\$ 237,563	\$ 203,463			\$ 475,125				\$ 475,125
19	Shoot Flume at Miner's Shack		\$ 45,000	\$ 261,250			\$ 306,250				\$ 306,250
20	Shaws Flat Ditch Flume - Pig Farm	\$ 15,000					\$ 15,000				\$ 15,000
21	Shaws Flat Ditch Flume - Spill #13		\$ 12,500				\$ 12,500				\$ 12,500
22	Eureka Ditch Pipe Segments		\$ 135,300	\$ 655,075			\$ 790,375				\$ 790,375
23	Section 4 Siphon Hanging on RR Trestle			\$ 5,000	\$ 60,000		\$ 65,000				\$ 65,000
	Scenic View Water System										
24	Cinder Block Tank Bypass	\$ 75,000							\$ 75,000		\$ 75,000
	Sonora-Jamestown Water System										
25	Jamestown Water Distribution Improvements	\$ 75,000	\$ 287,417	\$ 287,417	\$ 287,417					\$ 937,250	\$ 937,250
26	Sonora Water Distribution Improvements		\$ 430,627	\$ 430,627	\$ 430,627					\$ 1,291,881	\$ 1,291,881
27	Sonora WTP Land Acquisition and CEQA	\$ 350,000						\$ 350,000			\$ 350,000
28	Sonora WTP Preliminary Design	\$ 115,000						\$ 115,000			\$ 115,000
29	Rawhide Bridge Utility Relocation	\$ 35,000	\$ 218,400	\$ 183,400						\$ 436,800	\$ 436,800
30	Valley Vista Tank (Cost Share for Upsize)	\$ 240,000							\$ 240,000		\$ 240,000
31	Land Purchase for Mono Village to Scenic View Pump Station	\$ 15,000								\$ 15,000	\$ 15,000
	Tuolumne City Water System										
32	Tuolumne City Water Main Replacement (Amt above Grant Allotment)	\$ 150,000								\$ 150,000	\$ 150,000
	Upper Basin Water System										
33	Mono Vista Tank	\$ 713,000							\$ 713,000		\$ 713,000
34	Ranchos Poquitos Tanks and Pump Station Consolidation/Abandonment				\$ 29,160	\$ 315,600			\$ 172,380	\$ 172,380	\$ 344,760
35	Willow Springs Water Distribution Improvements	\$ 524,962	\$ 1,181,165	\$ 1,181,165	\$ 1,181,165	\$ 1,181,165				\$ 5,249,624	\$ 5,249,624
36	Techite Pipeline Replacement	\$ 412,767	\$ 825,533	\$ 412,767						\$ 1,651,067	\$ 1,651,067
37	Consolidate SV and PLP (Ridgewood Pipeline)			\$ 192,138	\$ 1,236,314	\$ 1,236,314				\$ 2,664,765	\$ 2,664,765
38	Riddle Tank Abandonment	\$ 160,913							\$ 160,913		\$ 160,913
39	Comstock Tank Rehabilitation			\$ 404,800					\$ 404,800		\$ 404,800
	Subtotal	\$ 5,788,166	\$ 5,661,195	\$ 5,485,376	\$ 3,512,993	\$ 3,182,788	\$ 4,863,600	\$ 465,000	\$ 4,339,483	\$ 13,922,435	\$ 23,590,518
							21%	2%	18%	59%	
	General Fund (Water Share)	\$ 226,341	\$ -	\$ -	\$ -	\$ -					
	Capital Outlay (Water Share)	\$ 217,500	\$ 297,000	\$ 169,500	\$ 228,000	\$ 212,000					
	TOTAL	\$ 6,232,007	\$ 5,958,195	\$ 5,654,876	\$ 3,740,993	\$ 3,394,788	\$ 24,980,859				

Footnotes

- ¹ Capital projects are defined as having a total project cost >\$50,000. Individual phases of the project maybe less than \$50,000 but the total project cost >\$50,000.
- ² Capital outlay is defined as being ≤\$50,000, with the exception of vehicle purchases which may exceed \$50,000 but are still considered to be Capital Outlay.
- ³ Values are estimates only and could vary by a number of factors including: (A) Which party is responsible for design/construction. (B) CEQA/NEPA requirements (C) Construction logistics and phasing.
- ⁴ Estimates were completed in Summer 2019 and will be influenced by inflation. Inflation is accounted for in the project contingencies which vary from 10%-25% depending upon the complexity of the project.

This page is intentionally left blank.



TABLE 8B-SEWER FUND CIP (FY20-24)

		Sewer					Sewer			
No.	Project Name	FYE20	FYE21	FYE22	FYE23	FYE24	Collection	Treatment	Reclamation	Project Total
Collections										
40	Columbia JC Upper SPS Rehab	\$ 92,000					\$ 92,000			\$ 92,000
41	Gibbs Interceptor Lining					\$ 54,338	\$ 54,338			\$ 54,338
42	Parrotts Ferry SPS Rehab	\$ 230,000					\$ 230,000			\$ 230,000
43	Columbia Interceptor Lining	\$ 126,500	\$ 126,500	\$ 126,500	\$ 126,500	\$ 126,500	\$ 632,500			\$ 632,500
44	Star MHP Lift Station Control Panel	\$ 54,000					\$ 54,000			\$ 54,000
45	Phoenix Lake Park Lift Station New Overflow Sump	\$ 54,000					\$ 54,000			\$ 54,000
46	Willow Springs Lift Station Upgrades	\$ 11,400	\$ 110,960				\$ 122,360			\$ 122,360
47	Apple Valley Lift Station Relocation	\$ 40,500	\$ 264,825				\$ 305,325			\$ 305,325
48	Mono Village Lift Station Abandonment		\$ 76,100		\$ 741,220		\$ 817,320			\$ 817,320
49	Gold Springs Overflow Sump			\$ 80,000			\$ 80,000			\$ 80,000
50	Ranchos Poquitos Interceptor Gaging Station PG&E Power					\$ 11,500	\$ 11,500			\$ 11,500
51	General Collection System Imrprovements	\$ 230,000	\$ 230,000	\$ 230,000	\$ 230,000	\$ 230,000	\$ 1,150,000			\$ 1,150,000
52	Parrotts Ferry FM Condition Assessment and ARV	\$ 35,000	\$ 80,000	\$ 35,000			\$ 150,000			\$ 150,000
53	MiWuk LS Rehab			\$ 150,000			\$ 150,000			\$ 150,000
54	Hilcrest and Palamone Sewer	\$ 75,000					\$ 75,000			\$ 75,000
55	Standard LS Rehabilitation					\$ 150,000	\$ 150,000			\$ 150,000
56	Nikki Court Lift Station Improvements	\$ 75,000					\$ 75,000			\$ 75,000
57	General Collection System Lining	\$ 300,000	\$ 300,000	\$ 300,000	\$ 300,000	\$ 300,000	\$ 1,500,000			\$ 1,500,000
Treatment										
58	RWWTP Design and Permitting (Title 22 and WDRs)	\$ 377,000	\$ 966,540					\$ 1,343,540		\$ 1,343,540
59	RWWTP Interim Improvements	\$ 263,350	\$ 64,200					\$ 327,550		\$ 327,550
60	Study Feasibility of Eliminating THWWTP	\$ 23,000						\$ 23,000		\$ 23,000
Reclamation										
61	Reclamation System Groundwater Monitoring Workplan and Implementation	\$ 91,225							\$ 91,225	\$ 91,225
62	Reclamation System Irrigation Area Expansion	\$ 74,050	\$ 483,410	\$ 250,000	\$ 250,000	\$ 250,000			\$ 1,307,460	\$ 1,307,460
		\$ 2,152,025	\$ 2,702,535	\$ 1,171,500	\$ 1,647,720	\$ 1,122,338	\$ 5,703,343	\$ 1,694,090	\$ 1,398,685	\$ 8,796,118
							65%	19%	16%	
General Fund (Sewer Share)		\$ 97,003	\$ -	\$ -	\$ -	\$ -				
Capital Outlay (Sewer Share)		\$ 423,000	\$ 66,000	\$ 100,500	\$ -	\$ 86,000				
TOTAL		\$ 2,672,028	\$ 2,768,535	\$ 1,272,000	\$ 1,647,720	\$ 1,208,338	\$ 9,568,621			

Footnotes

- ¹ Transferred from project ranking sheets.
- ² Capital projects are defined as having a total project cost >\$50,000. Individual phases of the project maybe less than \$50,000 but the total project cost >\$50,000.
- ³ Capital outlay is defined as being ≤\$50,000, with the exception of vehicle purchases which may exceed \$50,000 but are still considered to be Capital Outlay.
- ⁴ Values are estimates only and could vary by a number of factors including: (A) Which party is responsible for design/construction. (B) CEQA/NEPA requirements (C) Construction logistics and phasing.
- ⁵ Estimates were completed in Summer 2019 and will be influenced by inflation. Inflation is accounted for in the project contingencies which vary from 10%-25% depending upon the complexity of the project.

This page is intentionally left blank.



TABLE 8C-GENERAL FUND CIP (FY20-24)

No.	Project Name	Water (70% unless otherwise specified) ¹					Sewer (30% unless otherwise specified) ¹					Project Total
		FYE20	FYE21	FYE22	FYE23	FYE24	FYE20	FYE21	FYE22	FYE23	FYE24	
63	SCADA Improvements	\$ 87,500					\$ 37,500					\$ 125,000
64	Workspace Partitions	\$ 31,500					\$ 13,500					\$ 45,000
65	Flooring Replacement Project	\$ 107,341					\$ 46,003					\$ 153,344
		\$ 226,341	\$ -	\$ -	\$ -	\$ -	\$ 97,003	\$ -	\$ -	\$ -	\$ -	\$ 323,344.00

Footnotes

¹ Cost allocation supported by financials and numbers of accounts by service type.

This page is intentionally left blank.



TABLE 8D-CAPITAL OUTLAY SCHEDULE (FY20-24)

No.	Project Name	Water					Sewer					5-Year Plan
		FYE20	FYE21	FYE22	FYE23	FYE24	FYE20	FYE21	FYE22	FYE23	FYE24	
1	Flush Truck						\$ 265,000					\$ 265,000
2	Replace #14 1989 Chevy 4X4 Crew Cab for Ditch	\$ 65,000										\$ 65,000
3	Replace #91 2006 Flatbed Ford F-550 for Maintenance	\$ 49,000					\$ 21,000					\$ 70,000
4	New ½ ton Extra Cab 4X4 for Distribution	\$ 35,000										\$ 35,000
5	New ½ ton Extra Cab 4X4 for Collections						\$ 35,000					\$ 35,000
6	New ½ ton Extra Cab 4X4 for Treatment						\$ 35,000					\$ 35,000
7	New 1 ton Flatbed 4X4 with Hoist for Collections						\$ 58,000					\$ 58,000
8	New 60 KW Portable Generator for Non- Departmental	\$ 21,000					\$ 9,000					\$ 30,000
9	Replace #121 2006 10 Yard Dump Truck Kenworth T-800 for Maintenance (CARB)		\$ 105,000					\$ 45,000				\$ 150,000
10	Replace #90 Flatbed Ford F-550 for Maintenance		\$ 49,000					\$ 21,000				\$ 70,000
11	Replace #96 2007 Pickup Chevy Colorado 4X4 for Water Treatment		\$ 30,000									\$ 30,000
12	Replace #204 2010 1 ton 4X4 Utility for Distribution		\$ 55,000									\$ 55,000
13	New 1 ton Flatbed 4X4 for Distribution		\$ 58,000									\$ 58,000
14	Replace #95 2007 Chevy Colorado Pickup 4X4 for Water Treatment			\$ 30,000								\$ 30,000
15	Replace #98 2007 Toyota Pickup 4X4 for Engineering Inspector			\$ 24,500					\$ 10,500			\$ 35,000
16	Replace #143 2004 John Deere Backhoe 410g for Maintenance (CARB)			\$ 105,000					\$ 45,000			\$ 150,000
17	Replace #200 2010 Chevy Colorado Pickup 4X4 for Meter Readers				\$ 30,000							\$ 30,000
18	Replace #218 2015 Chevy 1 ton 4X4 Utility for Distribution				\$ 58,000							\$ 58,000
19	Replace # 201 2010 Chevy ½ ton 4X4 for Water Treatment				\$ 35,000							\$ 35,000
20	Replace #142 2007 John Deere Backhoe 410j for Maintenance (CARB)				\$ 105,000				\$ 45,000			\$ 150,000
21	Replace #1 2008 Chevy ½ ton Extra Cab 4X4 for Wastewater Treatment										\$ 35,000	\$ 35,000
22	Replace #210 2011 1 ton 4X4 Utility for Distribution					\$ 58,000						\$ 58,000
23	Replace #215 20147 ½ ton Chevy 4X4 for Raw Water					\$ 35,000						\$ 35,000
24	Replace #147 1990 Case Crawler for Maintenance					\$ 119,000					\$ 51,000	\$ 170,000
25	Shaws Flat Pipeline Flow Meter	\$ 40,000										\$ 40,000
26	Greenley Tank 6" On/Off and Rate of Flow Valve	\$ 7,500										\$ 7,500
27	Indigeny (Summers) 6" Magmeter			\$ 10,000								\$ 10,000
SUBTOTAL		\$ 217,500	\$ 297,000	\$ 169,500	\$ 228,000	\$ 212,000	\$ 423,000	\$ 66,000	\$ 100,500	\$ -	\$ 86,000	\$ 1,799,500
5-YR WATER TOTAL CAPITAL OUTLAY INVESTMENT		\$ 1,124,000					5-YR SEWER TOTAL CAPITAL OUTLAY INVESTMENT					\$ 675,500

This page is intentionally left blank.



Section 9: Project Information Sheets

Water Fund Projects

1. Cedar Ridge Upper Tanks Land Acquisition
2. Kennebec Tank Rehabilitation
3. Pedro Y Intersection Utility Relocation
4. Cuesta Heights Water Storage and Distribution Improvements
5. Canyonview Pump Station Generator
6. Zelinsky Tank Abandonment
7. Tank Ventilation Improvements
8. Phoenix Lake Preservation and Restoration Plan
9. Algerine Slum Dam
10. Columbia Ditch- Bo Leonard's Shoot Flume
11. Columbia Ditch-Replace Pagaini Siphon (CEQA)
12. Columbia Ditch-Upper Shoot Flume
13. Columbia Ditch-Upper Spill #1
14. Eureka Ditch Flume #1 & #3 Repair
15. General Annual Ditch Improvements
16. Matelot Pipeline and Turbidity Station
17. Oneil Tunnel Repair
18. Phoenix Dam and Spillway Improvements
19. Shoot Flume at Miner's Shack
20. Shaws Flat Ditch-Pig Farm Flume
21. Shaws Flat Ditch-Spill #13
22. Eureka Ditch-Pipe Segments
23. Section 4 Siphon on RR Trestle
24. Cinder Block Tank Bypass
25. Jamestown Water Distribution Improvements
26. Sonora Water Distribution Improvements
27. Sonora WTP Land Acquisition and CEQA
28. Sonora WTP Preliminary Design
29. Rawhide Bridge Utility Relocation
30. Valley Vista Tank (TUD Cost Share)
31. Land Purchase for Mono Village to Scenic View Pump Station
32. Tuolumne City Water Main
33. Mono Vista Tank
34. Ranchos Poquitos Tanks and Pump Station Abandonment
35. Willow Springs Water Distribution Improvements
36. Techite Pipeline Replacement
37. Consolidate Scenic View and Phoenix Lake Park
38. Riddle Tank Abandonment
39. Comstock Tank Rehabilitation

Wastewater Fund Projects

40. Columbia JC Upper SPS Rehabilitation
41. Gibbs Interceptor Lining
42. Parrotts Ferry SPS Rehabilitation
43. Columbia Interceptor Lining
44. Star MHP SPS Control Panel
45. Phoenix Lake Park SPS New Overflow Sump
46. Willow Springs SPS Upgrades
47. Apple Valley SPS Relocation
48. Mono Village SPS Abandonment
49. Gold Springs SPS Overflow Sump
50. Ranchos Poquitos Interceptor Gaging Station Electrical Service
51. General Collection System Improvements
52. Parrotts Ferry FM Condition Assessment and ARVs
53. MiWuk SPS Rehabilitation
54. Hillcrest and Palemone Sewer
55. Standard SPS Rehabilitation
56. Nikki Court SPS Improvements
57. General Collection System Lining
58. RWWTP Design and Permitting
59. RWWTP Interim Improvements
60. Feasibility Study to Eliminate THWWTP
61. Reclamation System Groundwater Monitoring Workplan and Implementation
62. Reclamation System Irrigation Area Expansion

General Fund Projects

63. SCADA Improvements
64. Workspace Partitions
65. Flooring Replacement Project



TUOLUMNE UTILITIES DISTRICT

Project Title: Cedar Ridge Upper Tanks Land Acquisition	Project #: 1
Department: Distribution	Start FY: 20
Engineer's Cost Estimate: \$ 40,000	End FY: 20
Project Description and Background: The District is planning on consolidating the new Sierra Pines Water Treatment Facility (WTF) with the Cedar Ridge WTF. Once consolidated, the Cedar Ridge WTF will be abandoned, and system storage will be consolidated at the highest point within the distribution system. Currently there are two 126,000-gallon tanks on TUD property; however, there is little space available to increase storage. Additionally, the current tank access is also shared by an adjoining residence. The most cost-effective way to increase system storage and to allow construction to take place with minimal impacts to existing operations, is to acquire additional land. District staff have studied the feasibility of siting two new tanks on an adjoining parcel. This project would fund the acquisition of approximately 1 acre of land.	



**Proposed Acquisition of New Tank Lot for
Cedar Ridge Water System**



TUOLUMNE UTILITIES DISTRICT

Project Title: Kennebec Tank Rehabilitation and Distribution Improvements	Project #: 2
Department: Distribution	Start FY: 21
Engineer's Cost Estimate: \$ 771,259	End FY: 24

Project Description and Background:

After evaluation of the Columbia distribution system, it has been determined that there are some deficiencies that hinder the ability to utilize greatly needed water storage. The Kennebec Tank is a steel/welded tank, first constructed in 1965, with a capacity of 500,000 gallons, that's in fair condition, but in need of rehabilitation. It currently serves as a "day tank" for pumping purposes to maintain flow into the Columbia College tanks with only a handful of other TUD customers with service connections along the way. The demand on the tank is so low that a recirculation pump and chlorine injector was installed to try and prevent water quality issues. This "multi-phase" project will increase water storage capacity for both domestic and fire flow demands, while introducing needed redundancy into the system for operation and maintenance of distribution assets. Additionally, this project helps with water treatment operations by reducing spikes in system demand and creates a more fluid demand curve at the Columbia Water Treatment Plant.

