Technical Memorandum

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Subject: Christian Valley Park CSD Water System Capital Improvements Plan

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Purpose

The purpose of this memorandum is to develop a capital improvement plan (CIP) for the water treatment and distribution facilities serving the Christian Valley Park Community Services District (District). The CIP includes an asset inventory, condition assessment, estimate of remaining life of facilities and planning level costs for repair and replacement projects that can be used for budgeting and rate setting.

Background

The District was formed in November of 1962. The majority of the water supply facilities were originally constructed in the early 1960's and 70's. The District's major facilities include the 1-million-gallon per day water treatment plant, approximately 16-miles of distribution pipelines, a pump station, and recently constructed steel water storage tanks with a combined capacity of 1.5 Mgal. Raw water is purchased from the Placer County Water Agency's (PCWA) Bowman Canal and is the sole source of raw water for the District.

For the purpose of this report the system components have been broken into three categories including water treatment plant, storage and transmission/distribution system as outlined below.

Water Treatment Plant. Additions and upgrades have been made to the water treatment plant to comply with new regulatory requirements and increase reliability of the system. The water treatment plant was completed in 1963 and has been upgraded since its original construction during the late 1990s through current. The District budgets funds each year for various upgrades to the water treatment plant. A summary of major upgrades to the facility include:

- Electrical and controls including a supervisory control and data acquisition (SCADA), new motor control centers and filter pumps as part of the Reservoir Replacement Project, completed in the fall of 2021.

- Back-up generator and manual transfer switch for emergency power were installed.

- Two of the original pressure filters were replaced in two projects between 2000 and 2007. One of the existing original filters is still in place.

- Chemical feed system upgrades as part of the Reservoir Replacement Project.
- Replacement of the original filter feed pumps. The new vertical turbine pumps are equipped with variable frequency drives to provide flexibility in setting flow rates through the pressure filters.
- Installed new flocculation basin mixers and rebuilt sedimentation basin redwood baffles.
- Installed a backwash water recycle system.
- Rerouted sedimentation basin overflow to onsite storage basins to prevent offsite discharges.
- Upgraded water quality monitoring and alarm instrumentation including chlorine analyzer, turbidimeters and streaming current analyzer.
- Constructed retaining wall and paved water treatment plant area.

Funding for water treatment plant improvements has been from reserves generated through water rates. In addition to large CIP projects, the District typically funds small maintenance/improvement projects for short term assets, generally about $15k per year.

Storage. Storage is necessary for proper operation of the system and provides flow equalization, emergency storage and fire flow capacity. The original reservoir was constructed in the early 1960's and did not have a cover to protect against contamination. In the early 1990's a cover was installed. The reservoir cover deteriorated from sun exposure and was prone to developing leaks and tears to the point it needed replacement. A number of options were considered and the District opted to construct two steel tanks to replace the original reservoir. The reservoir replacement project was completed in the fall of 2021.

There is a pump station located at the storage tank site. The pump station increases pressure to the upper zone serving about 60 homes. Over the years there have been minimal improvements at the pump station and it has operated satisfactorily. Significant improvements include:

- Replaced original hydropneumatic tank that supplies the upper pressure zone near the water treatment plant.
- Upgraded electrical system at the booster pump station including motor controls and installed a manual transfer switch that can be connected to a portable generator. (Generator was not a part of the project.)
- Added an emergency generator and automatic transfer switch. Operation of the generator and transfer switch are critical to maintain pressure in the distribution system during power outages. This has been a critical