The first phase of this project was to install metered automated level controls at the Kennebec Tank allowing operators to increase or decrease the on/off span and call levels to support recirculation of the tank. The metered flow ensures accuracy of rate and helps to evaluate water loss in the system. The first phase was completed FY 20 and has already proven to be beneficial in maintaining adequate chlorine levels and alleviate water age issues.

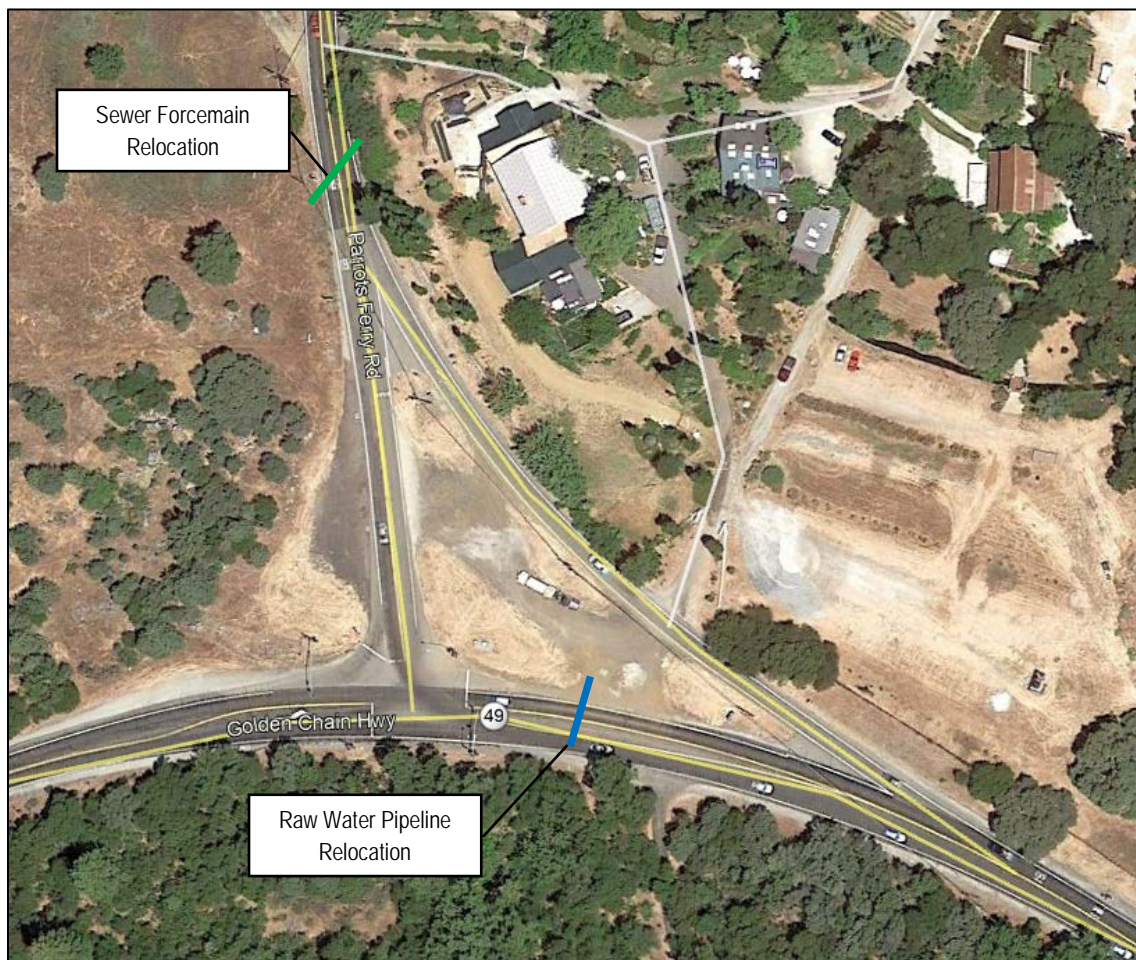
The second phase of the project will be the installation of approximately 1800' of main pipeline with strategically placed valving to allow for a designated feed line into the Kennebec Tank. It will re-develop the pressure zones taking some stress from the distribution system and will reduce peak demand flows at the treatment plant. In addition to increasing efficiency and reducing water age problems contributing to disinfection bi-products, benefits include utilizing additional water storage for emergency fire flow and to take the Pedro Y tank off-line during rehabilitation. After this project is complete, it will put an additional 500,000 gallons of water storage back into the Columbia/Gibbs system. Sequentially, the Kennebec Tank will undergo a full rehabilitation with sand-blasting, full interior/exterior coating, new forced air ventilation, and cathodic protection.





TUOLUMNE UTILITIES DISTRICT

Project Title: Pedro Y Utility Relocation	Water Project #: 3
Department: Distribution	Start FY: 20
Engineer's Cost Estimate: \$ 69,000	End FY: 20
Project Description and Background: <p>The County of Tuolumne is re-configuring the intersection of Parrotts Ferry Road and Highway 49. This intersection is locally known as the Pedro Wye. There are several shallow raw water lines, one sewer line, and one water valve vault that interfere with the County's proposed designs. TUD is obligated to relocate these facilities so that the County project can be built.</p> <p>TUD is developing an agreement with the County so that the raw water lines and the sewer lines will be relocated by the County's contractor. This strategy was selected because it will minimize TUD's construction effort and will minimize the duration of work being performed in the County and State right-of-way. The water valve vault can be abandoned because of a recent system improvement in the area. TUD crews will lower and backfill the vault as needed to accommodate the new roadway structural section. Construction is scheduled for summer of 2020.</p>	

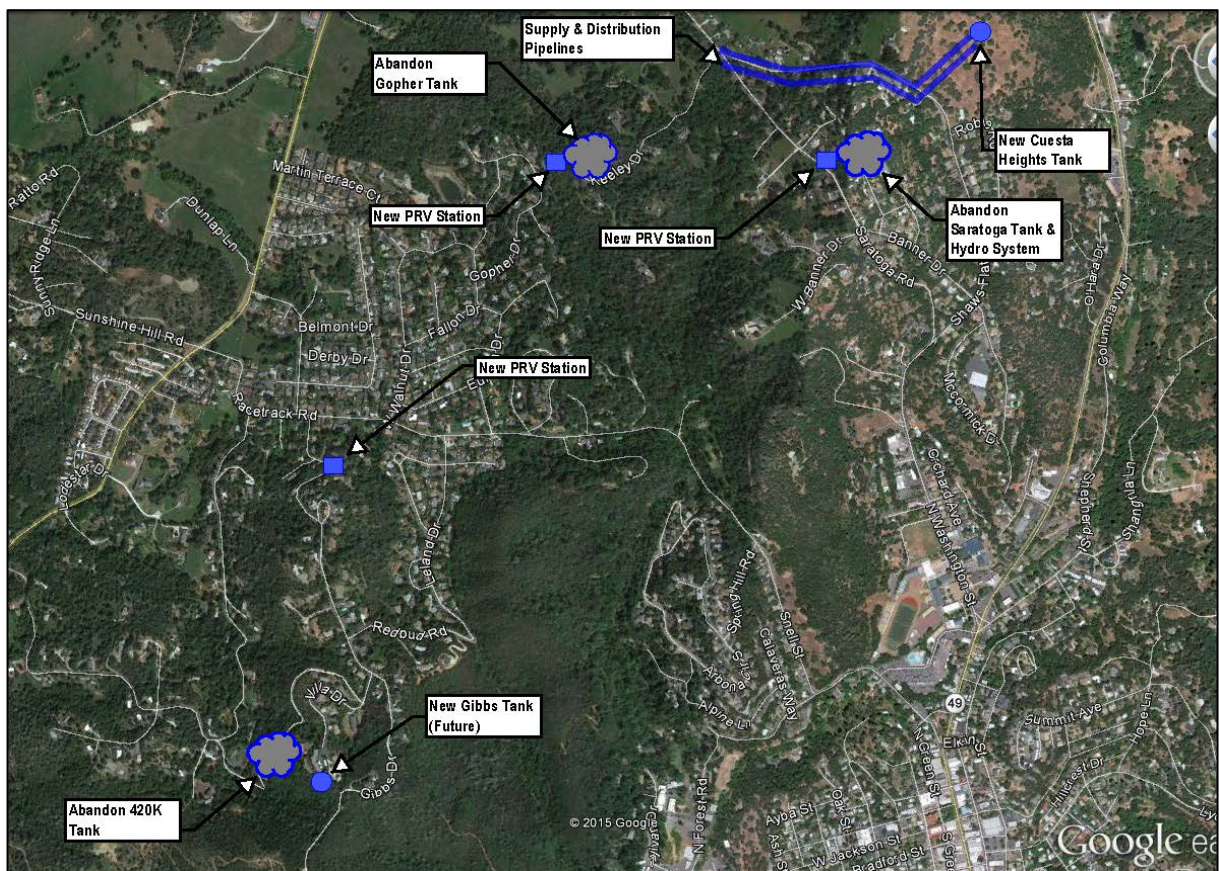


Utility Relocation for Pedro-Y Intersection Improvements



TUOLUMNE UTILITIES DISTRICT

Project Title: Cuesta Heights Tank and Distribution Improvements	Project #: 4
Department: Distribution	Start FY: 20
Engineer's Cost Estimate: \$ 2,673,050	End FY: 23
Project Description and Background: The Gopher, 420K, and Saratoga water tanks are in disrepair and need to be replaced. Through the construction of the Cuesta Heights Tank, the District could consolidate 3 tanks into 1 tank and save significant O&M costs. Additionally, the elimination of 2 pump stations will also yield cost savings.	
PHASING: Phase 1 - Construct 8" Gopher PRV and 6" Gibbs PRV and upgrade ex. transfer PS. Take Gopher and 420K tank out of service. Phase 2 - Construct 10-inch supply and distribution mains to the Cuesta Heights Tank Site. Grade the tank site. Phase 3 - Construct new Cuesta Heights Tank. Construct PRVs at Banner, Uncle Tom's, and at Shaws Flat PS. Install SCADA and controls on new tank. Phase 4 - Construct new tank adjacent to existing 126K tank. Demolish and remove Gopher, 420K, and Saratoga Tank and Hydro system.	



Cuesta Heights – Overall Project Sites



TUOLUMNE UTILITIES DISTRICT

Project Title: Canyonview Pump Station- Generator (PSPS)	Project #: 5
Department: Distribution	Start FY: 20
Engineer's Cost Estimate: \$ 51,750	End FY: 20
<p>Project Description and Background: The District acquired the Canyonview Pump Station with the purchase of the Ponderosa Water System in the 1990's. The District has invested thousands of dollars in improvements to upgrade this facility and adding a generator to this site is the next important project.</p> <p>The Canyonview Pump Station is a critical pump station that pumps up to the Rainbow tank and serves a few hundred customers, including a wholesale customer, Muller Mutual Water Company. This area is prone to significant snow fall and associated power outages for hours, or days at a time. During winter months, District personnel frequently plow the county roads in order to tow a portable generator to this site. The District plans to purchase a new generator to be placed on site permanently. This will save in labor cost and ensure reliable operations of delivering water for consumption and fire flow.</p>	





TUOLUMNE UTILITIES DISTRICT

Project Title: Zelinsky Tank and Hydro Pneumatic Station Consolidation	Project #: 6
Department: Distribution	Start FY: 20
Engineer's Cost Estimate: \$ 51,000	End FY: 20
Project Description and Background: <p>The Zelinsky Tank is a steel welded, 21' high - 7' in diameter tank that holds approximately 20,000 gallons. The District acquired the Zelinsky Tank with the purchase of the Ponderosa Water System, located in Tuolumne in the 1990's. This tank is in poor condition and is not suitable for rehabilitation. This tank is supplied by the Eden Lane Booster Station and has never been cleaned or inspected. The District plans to abandon this tank.</p> <p>The Hydro Pneumatic Station in this area serves four hilltop customers and is prone to frequent power outages resulting in loss of water. The proposed solution is to improve the Eden Lane Booster Station to a constant pressure system and equipped with a generator, constructing a new 4" diameter C-900 mainline from the Eden Lane Booster Station on Eden Lane up to Zelinsky Court and tie in the four hilltop customers. The District would abandon the 2" PVC cross country line that currently feeds the Zelinsky tank.</p>	



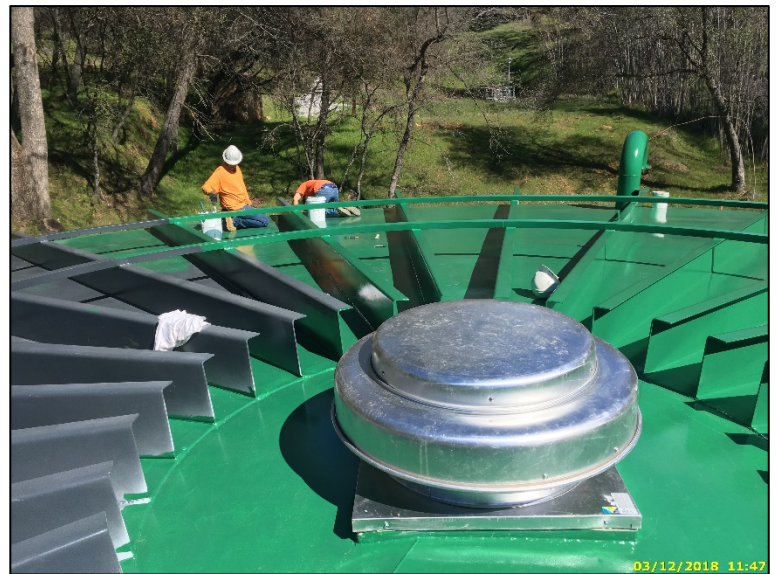


TUOLUMNE UTILITIES DISTRICT

Project Title: Tank Ventilation Improvements	Water Project #: 7
Department: Distribution	Start FY: 20
Engineer's Cost Estimate: \$ 311,000	End FY: 20
Project Description and Background: Many of TUD's tanks have reached their useful life due to severe corrosion in the headspace of the tank. Chlorine vapor combines with water to form hydrochloric acid and condenses on the roof structure of the tank. If not properly maintained the roof structure will become so deteriorated that sandblasting and recoating the steel is not possible. In order to slow the rate of corrosion, TUD staff have designed a forced air ventilation system that can be installed on existing tanks to reduce the concentration of chlorine vapor and to also the relative humidity inside the tank. This project will install the ventilation system on 10 tanks.	



Jamestown Tank Ventilation System

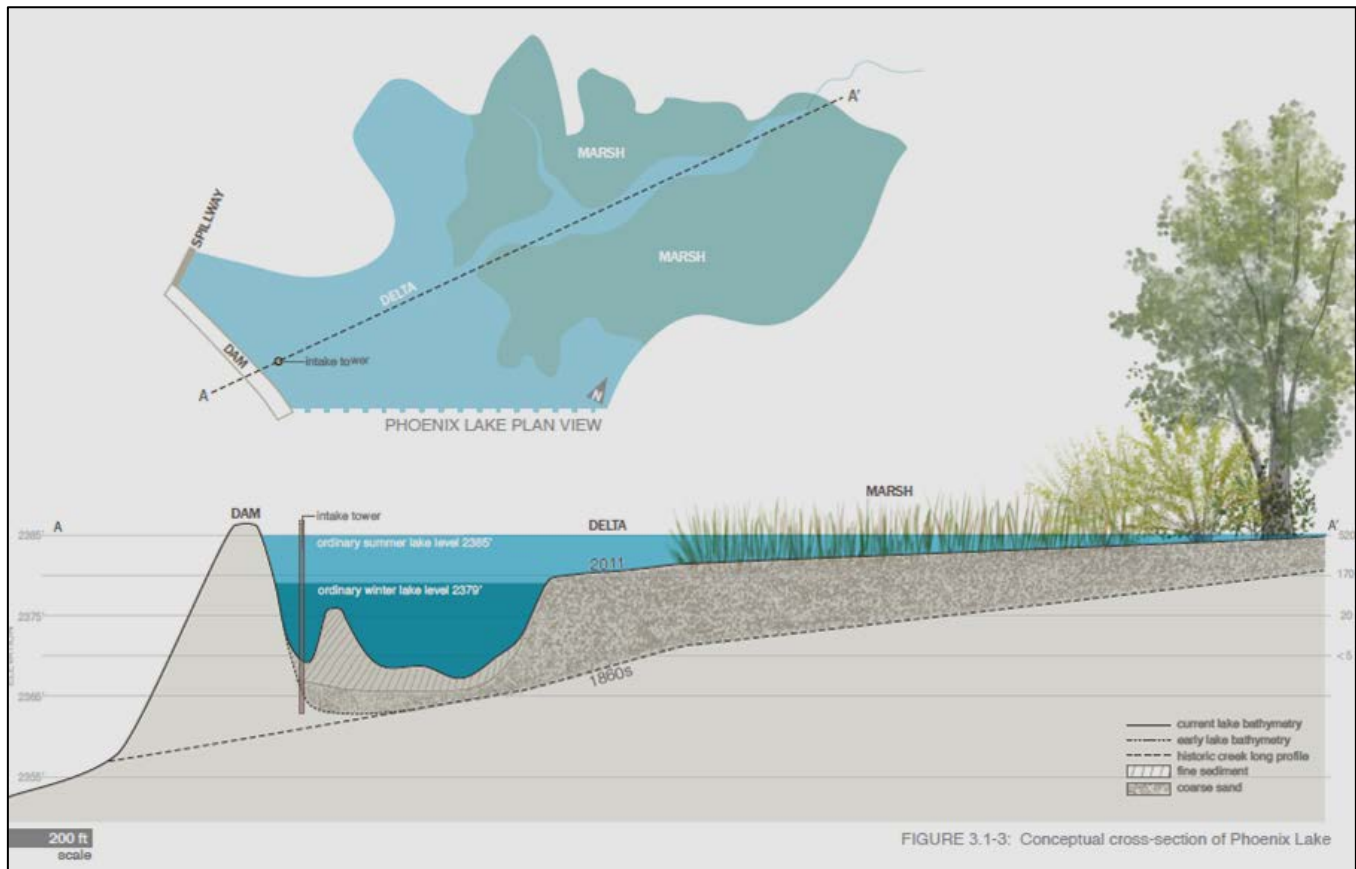


Columbia Clearwell Ventilation System



TUOLUMNE UTILITIES DISTRICT

Project Title: Phoenix Lake Preservation and Restoration Plan	Project #: 8
Department: Raw Water Conveyance	Start FY: 20
Engineer's Cost Estimate: \$ 1,133,500	End FY: 22
Project Description and Background: Phoenix Lake is filling with sediment. Deepening the lake will improve water quality, reduce unwanted taste and odor, reduce invasive aquatic vegetation, increase water storage, and improve habitat for fish and other wildlife. The project involves dredging up to approximately 400,000 cubic yards and placing much of the material on adjoining lands.	



Phoenix Lake Conceptual Dredging Plan



TUOLUMNE UTILITIES DISTRICT

Project Title: Algerine Slum Dam Repair	Project #: 9
Department: Raw Water Conveyance	Start FY: 20
Engineer's Cost Estimate: \$ 80,500	End FY: 21
Project Description and Background: <p>A hole has developed along the left bank of the creek immediately upstream of the Algerine Slum Dam allowing water to undermine the existing shotcrete and flow through the Slum Dam causing significant leaking and likely erosion at several elements of the dam. The hole and leak will need to be stopped else further degradation will take place causing further damage to the dam and diversion structure.</p> <p>TUD proposes to install shotcrete in and around the hole described above to prevent leaking. Shotcrete is also proposed to be applied to areas extending from the left bank to the right bank as shown in the drawing. A keyway is to be hand dug across the creek to expose the creek bottom surface about 30 feet upstream of the dam.</p>	



APROXIMATE LIMIT OF NEW
SHOTCRETE, (FAR SIDE OF TREE)

SMALL TREES TO BE REMOVED

PHOTO 4 SLUM DAM LOOKING UPSTREAM AT THE RIGHT AND LEFT BANK



TUOLUMNE UTILITIES DISTRICT

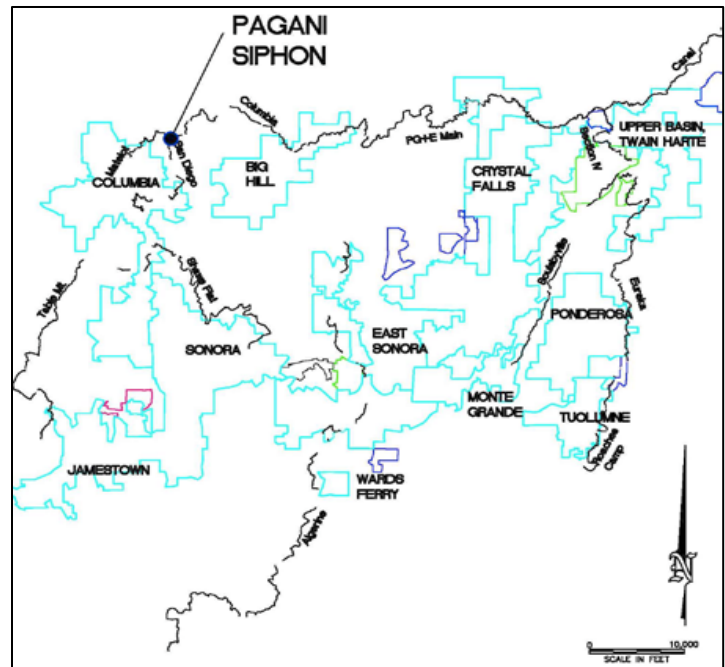
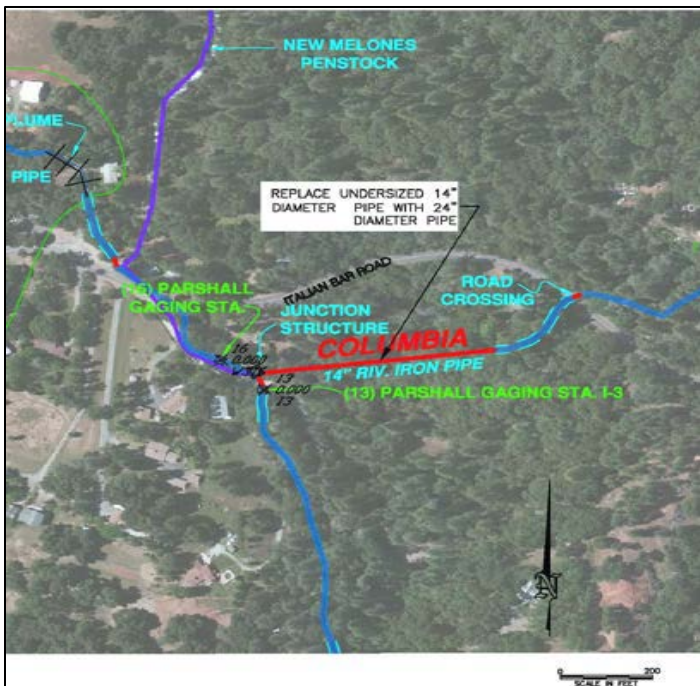
Project Title: Lower Columbia Ditch - Bo Leonard Shoot Flume	Project #: 10
Department: Raw Water Conveyance	Start FY: 22
Engineer's Cost Estimate: \$ 91,250	End FY: 23
<p>Project Description and Background: The Bo Leonard's Shoot Flume is a segment of the Lower Columbia Ditch located between the Big Hill and Columbia Water Treatment Plants, about 2 miles north of the town of Columbia on Italian Bar Road. This segment of ditch is used to convey water to the Columbia Water Treatment Plant and all ditch customers located on the Lower Columbia, Matelot and San Diego Ditches. The Columbia Water Treatment Plant serves approximately 3,500 people and 150 commercial connections. The Lower Columbia, Matelot and San Diego Ditches serve over 100 raw water customers and nearly 50 Ditch Domestic customers. The Bo Leonard Shoot Flume segment is 12" diameter, approximately 400 feet in length, concrete pipe exposed and broken in several places. The issue with the Bo Leonard Shoot Flume is that it is too small in diameter to deliver the original capacity of the ditch. The grizzly screen is undersized, and there is a need for a spill at the grizzly. This pipe segment is subject to plugging and spilling causing damage to adjacent property owners.</p> <p>The proposed solution is to install a new 24" diameter pipe parallel to the existing concrete shoot flume. The existing shoot flume will be left in place and will function as an emergency overflow. If the inlet to the new pipe becomes obstructed, water will spill into the old concrete pipe and continue flowing downhill to the ditch.</p>	





TUOLUMNE UTILITIES DISTRICT

Project Title: Lower Columbia Ditch - Pagani Siphon CEQA	Project #: 11
Department: Raw Water Conveyance	Start FY: 24
Engineer's Cost Estimate: \$ 8,000	End FY: 24
<p>Project Description and Background: The Pagani Siphon is located on the Lower Columbia Ditch near the intersection of Italian Bar Road and San Diego Ditch Road, about 1 mile north of the town of Columbia. This section of the ditch serves water to the Columbia Water Treatment Plant serving a population of 3,500 people including 80 raw water connections and over 20 Ditch Domestic customers. The original capacity of the Lower Columbia Ditch at this location is about 8 CFS. The Siphon is riveted iron pipe about 520 feet in length. It was installed when PG&E owned and operated the system prior to 1970. The issue is that the flow capacity of the siphon is too small. The undersize siphon is easily blocked with debris and creates a high risk of backing up during storm events. The siphon is currently operated at near full capacity during peak summer demand and is at risk of plugging with debris. In the event of a plug, the ditch will overflow at allocation upstream of the siphon. Large segments of the ditch are then likely to wash out creating a costly and lengthy repair. This also has a high risk of causing significant damage to nearby property owners.</p> <p>The proposed solution is to install a 24" diameter pipeline, large enough to carry the full original design capacity of the ditch. There will be a properly sized blow-off installed on the pipeline, to flush and help maintain the siphon.</p>	





TUOLUMNE UTILITIES DISTRICT

Project Title: Upper Columbia Ditch Shoot Flume	Water Project #: 12
Department: Raw Water Conveyance	Start FY: 20
Engineer's Cost Estimate: \$ 162,500	End FY: 20
Project Description and Background: <p>The Columbia Ditch Shoot Flume is a 300 foot in length, 24" diameter riveted iron pipe that was installed by PG&E in the late 1920's that has deteriorated beyond repair. This part of the ditch is located and accessed from Old Oak Ranch Road about 1.5 miles east of Big Hill Road. The lower part of this pipe is supported on a wooden frame structure to span a washed-out area near the end of the pipe. The Columbia Ditch serves water to Big Hill and Columbia Water Treatment Plants. It also serves water to the following ditches: Upper and Lower Columbia, San Diego and Matelot. The Columbia Ditch provides water to 116 raw water connections and more than 60 Ditch Domestic customers.</p> <p>The goal of this project is to abandon in place the existing leaking exposed pipeline that is a critical source of water for 4,000 customers from Big Hill to Columbia to Gibbs Estates and to construct a new 300' 32" diameter pipeline parallel to the existing riveted pipe. It is expected that this work will be completed by TUD's Construction crews.</p>	





TUOLUMNE UTILITIES DISTRICT

Project Title: Upper Columbia Ditch - Spill #1	Project #: 13
Department: Raw Water Conveyance	Start FY: 21
Engineer's Cost Estimate: \$ 381,250	End FY: 21
Project Description and Background: <p>The Upper Columbia Ditch at Spill #1 is a 60-foot segment of steel pipe installed decades ago when PG&E owned the system. This pipe spans a section of unstable slope. Spill # 1 is located immediately upstream of this pipe and accessed from North Ridge Road located about 1.5 miles east of Big Hill Road. This pipe is at risk of slipping down slope. The Upper Columbia Ditch serves water to the Big Hill and Columbia Water Treatment Plants serving a population of over 4,000. It also supplies water to the following ditches: Upper and Lower Columbia, San Diego and Matelot. The Upper Columbia Ditch provides water to over 116 raw water connections and over 60 Ditch Domestic customers.</p> <p>The pipe that conveys the ditch water at this location is subsiding due to unstable footing and inadequate support. The slope below the spill has been eroded away by drainage and has significantly contributed to the instability of the site. This slope and pipe are likely to subside further to a point where the ditch water cannot be conveyed through the pipe. As with many slope failures, this is more likely to fail as time passes and it is especially vulnerable to failure in the wintertime when the ground is saturated.</p> <p>The proposed solution is to grade the ditch slopes back to a more stable condition, improve the drainage, and to either replace the existing pipe with larger pipe in a more stable footing or reestablish the open ditch at this location. This earthwork is complex due to the nature of the steep slopes and difficult and remote access to the site. This work will require working with surrounding land owners to obtain easements for the construction of access roads.</p>	





TUOLUMNE UTILITIES DISTRICT

Project Title: Eureka Flume A Repair	Project #: 14
Department: Raw Water Conveyance	Start FY: 20
Engineer's Cost Estimate: \$ 25,000	End FY: 21
<p>Project Description and Background:</p> <p>Flume A is part of the Eureka Ditch that was constructed decades ago. The Flume is 71 feet long and 12 feet tall. This Flume is located at Spill 1.5 and is accessed off Robin Hood Drive in Twain Harte. The wood structure has many spots of rotten material and is at risk of failing. The 23 Lennons (flume sheets) are in bad shape and have little pinhole leaks.</p> <p>It is proposed to replace the wood structure and Lennons. The Eureka Ditch serves water to the Ponderosa and Tuolumne Water Treatment Plants serving a population of over 3,000 people including 90 raw water connections and about 10 Ditch Domestic customers along the Eureka and Roaches Camp Ditches.</p>	





TUOLUMNE UTILITIES DISTRICT

Project Title: Annual Ditch Covered Maintenance Activities and Emergency Repairs	Project #: 15
Department: Raw Water Conveyance	Start FY: 20
Engineer's Cost Estimate: \$ 500,000	End FY: 24
<p>Project Description and Background:</p> <p>Tuolumne Utilities District ditch system is unlike any other water conveyance system. Each year, the District undertakes the repair and maintenance of its 71 miles, 1850's era, ditch system in order to deliver water to domestic and agricultural users that rely on raw water delivery for limited non-potable purposes. The maintenance and upkeep must take place in all weather conditions to keep the water flowing, including floating snow in the winter. The ditch system represents a significant investment in raw water transmission by the District for its customers. Staff monitors and calibrates ditch water flows throughout the year and especially during the summer months to ensure reliability. Continual, year-round maintenance and upkeep is always required to keep the ditch system flowing. Staff also maintains the Phoenix Lake dam which is owned by the District and annually inspected by the state Division of Safety of Dams. Maintenance of the ditch is reactive in nature; however, if maintenance is not completed, then small leaks could turn into larger leaks resulting in landslides, flooding, and property damage that could easily translate to hundreds of thousands of dollars per event.</p> <p>Shotcrete lining has proven to save water and increase flow capacity in the ditches. It also makes it easier to clean the ditches and retards aquatic weed growth in the waterway. Annual ditch maintenance activities include: fixing leaks, raising sidelines, cleaning weed choked areas, eliminating hazard trees, and repairing spills at various locations along the ditch.</p>	





TUOLUMNE UTILITIES DISTRICT

Project Title: Matelot Pipeline and Turbidity Station	Project #: 16
Department: Raw Water Conveyance	Start FY: 20
Engineer's Cost Estimate: \$ 693,600	End FY: 21
Project Description and Background: The Columbia Water Treatment Plant (WTP) is frequently required to achieve a higher level of water treatment due to turbidity and other bacteriological contamination originating in the Matelot Ditch. Due to a lack of flow control in the ditch, the ditch is operated at a flow rate that greatly exceeds the demands of the WTP and consequently large volumes of water flow past the WTP in excess of the amount needed for downstream users. By completing the project, the District will save as much as 300 acre-feet of water per year by matching the flow in the pipeline to the Columbia WTP demands. The project entails the construction of a water supply pipeline from the Matelot Reservoir to the Columbia Water Treatment Plant (WTP), currently being fed by the Matelot Ditch.	



Matelot Ditch



TUOLUMNE UTILITIES DISTRICT

Project Title: O'Neil Tunnel Repair	Project #: 17
Department: Raw Water Conveyance	Start FY: 20
Engineer's Cost Estimate: \$ 123,750	End FY: 20
Project Description and Background: In the summer of 2017 a hazard study was performed on the O'Neil Tunnel located on the Table Mountain Ditch in Jamestown. The hazards study reveals and details several concerns and risks about the tunnel and the level of deterioration. The consequence of the tunnel failing is extraordinarily costly. This project will eliminate the risk of tunnel collapse by placing a pipe on the tunnel floor and encasing the pipe in with fiber reinforced concrete.	



O'Neil Tunnel



TUOLUMNE UTILITIES DISTRICT

Project Title: Phoenix Lake Dam and Spillway Improvements	Water Project #: 18
Department: Raw Water Conveyance	Start FY: 20
Engineer's Cost Estimate: \$ 475,125	End FY: 22
Project Description and Background: The Phoenix Lake Dam and Spillway Improvements project addresses years of deferred maintenance and is being required by Division of Safety of Dams. The rehabilitation project will entail striping and replacing the existing shotcrete surface to implement a pressure grouting technique to address the propagation cracking taking place on the spillway crest. Additionally, vegetation will be removed on the dam face and slopes will be stabilized.	



Concrete Spalling on Spillway



Erosion on the Earthen Dam



TUOLUMNE UTILITIES DISTRICT

Project Title: Upper Columbia Shoot Flume at Miners Shack	Project #: 19
Department: Raw Water Conveyance	Start FY: 21
Engineer's Cost Estimate: \$ 306,250	End FY: 22
<p>Project Description and Background: A 250-foot length of the Columbia Ditch is piped using an above-ground 12-inch diameter steel pipe to transition the flow of the ditch through a 50-foot drop in elevation. The pipe is supported on piers consisting of stacked rocks that support the pipe on the ground through this section of steep terrain. The end of this piped "shoot" section of ditch is located near the Miner's Shack.</p> <p>Problem Several of the stacked rock piers have deteriorated over time and the pipe is subject to sliding off the piers. As the pipe is fully exposed, the pipe expands and contracts due to temperature changes over the seasons. The inlet of the pipe at the transition from shotcrete to pipe needs repair each season due to this movement. Additionally, the pipe is undersized and needs to be a larger diameter. Access to this site with heavy equipment is very limited.</p> <p>Solution The proposed solution is to install new 24" diameter steel pipe large enough carry the full original design capacity of the ditch and to install new support piers that will address the deterioration of the existing piers but also accommodate the expansion and contraction of the above ground pipe. Additionally, to install a new transition at the ditch-to-pipe segment that will also accommodate this pipe movement. Access with heavy equipment to this part of the ditch is very limited, will be challenging and require specialized equipment and techniques.</p> <p>Consequence of failure The ditch at this section provides water for the Columbia Water Treatment and raw water to irrigation and ditch domestic customers below this location on both the Columbia Ditch and San Diego Ditch.</p>	



End of Shoot Section



Transition to Pipe Section



TUOLUMNE UTILITIES DISTRICT

Project Title: Shaws Flat Flume D - Pig Farm Repairs	Project #: 20
Department: Raw Water Conveyance	Start FY: 20
Engineer's Cost Estimate: \$ 15,000	End FY: 20
Project Description and Background: <p>The Shaws Flat flume D was built decades ago. The flume is 102 feet long and 6 feet tall. It is located at Spill 16 on the Shaws Flat Ditch, the access is off Shaws Flat/School Road in the old Pig Farm. The flume is in very bad shape and most of the structure is rotten, the 35 Lennons (flume sheets) are also rotting and have many pin hole leaks. This structure is at risk of failing soon.</p> <p>This flume serves the Table Mountain Ditch, O'Neil Reservoir and Montezuma Ditch. There is one Water Treatment Plant below this structure that is not District owned. The surrounding area has a lot of agriculture and domestic raw water customers. This repair will ensure the delivery of water to downstream customers.</p> <p>This project is a routine maintenance activity and will be completed by District crews.</p>	





TUOLUMNE UTILITIES DISTRICT

Project Title: Shaws Flat Flume - Spill #13 Repairs	Project #: 21
Department: Raw Water Conveyance	Start FY: 21
Engineer's Cost Estimate: \$ 12,500	End FY: 21
Project Description and Background: <p>Flume C is on the Shaws Flat "Loop" and is located at spill 13 upstream of the Sonora Water Treatment Plant (WTP). The flume is part of the old Shaws Flat ditch that used to be the main water delivery to Sonora WTP, Table Mountain Ditch, O'Neil Reservoir and Montezuma Ditch. This now serves as a backup water supply to the Sonora WTP and raw water customers to ditches below. The flume and ditch were built decades ago.</p> <p>The flume is 36 feet long and 9 feet tall. This project involves replacing all 12 Lennons (flume sheets) due to them rotting and leaking. The wood structure is in fair shape and will last a few more years. Repairing this flume will ensure water to facilities below in an emergency.</p>	





TUOLUMNE UTILITIES DISTRICT

Project Title: Eureka Ditch Pipe Segments - Mount Provo Road Repairs	Project #: 22
Department: Raw Water Conveyance	Start FY: 21
Engineer's Cost Estimate: \$ 790,375	End FY: 22

Project Description and Background:

The Eureka Ditch segments of culvert in this area are very poorly supported by stacked rock supports, wire tie-backs to trees and stumps that are subject to rotting, or inadequate pier and footing stability. The poor condition and construction techniques and methods used in the past are indicative of the remote location of this site as it is difficult and costly to bring in proper equipment to correctly fix this section of ditch. The culverts are subject to plugging causing the ditch to back up and fail. A back up of the ditch would then erode the ditch embankment upstream as has been experienced in the past. The northern part is located about one mile south of the intersection of Confidence and Mt. Provo Roads and is accessed through locked gates from a small access road connecting to Mt. Provo Road. The south section is located about ½ of a mile downstream of the northern part. The Eureka Ditch serves water to the Ponderosa and Tuolumne Water Treatment Plant serving a population of over 3,000 people. The water from the Eureka Ditch also flows to the Roaches Camp Ditch and serves over 90 raw water connections and about 10 Ditch Domestic customers. The proposed solution is to complete a study and CEQA to build a road for access to remove old pipe and return the ditch back to its original capacity.

These Eureka Ditch segments serve two water treatment plants, Westside Reservoir and Camp Roaches Ditch, along with many agriculture and domestic customers. Returning these areas back to open ditch will ease operations in the winter due to pipes plugging with debris or snow and ice. This will help ensure water delivery to the treatment plants and raw water customers.





TUOLUMNE UTILITIES DISTRICT

Project Title: Section IV Ditch – Railroad Trestle	Project #: 23
Department: Raw Water Conveyance	Start FY: 22
Engineer's Cost Estimate: \$ 65,000	End FY: 23
Project Description and Background: <p>This siphon located off the Section IV Ditch is hanging on the Railroad Trestle at Twain Harte Drive downstream of Spill 3. It is a 16-inch diameter steel pipe, 400 feet long. A 60-foot section of this siphon was replaced by PG&E in 1965. The pipe is under sized for the downstream facilities it serves. The siphon should be up-sized and moved. The Trestle it hangs on is in poor condition and is hit often by large trucks driving under it. The Section IV Ditch serves water to the Monte Grande, Ponderosa and Tuolumne Water Treatment Plants serving a population of over 4,000 people. The Section IV Ditch also flows water to the Eureka and Roaches Ditch customers serving over 100 raw water connections and about 10 Ditch Domestic customers.</p> <p>Up-sizing and relocating the siphon will help ensure the delivery of water to the downstream customers and water treatment plants.</p>	





TUOLUMNE UTILITIES DISTRICT

Project Title: Cinder Block Reservoir and Pump Station Abandonment	Project #: 24
Department: Distribution	Start FY: 20
Engineer's Cost Estimate: \$ 75,000	End FY: 20
Project Description and Background: The Cinder Block Reservoir is a 50,000-gallon inground reservoir is in the Scenic View Water System in Sonora and was part of the 1992 consolidation of the County and Tuolumne Regional Water District. Original construction is unknown, constructed of cinder block and trusses and is not suitable for rehabilitation. This reservoir both serves down stream customers by gravity and pumps up to the Sommette Tank. Staff is recommending elimination of this reservoir and installation of a combination pump station with pressure reducing valves for reverse flow. This would allow the Sommette Tank to supply water to the Scenic View distribution system and increase the available storage for immediate use during heavy demands or fire flow situations. Not only will this project mitigate a potential health hazard but will also be an asset when in the near future the District consolidates the Scenic View System with the Upper Basin System.	





TUOLUMNE UTILITIES DISTRICT

Project Title: Jamestown Distribution Improvement Projects	Project #: 25
Department: Distribution	Start FY: 20
Engineer's Cost Estimate: \$ 937,250	End FY: 23

Project Description and Background:

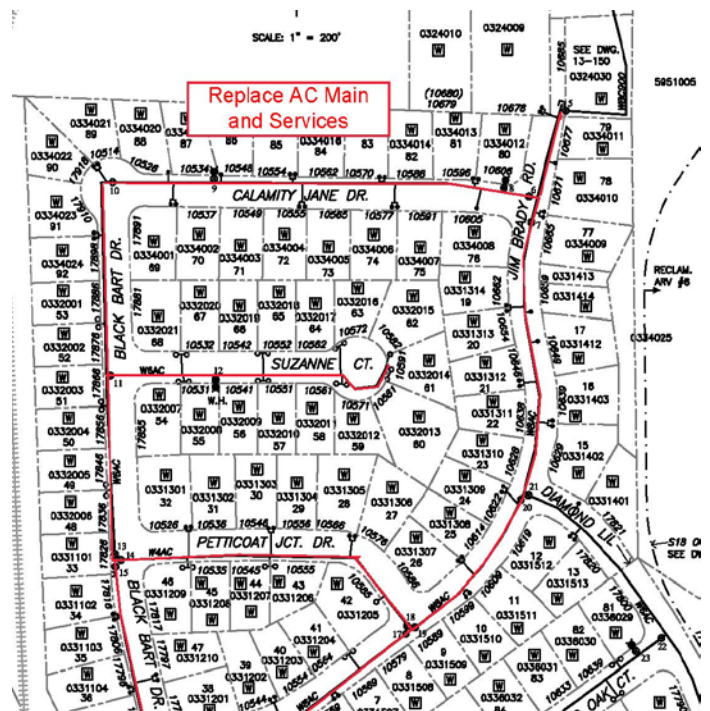
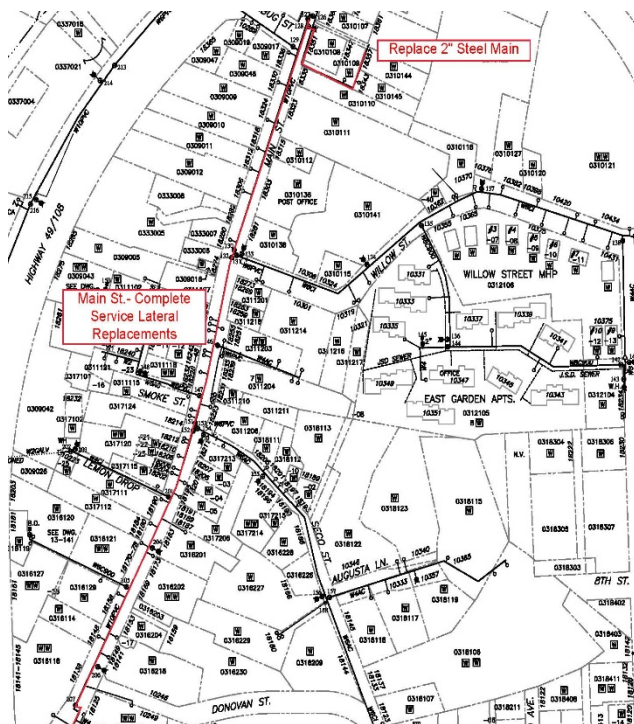
The Jamestown Distribution Improvement Projects will include complete service lateral replacements on Main Street and complete main/service-lateral replacements in the Mother Lode West subdivision. The objective of these projects is to reduce the number of after-hour calls and financial impact that continues to burden the District while increasing system efficiency and reliability.

Project 1- Replacement of 40 "full road crossing" service laterals approximately 20' in length and 9 service laterals from curb to main approximately 10' in length; Location - Main Street, Jamestown. In addition, approximately 250' of 2" steel main and services (originally installed 1932) will also be replaced. Start construction- FY20

Project 2- Replace 4,084' of AC main and services in the Mother Lode West Subdivision. (Subdivision Infrastructure original construction in 1965 and second phase in 1974)

Phase of Construction-

- Phase 1- Replace 1330' of main/service-laterals on Jim Brady Road and 314' of main/service-lateral on Diamond Lil Way. Start construction- FY21
- Phase 2- Replace 885' of main/service-laterals on Black Bart Drive and 510' of main/service-lateral on Petty Coat Junction Drive. Start construction- FY22
- Phase 3- Replace 677' of main/service-laterals on Calamity Jane Drive and 368' of main/service-laterals on Suzanne Court. Start construction- FY23





TUOLUMNE UTILITIES DISTRICT

Project Title: Sonora Distribution Improvements	Project #: 26
Department: Distribution	Start FY: 21
Engineer's Cost Estimate: \$ 1,291,881	End FY: 23
<p>Project Description and Background:</p> <p>In the City of Sonora, District staff responds to many water main line breaks or service lateral leaks along Bradford Street, Green Street, and Stewart Street. Many of these water main pipelines are cast iron and approximately 80 years old and are corroded.</p> <p>The goal of the Sonora Distribution Improvements project is to replace ~4,750 linear feet of old water mains within the City of Sonora that have exhibited a high incidence of failure resulting in costly repairs. The new main would provide improved fire protection and replace old meters with improved auto read meters.</p> <p>Replacing mains with a history of leaks reduces labor and material costs for repairs, conserves water by reducing leaks, and improves operational efficiency by changing manual read meters out with remote read meters. Main line water breaks interrupt service to customers and are often followed by water quality problems.</p> <p>Phase 1 - Replace 4-inch with 8-inch main on Green Street. Construction bridges two fiscal years.</p> <p>Phase 2 - Replace 4-inch with 8-inch main on Bradford Street.</p> <p>Phase 3 - Replace 4-inch with 8-inch main on Stewart Street.</p>	





TUOLUMNE UTILITIES DISTRICT

Project Title: Sonora WTF Land Acquisition and CEQA	Project #: 27
Department: Water Treatment	Start FY: 20
Engineer's Cost Estimate: \$ 350,000	End FY: 20
Project Description and Background: The Board adopted the Treated Water System Optimization Plan to include a consolidation alternative involving a regional Water Treatment Facility (WTF) at Sierra Pines and another WTF to replace the Sonora WTF. A consultant was hired to conduct a siting study. A total of 4 sites were screened on the basis social, environmental, and economic factors. The preferred site was selected, and an appraisal was completed. Negotiations are currently underway with the property owner. This funding will allow for the purchase of a 17-acre parcel that can accommodate a new 6 mgd WTF. Included in this cost is CEQA compliance needed to complete the acquisition.	

APPRAISAL REPORT OF A PROPOSED 17 ACRE PARCEL

SONORA, CA



PREPARED FOR



TUOLUMNE UTILITIES DISTRICT

AS OF

FEBRUARY 6, 2019

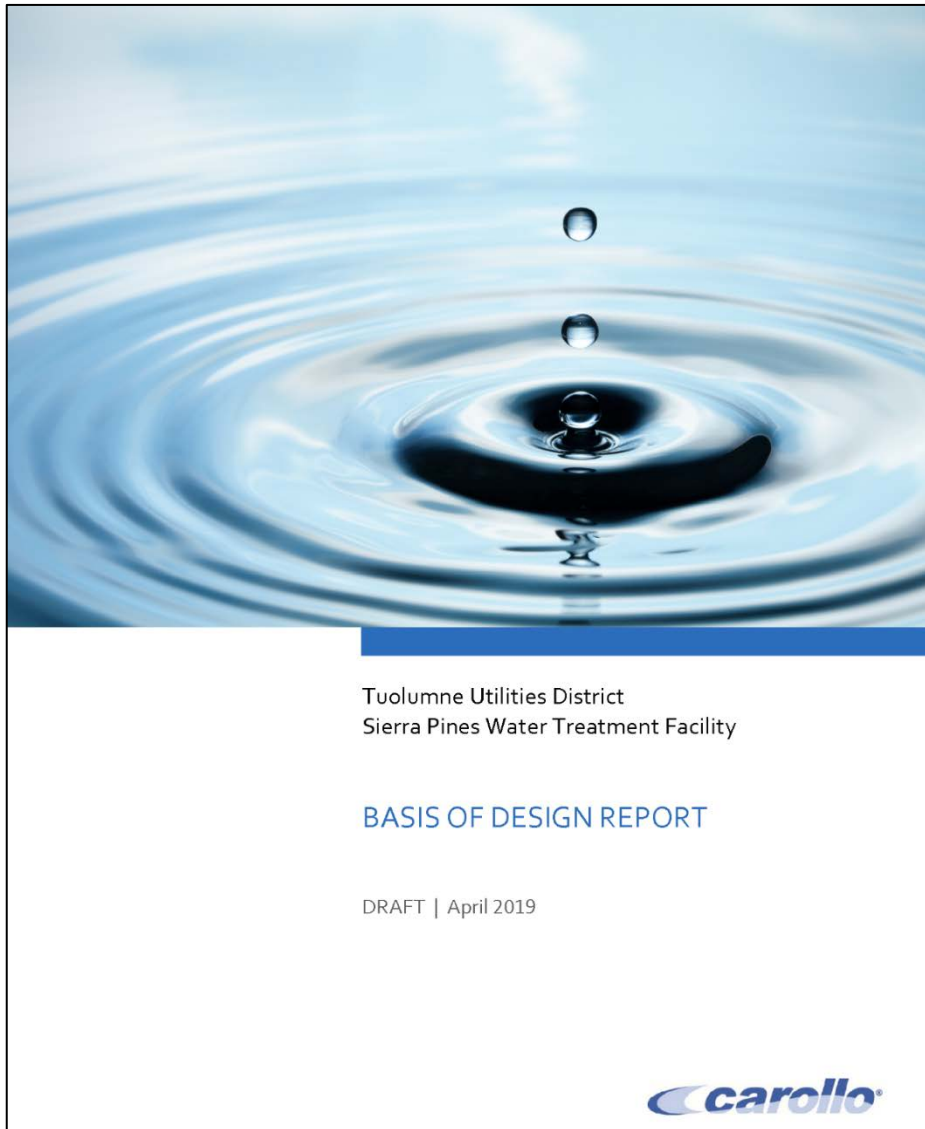
PREPARED BY

**R. MICHAEL WRIGHT CALIFORNIA CERTIFIED GENERAL APPRAISER
#AG006177**



TUOLUMNE UTILITIES DISTRICT

Project Title: Sonora WTF Preliminary Design	Project #: 28
Department: Water Treatment	Start FY: 20
Engineer's Cost Estimate: \$ 115,000	End FY: 20
Project Description and Background: <p>Once the site for the new Sonora WTF has been acquired, preliminary design needs to be completed to position the District to secure grants and low interest loans for the construction of the facility. The preliminary design will establish the appropriate treatment technology, size of processes, locations and footprints of facilities, and include a level 3 cost estimate. The Sonora WTF Design would be similar to what has been completed for the Sierra Pines WTF.</p>	

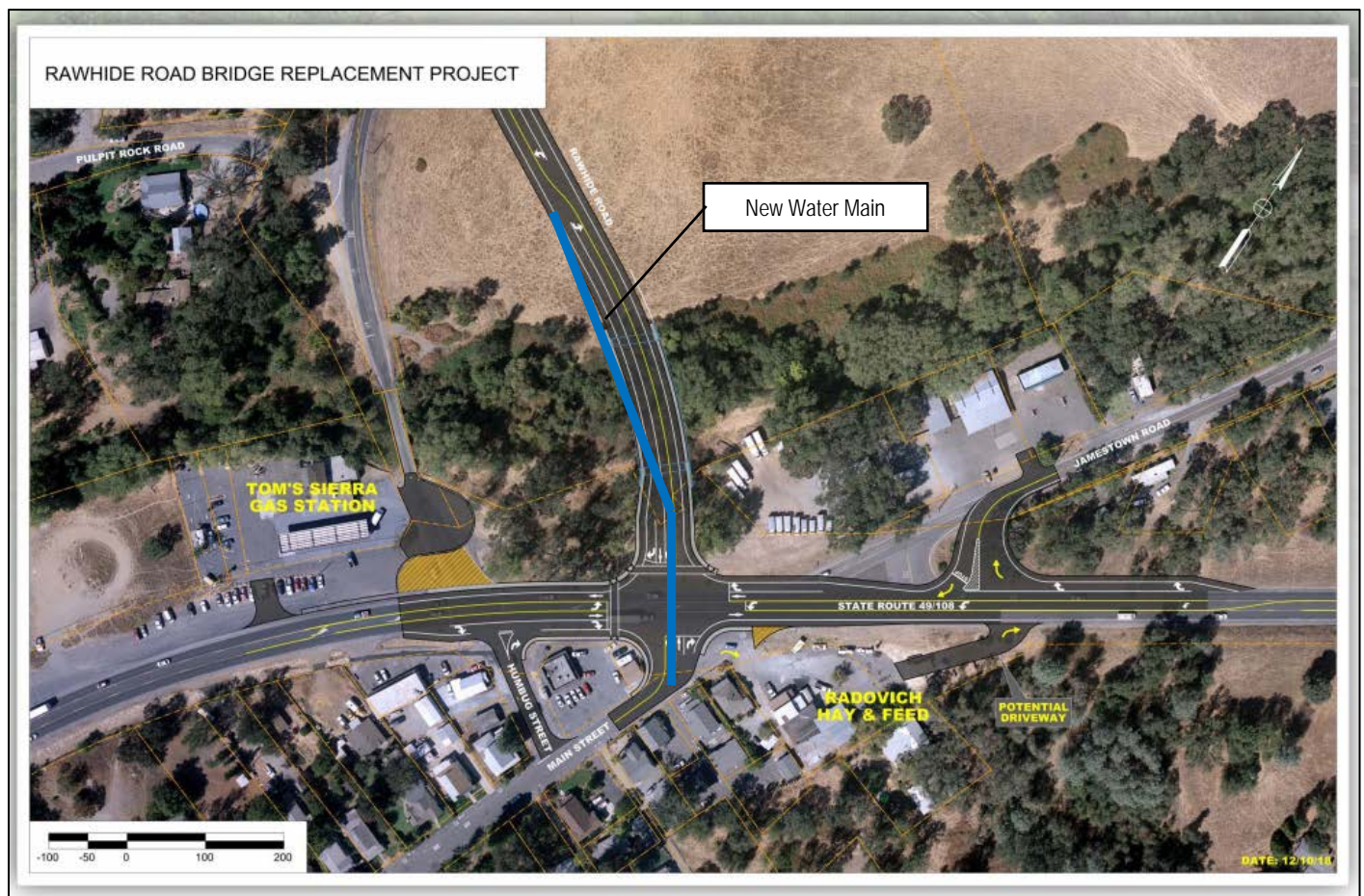


Sample Design Report for Sierra Pines WTF



TUOLUMNE UTILITIES DISTRICT

Project Title: Rawhide Bridge Utility Relocation	Project #: 29
Department: Water Treatment	Start FY: 20
Engineer's Cost Estimate: \$ 436,800	End FY: 22
Project Description and Background: The County of Tuolumne is constructing a new bridge on Rawhide Road crossing Woods Creek in Jamestown. There are some minor conflicts between the County's proposed design and a TUD water line. TUD is taking advantage of the construction of the new bridge by placing a new water line on the bridge and under the new roadway. Doing this will eliminate the utility conflict and will allow for future system improvements. It will also provide additional reliability and allow the abandonment of underperforming pipes in the current water system. The project is scheduled for summer of 2020.	



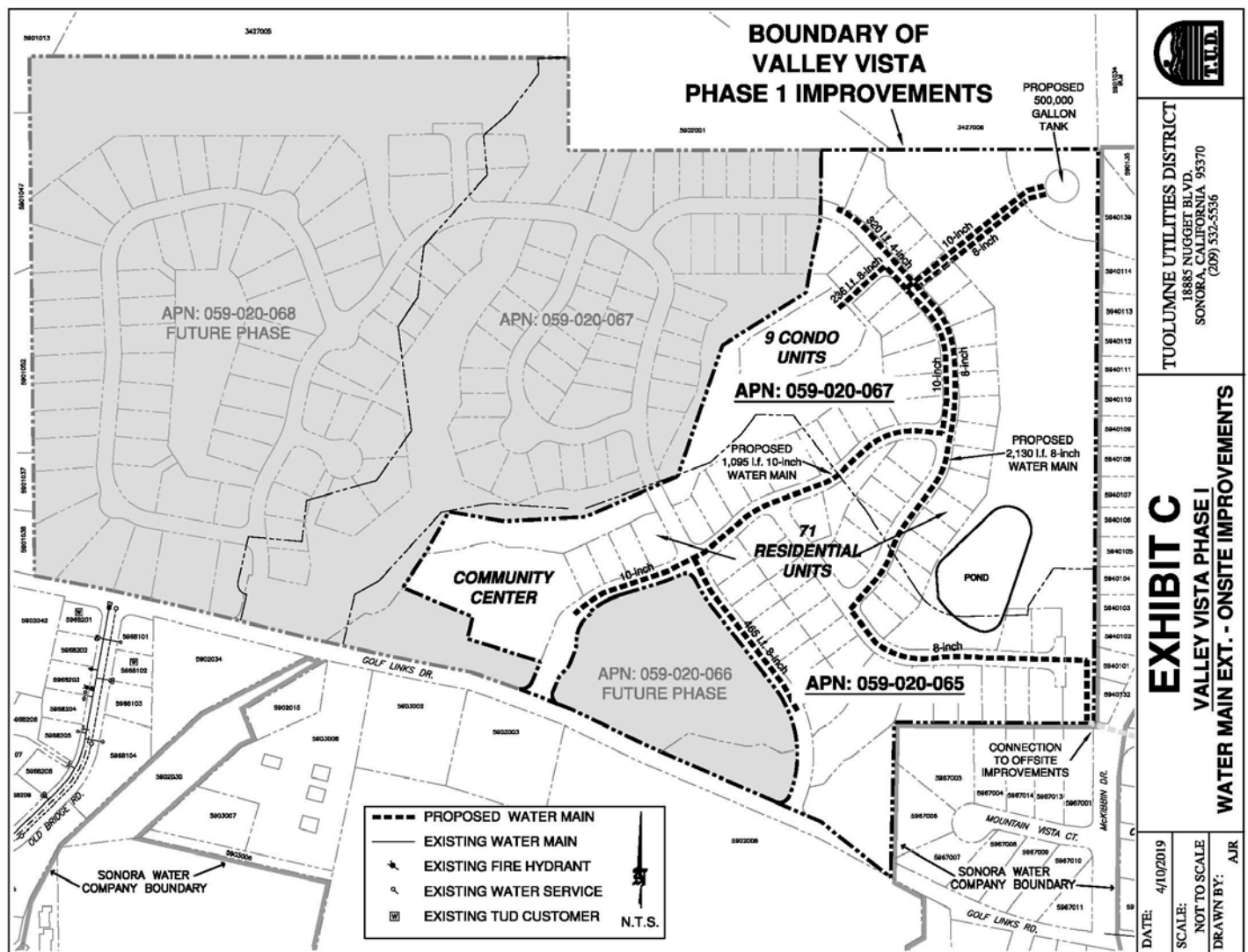


TUOLUMNE UTILITIES DISTRICT

Project Title: Valley Vista Tank	Project #: 30
Department: Water Treatment	Start FY: 20
Engineer's Cost Estimate: \$ 240,000	End FY: 20

Project Description and Background:

The proposed Valley Vista residential development in Jamestown is required to construct 230,000 gallons of water storage facilities to satisfy domestic and fire demands. However, the District would like to upsize the tank to 500,000 gallons to provide operational flexibility, improve system pressures and fire flows in Jamestown, and to provide redundant storage which will allow for proper maintenance of the Jamestown Tank. This project includes the District's cost share of upsizing the tank in accordance with the executed Developer Agreement.



Valley Vista Site Plan



TUOLUMNE UTILITIES DISTRICT

Project Title: Mono Village to Scenic View Pump Station Land Acquisition	Project #: 31
Department: Distribution	Start FY: 20
Engineer's Cost Estimate: \$15,000	End FY: 20
Project Description and Background: Caltrans is preparing to auction surplus property in Tuolumne County. Prior to going to auction, Caltrans offers land to public agencies for the appraised value. This 0.52 acre parcel already has water mains and power running through it. The location could be a good site for a future pump station that could deliver water from the Mono Village area to the Scenic View and Phoenix Lake Park areas.	



Proposed Acquisition Area



TUOLUMNE UTILITIES DISTRICT

Project Title: Tuolumne City Mainline Replacement	Project #: 32
Department: Distribution	Start FY: 20
Engineer's Cost Estimate: \$ 150,000	End FY: 20
Project Description and Background: This project represents the District's share above and beyond the \$400,000 grant received to replace 1,150 linear feet of 12-inch water main pipeline and 900 linear feet of 8-inch water main pipeline within the townsite of Tuolumne. The project will replace an older asbestos cement water main that served as the only supply line to the entire water system.	



Tuolumne City Water Main Replacement



TUOLUMNE UTILITIES DISTRICT

Project Title: Mono Vista Tank	Project #: 33
Department: Distribution	Start FY: 20
Engineer's Cost Estimate: \$ 713,000	End FY: 20
Project Description and Background: The Mono Vista Tank Project entails on-site distribution improvements, demolition of the existing Tank 2, and the construction of the new 400,000-gallon bolted steel Tank 2. The tank has nearly 100% internal coatings failure above the water line and has a fair amount of corrosion on the center support beam and dollar plate. The exterior coating of the tank is in poor condition as well.	



Mono Vista Tank to be Replaced



TUOLUMNE UTILITIES DISTRICT

Project Title: Ranchos Poquitos Tank and Pump Station Consolidation	Project #: 34
Department: Distribution	Start FY: 23
Engineer's Cost Estimate: \$ 344,760	End FY: 24

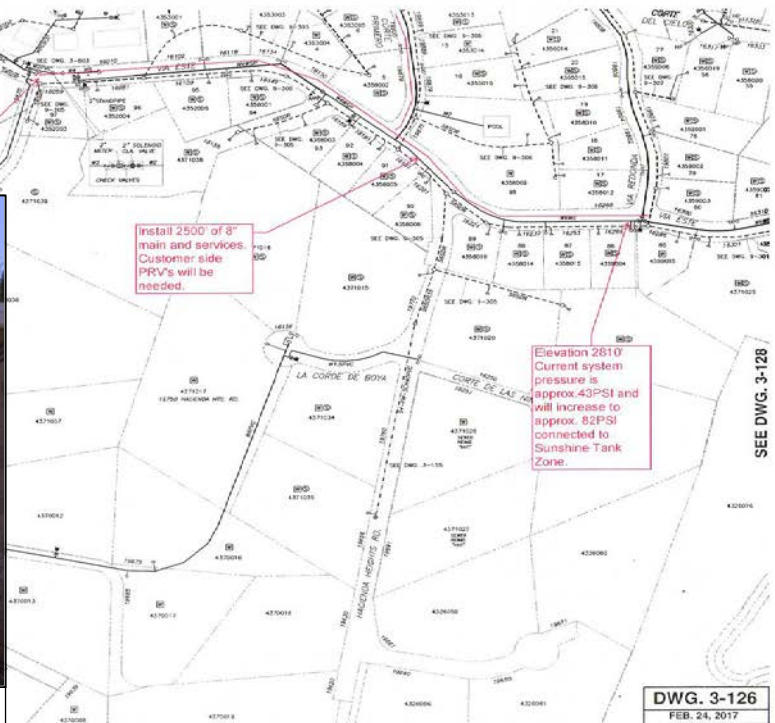
Project Description and Background:

The objective of this project is to introduce pressure and available storage capacity from the Sunshine Tank into the Ranchos Poquitos distribution system allowing the elimination of the Ranchos Poquitos Tanks and hydro-station. In addition to the consolidation of two tanks that are in poor condition, this is beneficial in that it will eliminate water quality issues created by low demands and limited cycling at the Sunshine Tank. By removing the hydro-station we will reduce the number of after hours calls due to PG&E interruptions. By replacing the aging infrastructure with new main lines, services, and hydrants we will be reducing the financial burden associated with repair costs while increasing system efficiency, reliability, and fire flow.

The scope of this project is the installation of approximately 1800 lineal feet of 8 inch main pipeline and services on Via Este from the intersection of Grace Way to Via Redonda and approximately 700 lineal feet of main pipeline and services on Corte Primero.



Rancho Poquitos Tank #1





TUOLUMNE UTILITIES DISTRICT

Project Title: Willow Springs Distribution System and Fire Flow Improvements	Project #: 35
Department: Distribution	Start FY: 20
Engineer's Cost Estimate: \$ 5,249,624	End FY: 24
Project Description and Background: <p>The scope of this project is to replace antiquated infrastructure that is rapidly failing and cannot sustain fire flow demands. The greater portion of the Willow Springs Distribution System is comprised of inadequately sized asbestos-cement and galvanized steel water mains. This project will not only increase the flow capacity and efficiency in the Willow Springs Distribution System but reduce water quality problems and create more redundancy by looping the dead-ends. This will also effectively reduce the number of after hour calls that often occur and the financial burden of continuous repair costs.</p> <p>Phase of construction-</p> <ul style="list-style-type: none">• Phase 1- Install 1000 lineal feet of main/services from 20605 to 20705 Caylor Dr. and 900 lineal feet of main/services from 20593 to 20673 Willow Springs Dr. West. Start Construction FY 20.• Phase 2- Install 930 lineal feet of main/services from 20614 to 20708 Willow Springs Drive and 615 lineal feet of main/services from 20586 to 20654 Tanner Drive. Start Construction FY 21.• Phase 3- Install 1900 lineal feet of main/services from 20839 to 20920 Caylor Drive. Start Construction FY 22.• Phase 4- Install 730 lineal feet of main/services from 20737 to 20821 Willow Springs Drive. Start Construction FY 23.	



Construction/Maintenance Crews Repairing a Leak on Willow Springs Drive



TUOLUMNE UTILITIES DISTRICT

Project Title: Crystal Falls Techite Pipeline Replacement	Project #: 36
Department: Distribution	Start FY: 20
Engineer's Cost Estimate: \$ 1,651,067	End FY: 22
Project Description and Background: District personnel respond to mainline breaks multiple times per year on the same stretch of pipe. The pipe segment in question is the primary transmission line from Crystal Falls Water Treatment Plant and can impact many downstream customers. Techite Pipe is obsolete and is very fragile. The breaks are catastrophic resulting hundreds of thousands of gallons water lost often time causing significant damage to nearby property owners. This project is to replace 9,000 lineal feet of Techite Pipe line from the Crystal Falls Water Treatment Plant down to Rhine Court. Replacement of this line will result in less labor, equipment, and material cost associated with repair efforts multiple times per year. This project is anticipated to be phased in three fiscal years beginning in 2020 and ending in 2022.	





TUOLUMNE UTILITIES DISTRICT

Project Title: Scenic View and Phoenix Lake Water Systems Consolidation	Project #: 37
Department: Distribution	Start FY: 22
Engineer's Cost Estimate: \$ 2,664,765	End FY: 24
Project Description and Background: <p>This consolidation project would comprise of the installation of approximately 7,000 lineal feet of 8-inch C900 main pipeline, strategically located pressure reducing stations from an upper connection point located on Ridgewood Drive and terminating at a downstream connection point on Sommette Drive near the Cinder Block tank site.</p> <p>The project objective is the elimination of one water tank that is in poor and failing condition, two water treatment plants, two booster stations, two hydro pneumatic stations and all costs associated with operation and maintenance. With the completion of this consolidation project, the District would be able to deliver water from Upper Basin all the way to the Sonora/Jamestown system. The proposed main line would serve as the transmission line interconnecting the Upper Basin/Crystal Falls and Phoenix Lake/Scenic View systems, but has the potential to add additional service connections, supplying potable water to all adjacent parcels along Phoenix Lake Road. Additionally, the pipeline could be used for future consolidation if the District absorbed a bordering water district. This interconnection will be a key resource needed to utilize future regionalized treatment and water storage from the new Sierra Pines Water Treatment Plant.</p>	





TUOLUMNE UTILITIES DISTRICT

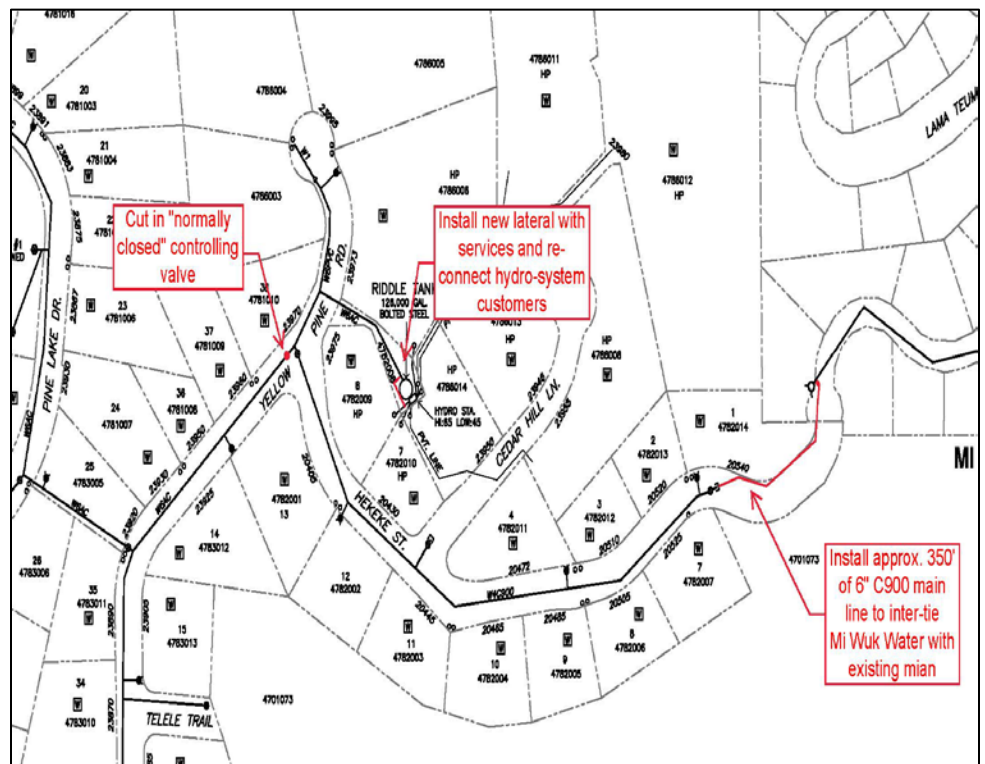
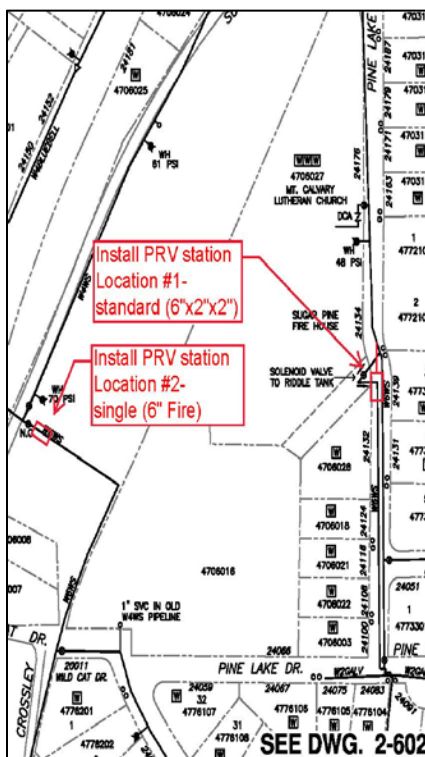
Project Title: Riddle Tank and Booster Station Consolidation with Mi Wuk Mutual Water Company	Project #: 38
Department: Distribution	Start FY: 20
Engineer's Cost Estimate: \$ 160,913	End FY: 20

Project Description and Background:

The scope of this project is to eliminate the Riddle Tank and Hydro Station by constructing an intertie with the Mi Wuk Mutual Water Company but also maintain adequate reliable storage and supply to our customers in the Sugar Pine Distribution System with strategically placed Pressure Reducing Stations and infrastructure improvements. The Riddle Tank with its steel bolted construction was put into service in 1997, has a push/pull design, and the last inspection report listed the tank in "poor" condition. Power interruptions cause intermittent control issues which consequently cause tank over-flows and the inadequate drainage during this condition have previously caused damage to adjacent properties.

In addition to the tank abandonment, the introduction of a higher system pressure with the interconnection from Mi Wuk Mutual will support the removal of the hydro-pneumatic station while also increasing fire flow to the four hydrants within the boundary of the newly established pressure zone. This Hydro Station which serves only seven customers, is antiquated and un-reliable. Without the installation of a stand-by generator this station cannot supply water during power interruptions.

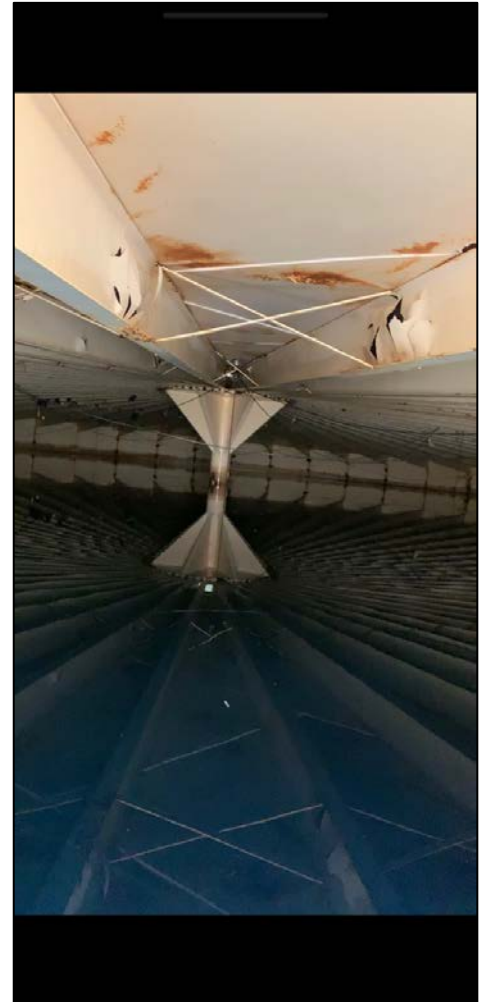
The construction of this intertie with the Mi Wuk Mutual Water Company creates an avenue for redundancy and allows for the potential for future consolidation. This project will reduce district liability while increasing operational efficiencies and reliability.





TUOLUMNE UTILITIES DISTRICT

Project Title: Comstock Tank Rehabilitation	Project #: 39
Department: Distribution	Start FY: 22
Engineer's Cost Estimate: \$ 404,800	End FY: 22
Project Description and Background: Constructed in 2005, the 1.5 Million Gallon (MG) Comstock Tank serves all Crystal Falls and much of the Upper Basin System Customers. This Tank is critical for the future Tank Master Plan and has since replaced the Comstock Inground Reservoir on site. Interior coatings failure is apparent above the waterline, freeboard section of the Tank. The recent addition of forced air ventilation will assist in the longevity of the tanks interior coating after rehabilitation.	





TUOLUMNE UTILITIES DISTRICT

Project Title: Columbia College Upper Lift Station Rehabilitation	Project #: 40
Department: Collections	Start FY: 20
Engineer's Cost Estimate: \$ 92,000	End FY: 20

Project Description and Background:

The Columbia College Upper Lift Station is an older pump station that takes on flow from both the Lower College Pump Station and the Oak Pavilion. The interior of the sump is constructed of concrete. The hydrogen sulfide gas has deteriorated the concrete along with corroding the metal surfaces causing the guide rails for the pumps to rot away. One discharge pipe was already replaced due to the corrosion, and now the other is due for replacement. Additional concerns include the check valves problematically located inside the sump, the extremely poor condition of the building, and the fact that there is no overflow sump for redundancy and continuity of service consistent with the district's current lift station design specifications.

The building is also in disrepair; however, is not needed and will be removed and a new weatherproof control panel will be installed. The installation of the new sump will be similar to the Saratoga Pump Station project that was recently completed, including an exterior check valve pit, new guide rails and discharge piping.





TUOLUMNE UTILITIES DISTRICT

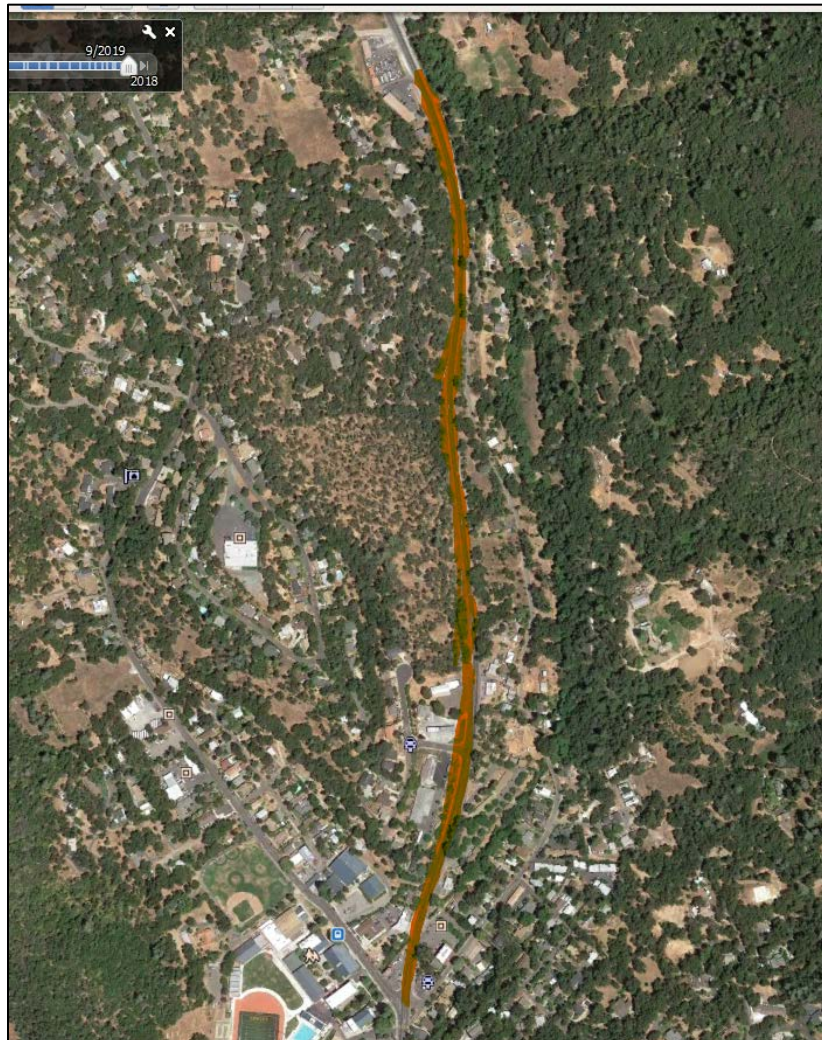
Project Title: Parrotts Ferry Sewer Pump Station Rehabilitation	Project #: 42
Department: Collections	Start FY: 21
Engineer's Cost Estimate: \$ 230,000	End FY: 21
Project Description and Background: This is one of the most critical sewer pump station in our system relating to flow and storage time. There is an extremely high flow rate coming into this station with the main sump being undersized and the overflow sump being severely undersized. The building, generator, and control panel are all in need of replacement. This station needs a complete rebuild so there will be ample storage time in extreme conditions. This project would include two new sumps, a new building, new generator and control panel.	





TUOLUMNE UTILITIES DISTRICT

Project Title: Columbia Interceptor Lining	Project #: 43
Department: Collections	Start FY: 20
Engineer's Cost Estimate: \$ 632,500	End FY: 24
Project Description and Background: <p>There have been catastrophic failures on the Columbia Interceptor sewer pipeline in the past due to sulfides attacking the cement in the AC pipe. The District initially replaced approximately 3000 feet of pipe and concluded that the reminder of this line should be repaired or rehabilitated as well. The remaining footage to the plant is approximately 10,000 feet. In May and June of 2019, the District used Cured in Place Pipe (CIPP) to rehabilitate approximately 1,500 feet of this pipe.</p> <p>In FY20 the District will continue to rehabilitate this line. There is approximately 4,000 feet of 8" and 10" pipe that has been identified to line this year. From FY21 to FY 24 the District will continue to line the approximately 4,500 feet of remaining pipe until the project is completed. The size of the yearly project will based on a year to year analysis.</p>	





TUOLUMNE UTILITIES DISTRICT

Project Title: Star Mobile Home Park Sewer Pump Station	Project #: 44
Department: Collections	Start FY: 20
Engineer's Cost Estimate: \$ 54,000	End FY: 20
Project Description and Background: The control panel for the Star Mobile Home Park Sewer Pump Station is outdated and in need of replacement. The panel also sits directly in the middle of the property which makes access to the main sump difficult. In addition, the secondary sump needs to be relined and have guide rails installed so a third pump can be installed. This Sewer Pump Station is also in need of a new control panel, which has been ordered. When the new panel arrives, it will be installed to the side of the property out of the way. New guide rails will be installed along with a transducer to control the third pump.	





TUOLUMNE UTILITIES DISTRICT

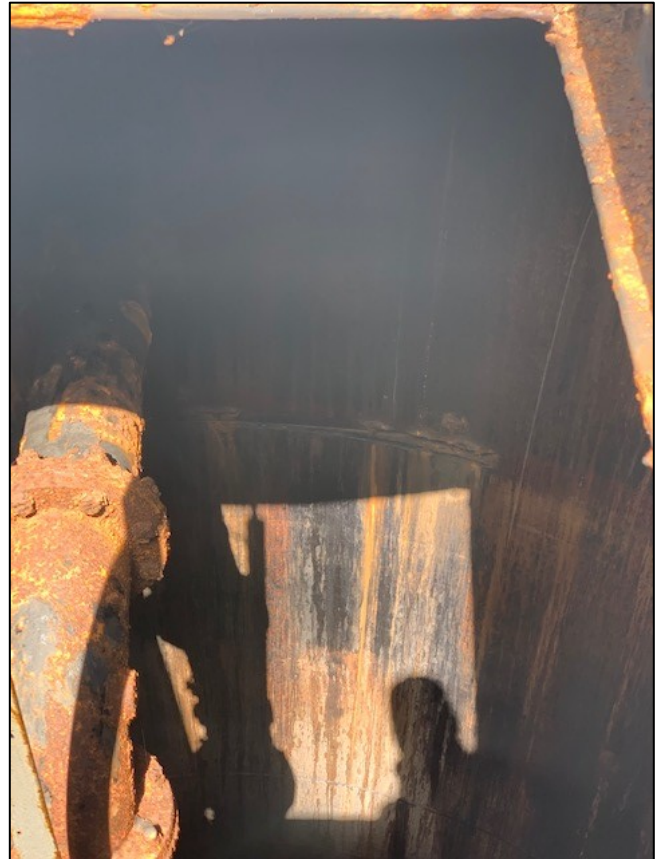
Project Title: Phoenix Lake Park Sewer Pump Station Rehabilitation	Project #: 45
Department: Collections	Start FY: 20
Engineer's Cost Estimate: \$ 54,000	End FY: 20
Project Description and Background: <p>The Phoenix Lake Park Sewer Pump Station is considered a critical pump station that sits approximately 60' from Phoenix Lake. Several years ago, a new primary sump was installed leaving the original sump as an overflow. The overflow sump is a steel tank with a considerable amount of corrosion. Due to this corrosion, the sump takes on ground water during the winter and fills daily. Since there is no pump in the overflow, a vacuum truck is needed to remove the water.</p> <p>This would be a great location to use a slip sump like what was done at the Saratoga Pump Station in August of 2019. In addition to the new sump, new guide rails, transducer and control unit will need to be purchased. This will allow the District to have a backup pump installed and functioning if needed.</p>	





TUOLUMNE UTILITIES DISTRICT

Project Title: Willow Springs Sewer Pump Station Rehabilitation	Project #: 46
Department: Collections	Start FY: 20
Engineer's Cost Estimate: \$ 122,360	End FY: 21
Project Description and Background: <p>The Willow Springs Sewer Pump Station serves approximately 800 residences handling on average 74,000 gallons per day (GPD). This number increases significantly during storm events. The two sumps are both steel measuring 10 feet in diameter and 20 feet in depth. Both sumps have been coated in the past, now needing an additional recoating. Currently there is no pump in the overflow sump for emergency situations.</p> <p>Both sumps will be recoated with the exact process to be determined. Additionally, a new hoist is needed to be able to pull the pumps for maintenance more effectively. To help with emergency situations a third pump, which is on site, will be installed in the overflow sump. Lastly, new slats for the chain link fencing need to be purchased.</p>	





TUOLUMNE UTILITIES DISTRICT

Project Title: Apple Valley Sewer Pump Station Rehabilitation	Project #: 47
Department: Collections	Start FY: 20
Engineer's Cost Estimate: \$ 305,325	End FY: 21
Project Description and Background: <p>The Apple Valley Sewer Pump Station is located next to Chicken Creek which in severe storm events rises to a level which puts our Pump Station under water. The most significant level being in 2018 where there was 3 feet of water inside the building. In the past two winters this has resulted in the loss of several pumps, a generator and the fence that surrounds the pump station. Along with these losses is the increase in manpower to keep the pump station from overflowing.</p> <p>The pump station needs to be completely rebuilt. This would encompass raising the site to a height where the water level would not impact the station. Included would be two new sumps, three new pumps, a new generator, building and fence. The access road to the station should be paved. Currently the road is gravel which makes in nearly impossible to get a large vehicle into the station during storm events.</p>	





TUOLUMNE UTILITIES DISTRICT

Project Title: Mono Village Sewer Pump Station Abandonment	Project #: 48
Department: Collections	Start FY: 21
Engineer's Cost Estimate: \$ 817,320	End FY: 23
Project Description and Background: <p>The Mono Village Sewer Pump Station is in extremely poor condition and at times unsafe. There are sections of the sump which are inaccessible due to their location. There are also sections that are outside of the fence as well as under the corrugated tin pictured below. The cinderblock building serves no purpose and is no longer in use.</p> <p>There is not enough land to rebuild the station so abandoning the station and running a new gravity line down Mono Way to tie in with the line above Hess Avenue is the best option. This would result in decreased maintenance costs as well as decreased manpower costs to run the station.</p>	





TUOLUMNE UTILITIES DISTRICT

Project Title: Gold Springs Sewer Pump Station Rehabilitation	Project #: 49
Department: Collections	Start FY: 22
Engineer's Cost Estimate: \$ 80,000	End FY: 22
Project Description and Background: The Gold Springs Sewer Pump Station (SPS) is a critical station due to the amount of flow that goes through it as well as being located next to a drainage course. The station is run on two 7.5 HP submersible pumps that are aided with two centrifugal pumps. The sump that is currently used for an overflow situation is the old primary sump that does not have a pump and is accessed through a manhole. This station needs a proper overflow sump with a third pump installed for backup and emergencies. The current pumps that are at this station should be upgraded to more powerful pumps to get the proper pipe scouring effect in the forcemain.	





TUOLUMNE UTILITIES DISTRICT

Project Title: Ranchos Poquitos Interceptor Flow Meter

Project #: 50

Department: Collections

Start FY: 24

Engineer's Cost Estimate: \$ 11,500

End FY: 24

Project Description and Background:

The Ranchos Poquitos Interceptor takes flow from the Ranchos Poquitos subdivision, Willow Springs Sewer Pump Station as well as the Mono Vista area. With this pipe serving such a substantial area, it has a high potential for Inflow and Infiltration.

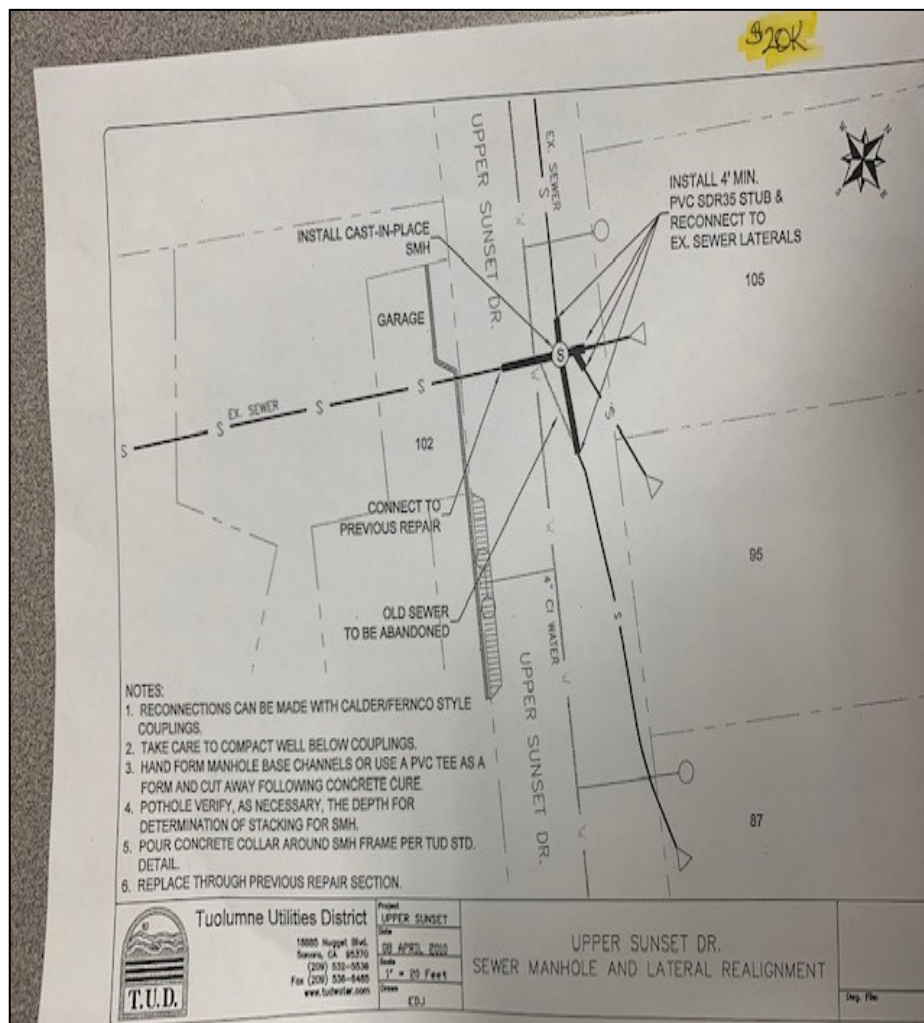
Flow metering will be monitored at MH2812 on Jenness Road by using a Parshall flume. This will allow the entire flow to be monitored as well as being a safe area for employees to conduct work without the risk of vehicle traffic.





TUOLUMNE UTILITIES DISTRICT

Project Title: Annual Collections System Improvements and Emergency Repairs	Project #: 51
Department: Collections	Start FY: 20
Engineer's Cost Estimate: \$ 1,150,000	End FY: 24
Project Description and Background: The District owns and operates over 140 miles of collection system. TUD's situation is different in that most of the District's collection system reaches the end of its useful life before reaching its design capacity. Wastewater collection is highly regulated and there is a high degree of exposure and liability. The District has committed to allocate \$230,000 for collection system improvements for each Fiscal Year (FY) FY20-FY24. Listed below is an example of collection system improvements for one area in Sonora.	



Upper Sunset Drive in Sonora

This collections system improvement includes: Install new manhole, realign mainline, realign laterals and install approximately 60 feet of pipe.



TUOLUMNE UTILITIES DISTRICT

Project Title: Parrotts Ferry Force Main Condition Assessment

Project #: 52

Department: Collections

Start FY: 20

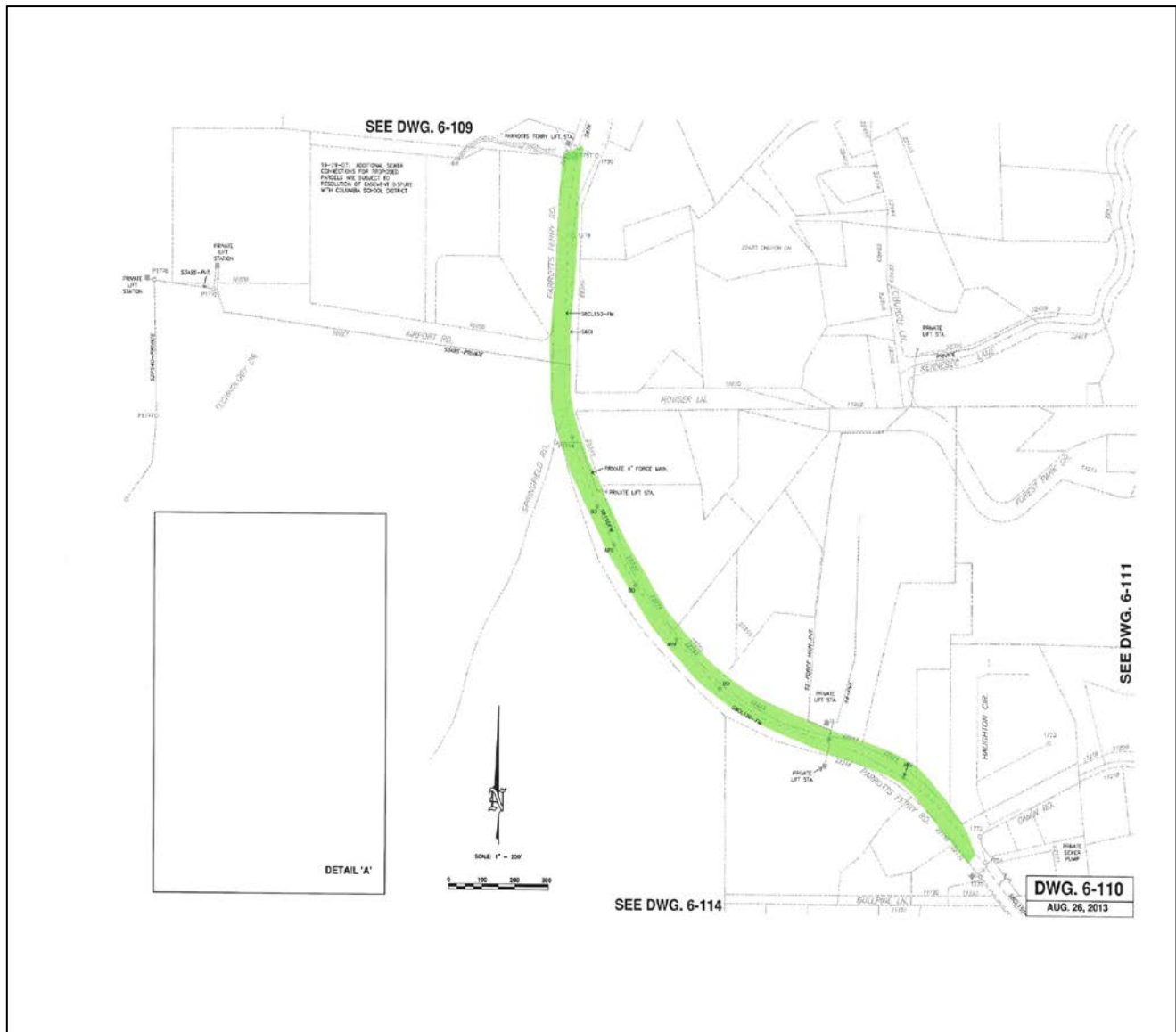
Engineer's Cost Estimate: \$ 150,000

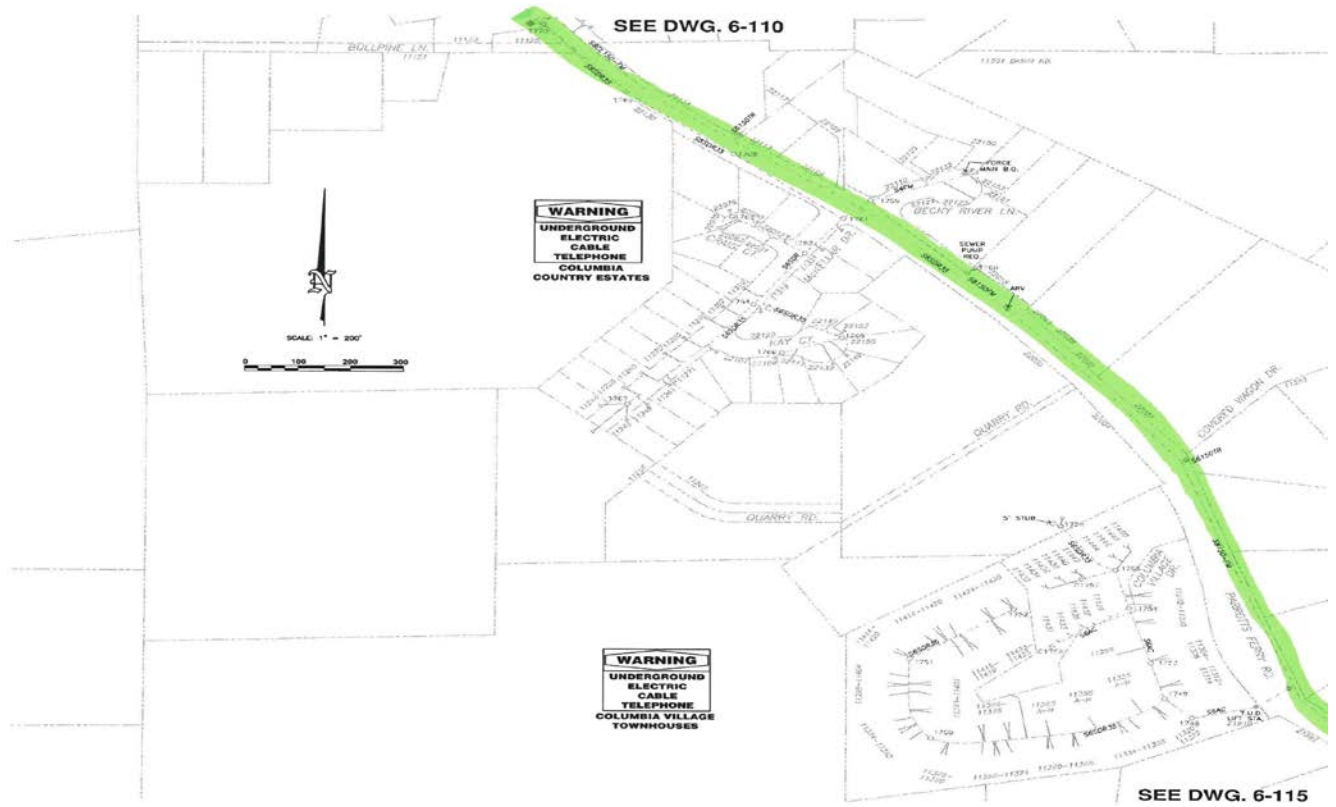
End FY: 23

Project Description and Background:

The Parrotts Ferry Force Main takes on the entire Columbia Collection system as well as many private pump stations and developments. The force main is constructed of Asbestos Cement pipe that is subject to sulfide corrosion, is 8 inches in diameter and is approximately 6,000 feet in length. There are 6 Air Release Valves and 5 Blow Off Valves. Due to the access limitations, the pipe has never been cleaned or maintained.

The Force Main pipe needs to be dewatered so cleaning can be performed and a video assessment of its condition. This will need to be done in segments utilizing pump stations and blow off valves at collection points.







TUOLUMNE UTILITIES DISTRICT

Project Title: Mi Wuk Sewer Pump Station Rehabilitation	Project #: 53
Department: Collections	Start FY: 22
Engineer's Cost Estimate: \$ 150,000	End FY: 22
Project Description and Background: <p>The Mi Wuk Sewer Pump Station is located in the snow line in Mi Wuk Village. The pump station is inaccessible for large vehicles several times during the winter months. Additionally, the station is prone to power outages. Currently this station does not have an overflow sump for emergency situations. The interior of the sump has had some corrosion issues in the past causing the guide rails to rot and break off.</p> <p>A new primary sump will be installed rendering the current sump to the secondary position. The current sump will be repaired so the third pump can be installed for backup situations.</p>	





TUOLUMNE UTILITIES DISTRICT

Project Title: Hillcrest Drive and Palemone Street Sewer Repairs	Project #: 54
Department: Collections	Start FY: 20
Engineer's Cost Estimate: \$ 75,000	End FY: 20
Project Description and Background: Realign existing sewer pipeline on Hillcrest Drive and Palemone Street in Sonora that crosses under retaining walls and provides limited access for maintenance. The project involves installing new sewer pipeline: 180 linear feet of 6-inch sewer pipeline and 150 linear feet of 4-inch sewer pipeline along with a new sewer manhole.	



Intersection of Hillcrest Drive and Palemone Street



TUOLUMNE UTILITIES DISTRICT

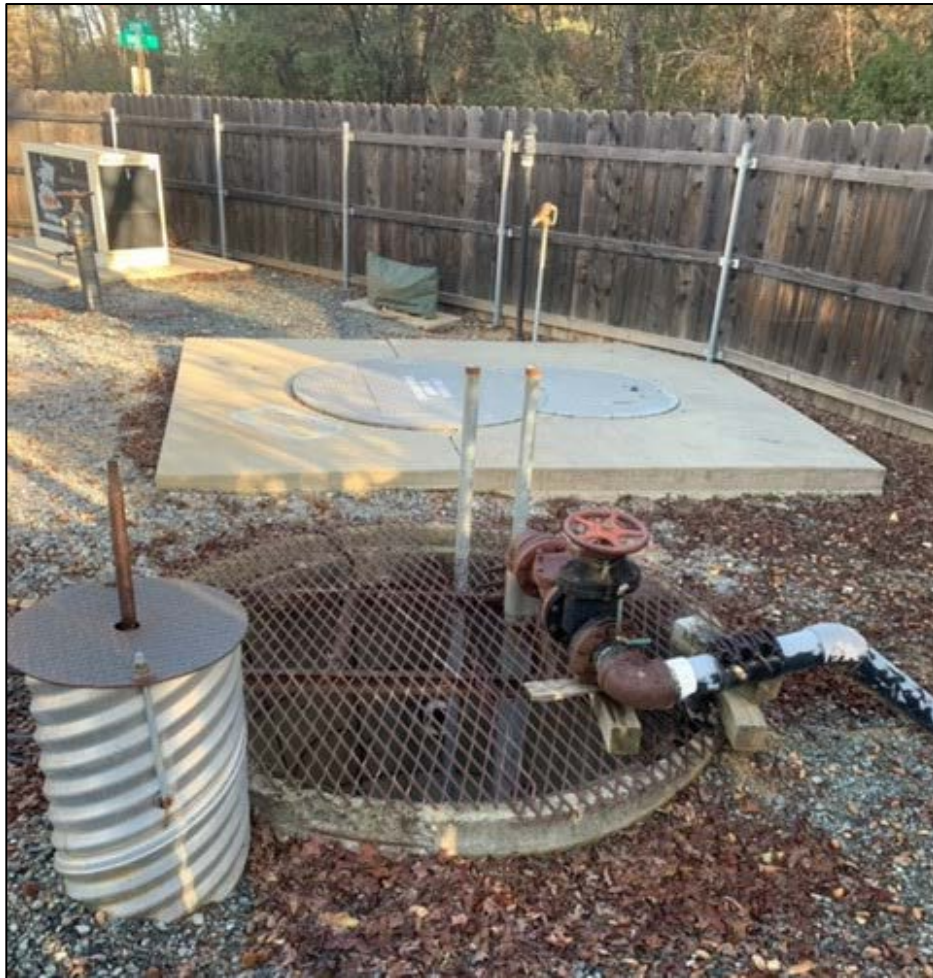
Project Title: Standard Sewer Pump Station Rehabilitation	Project #: 55
Department: Collections	Start FY: 24
Engineer's Cost Estimate: \$ 150,000	End FY: 24
Project Description and Background: <p>The Standard Sewer Pump Station has been problematic for several years. Problems include: pumps shutting down intermittently, the control panel not operating the pumps correctly, difficulty in pulling the pumps and the check valves being located inside the sump. In addition, the pumps are no longer manufactured and the check valves leak.</p> <p>The recommendation is to have a new weatherproof control panel purchased and installed. Because the pumps are no longer manufactured, three new pumps along with guide rails and pump shoes need to be purchased. Finally, there needs to be a new check valve pit installed so that the valves may be relocated to the sump exterior.</p>	





TUOLUMNE UTILITIES DISTRICT

Project Title: Nikki Court Sewer Pump Station Rehabilitation	Project #: 56
Department: Collections	Start FY: 20
Engineer's Cost Estimate: \$ 75,000	End FY: 20
Project Description and Background: <p>The Nikki Court Sewer Pump Station in Sonora is experiencing issues with the overflow sump. The sump lid is a metal grate which is unsafe to walk on and it allows rainwater to fill the sump during winter. The sump is constructed of concrete barrels which also leak during the winter months. The discharge pipe is above ground and exposed to the elements.</p> <p>This station requires a proper lid for safety and inflow control. In addition, the inside of the sump needs to be sealed, the discharge piping and check valve moved underground, and a new guide rail system installed.</p>	





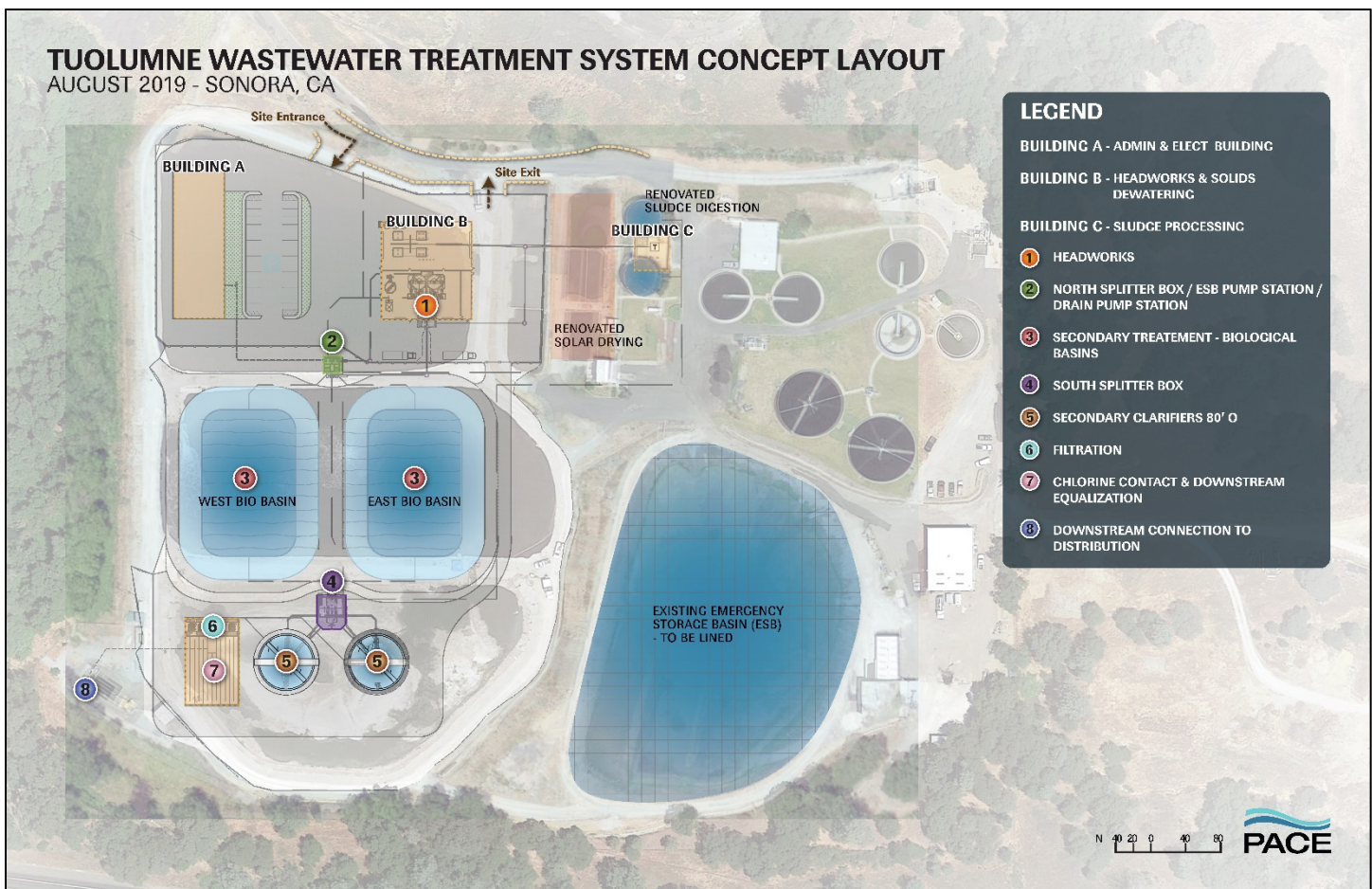
TUOLUMNE UTILITIES DISTRICT

Project Title: General Collection System Lining	Project #: 57
Department: Collections	Start FY: 20
Engineer's Cost Estimate: \$ 300,000	End FY: 24
Project Description and Background: The District owns and operates over 140 miles of collection system. District staff identify sewer segments that are in poor condition and that would be good candidates for trenchless rehabilitation of sewer pipeline known as cured-in-place pipe (CIPP). This project reflects TUD's annual investment in rehabilitating select segments of its sewer collection system by using cured-in-place pipe. On average, the District completes 2,000-2,500 of lineal feet per year. Using the cured-in-place pipe technique has proven to be a cost-effective alternative to dig and replace methods. The cost is less because it does not involve digging up the asphalt and providing prolonged traffic control. Trenchless methods also minimize inconvenience to the public. The District has allocated \$300,00 for Collections Lining for each FY starting in FY20 to FY24.	



TUOLUMNE UTILITIES DISTRICT

Project Title: Regional Wastewater Treatment Plant Design and Permitting	Water Project #: 58
Department: Wastewater Treatment	Start FY: 20
Engineer's Cost Estimate: \$ 1,343,540	End FY: 21
Project Description and Background: The existing Regional Wastewater Treatment Plant (RWWTP) was constructed in the mid 1970's and while it has undergone limited improvements, the County has seen population growth and increases in septage loading. The current treatment processes are labor intensive and struggle to meet effluent limits. The District expects to be issued new effluent limits in the upcoming years and upgrades are needed to address deficiencies in treatment, disinfection, and solids digestion and dewatering. This project will fund the design and permitting of the new facilities and position the District to seek grants and low interest loans to fund the construction.	



Conceptual Layout of Proposed WWTF



TUOLUMNE UTILITIES DISTRICT

Project Title: Regional Wastewater Treatment Plant Interim Improvements	Project #: 59
Department: Wastewater Treatment	Start FY: 20
Engineer's Cost Estimate: \$ 263,350	End FY: 20
Project Description and Background: This project involves various improvements to the existing Regional Wastewater Treatment Plant (RWWTP) that maybe deferred, if possible, until construction of the new treatment facility. If necessary, improvements needed include: <ol style="list-style-type: none">1. New Axial Flow Pump2. New 10hp Aerator3. Supper Shredder Rebuild4. Grit Chamber Rehabilitation5. Digester Valving Replacement6. Hose Pump Replacement	



Existing RWWTP



TUOLUMNE UTILITIES DISTRICT

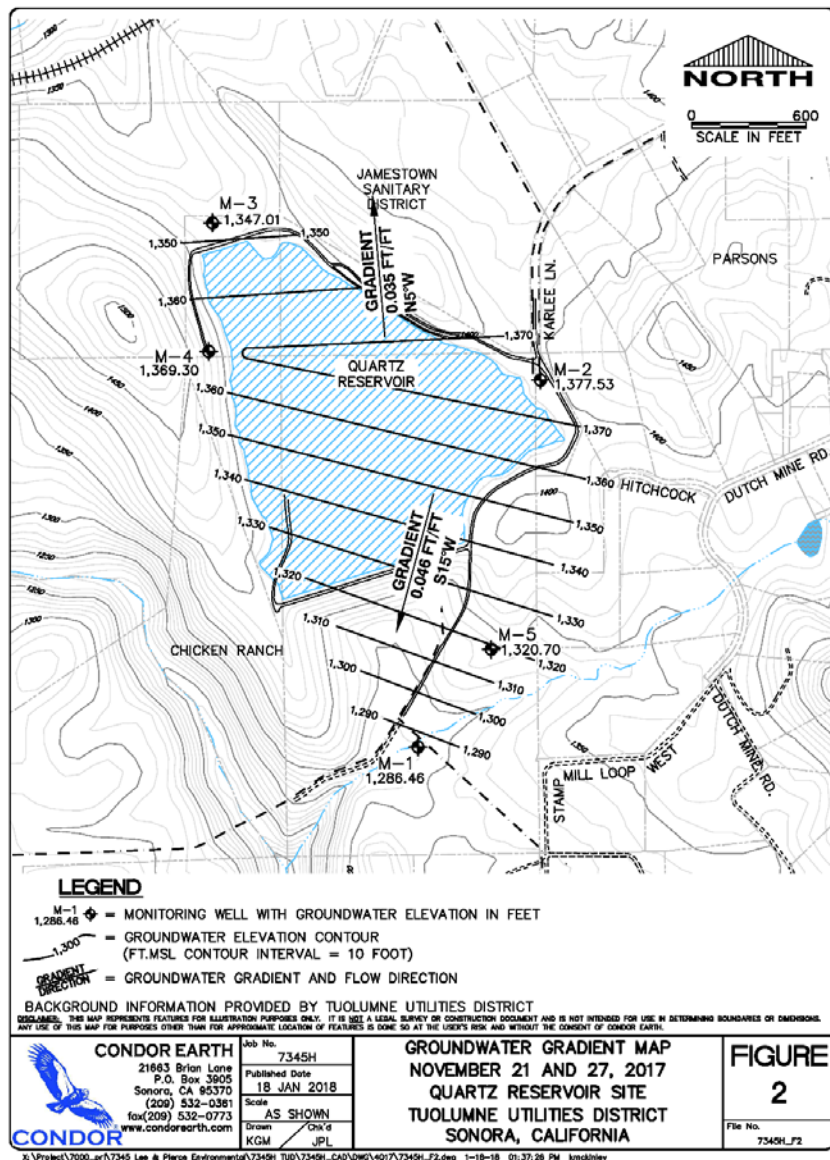
Project Title: Twain Harte Wastewater Treatment Plant Study	Water Project #: 60
Department: Wastewater Treatment	Start FY: 20
Engineer's Cost Estimate: \$ 23,000	End FY: 20
<p>Project Description and Background:</p> <p>The Twain Harte Wastewater Treatment Plant was originally constructed in the 1960's and was operated by Tuolumne County Water District #1 until about 1978. At that time, the regionalization occurred of many county sewer systems and the construction of more than 20 miles of sewer interceptors which involved connecting the communities of Twain Harte, Mono Village, East Sonora, Sonora, Columbia and others. Improvements were made to the Sonora wastewater treatment plant and finally the construction of Quartz Reservoir. During this transition, Tuolumne County Water District #2, now TUD, took over operations of the Twain Harte Wastewater Plant.</p> <p>This plant is well beyond its life expectancy and needs some major improvements. The District will be seeking recommendations from outside consultants to identify the most cost-effective path forward for continued operations. Some of the options that will be considered; renovate the plant to continue the secondary treatment of raw sewer, upgrade the plant to tertiary treatment and land apply the treated effluent, and bypass the plant sending all prescreened raw sewer to the Sonora Wastewater plant for final treatment.</p>	





TUOLUMNE UTILITIES DISTRICT

Project Title: Reclamation System Work Plan and Implementation	Project #: 61
Department: Reclamation System	Start FY: 20
Engineer's Cost Estimate: \$ 79,350	End FY: 20
Project Description and Background: The Central Valley Regional Water Quality Control Board (RWQCB) regulates the District's Regional Reclamation System. The RWQCB sent TUD a letter requesting a new work plan be established to install additional groundwater monitoring wells throughout the system. TUD has hired a consultant to prepare the work plan and anticipates additional costs associated with monitoring well installation.	





TUOLUMNE UTILITIES DISTRICT

Project Title: Reclamation System Irrigation System Expansion	Project #: 62
Department: Reclamation System	Start FY: 20
Engineer's Cost Estimate: \$ 1,307,460	End FY: 24
Project Description and Background: The District relies on having enough reclamation storage in Quartz Reservoir to contain the wastewater flows that occur in a 1:100 rainfall year. Following a "wet" year the District must empty Quartz by irrigating lands primarily used for cattle grazing. Currently the District does not have enough land in the system to ensure that it can empty Quartz Reservoir when starting at full on or around April 15 th . The District anticipates needing to buy land that it can control and can fallow in dry years and then irrigate in wet years. Additionally, the District recently executed an agreement with the Teleli Golf Course to extend a pipeline and deliver reclaimed water to their site once permits are obtained. This project will pay for land acquisition and capital improvements needed to expand the Reclamation System.	





TUOLUMNE UTILITIES DISTRICT

Project Title: Ignition Software Platform for SCADA

Project #: 63

Department: General Fund

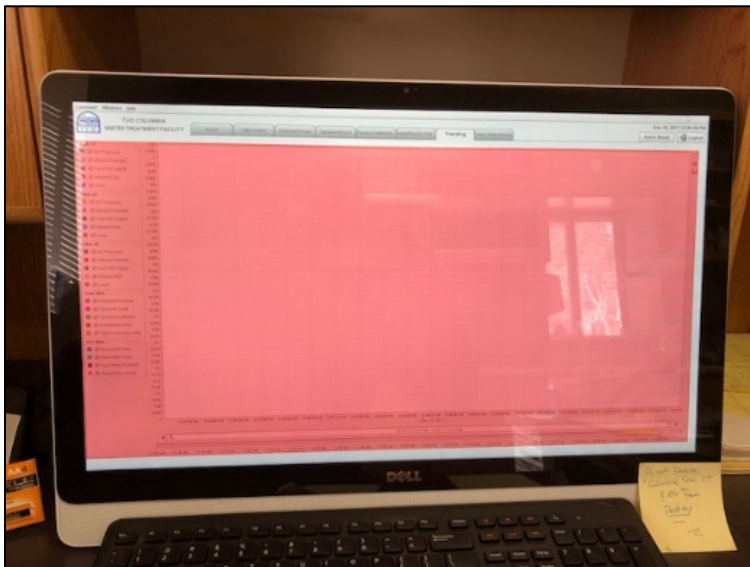
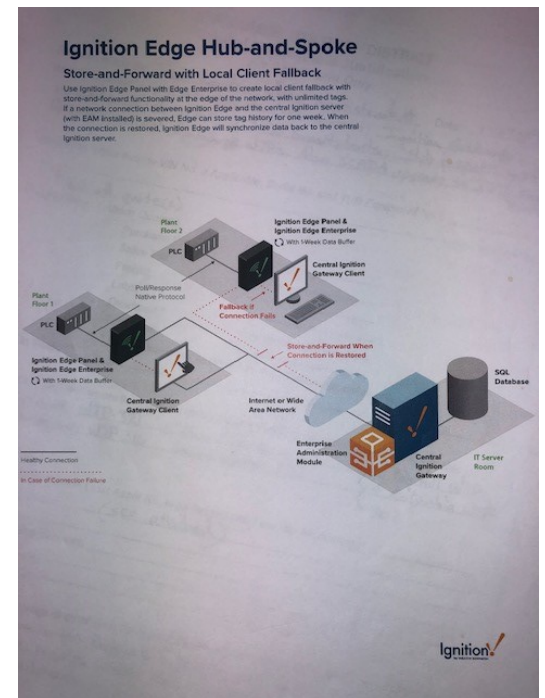
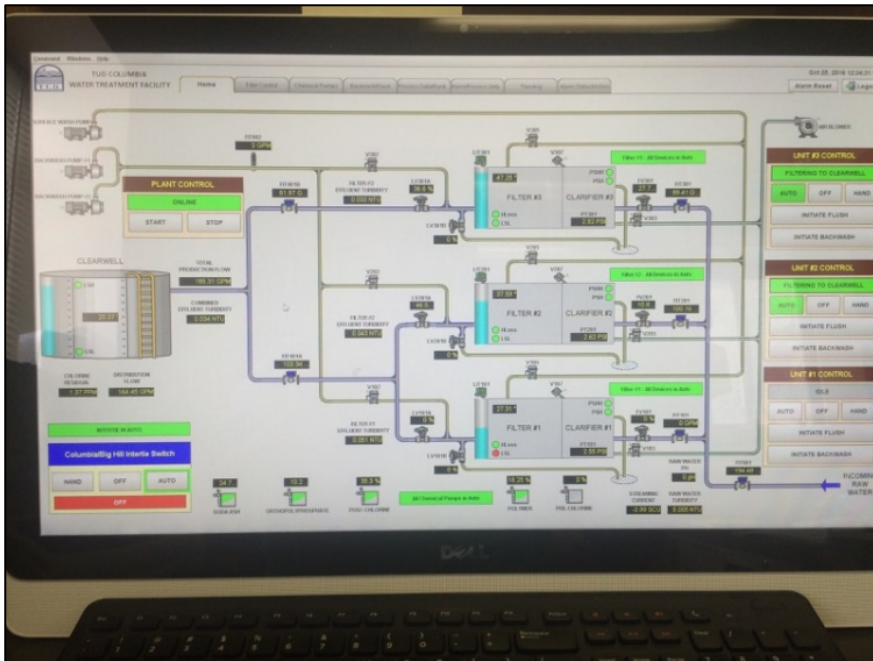
Start FY: 20

Engineer's Cost Estimate: \$ 125,000

End FY: 20

Project Description and Background:

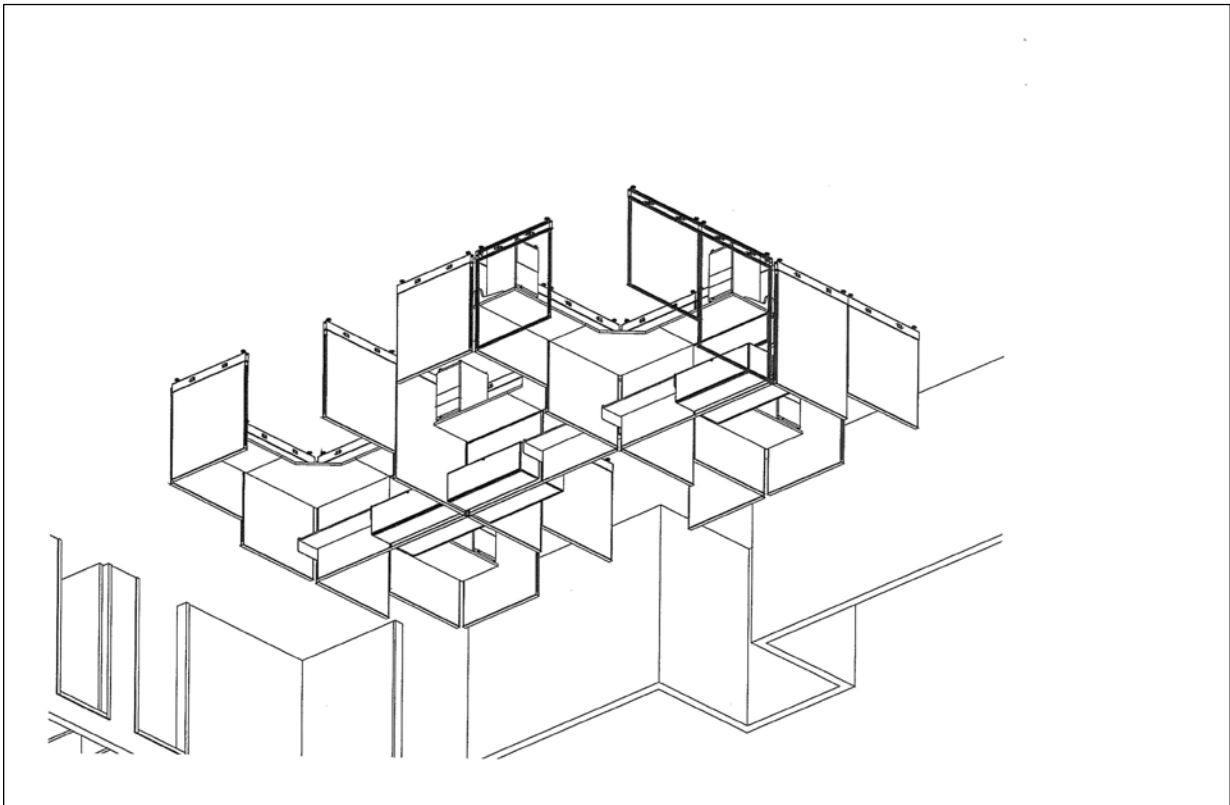
This project is to improve SCADA communications with integration of labor and software licenses for SCADA system upgrades at the District's Tuolumne, Monte Grande, and Big Hill Water Treatment Plants (WTP). It will provide the integration labor for a central Ignition Gateway at the District's Headquarters and minor upgrades to the Columbia Water Treatment Plant. The Software Upgrade, Ignition Gateway, will utilize a "hub and spoke" system that initially will be integrated and supported through internet connection by an experienced contractor. The upgrade allows enhanced, internet SCADA to monitor and control certain WTP parameters remotely. This Systems upgrade will reduce and possibly eliminate costly PLC Technician visits that have required many man hours over the years troubleshooting TUD's Smart Plant PLC's.





TUOLUMNE UTILITIES DISTRICT

Project Title: Workspace Partitions	Project #: 64
Department: General Fund	Start FY: 20
Engineer's Cost Estimate: \$ 45,000	End FY: 20
Project Description and Background: The District will be adding workspace partitions and rearranging the customer service and administration offices. Until this is completed, some staff members are using makeshift workstations in the common areas.	





TUOLUMNE UTILITIES DISTRICT

Project Title: Flooring Replacement	Water Project #: 65
Department: General Fund	Start FY: 20
Engineer's Cost Estimate: \$ 153,344	End FY: 20

Project Description and Background:

The District's central administrative office was built in 2000 and currently still has the original flooring that has outlived its useful life expectancy and requires replacement. The existing flooring constitutes a tripping hazard for anyone navigating the administration building.

District staff have explored various options for replacing the carpet and have consulted with carpet manufacturers and installers. Carpeting is preferred over vinyl, concrete, or other hard surfaces because of its superior sound adsorption capability, cost, and overall ambiance. Carpeting can be furnished in rolls or in tiles. The District has selected carpet tiles because of ease of installation and the ability to remove and replace worn tiles in the future without needing to splice in large sections of rolled carpet. The project includes replacement of approximately 10,000 square feet of flooring.

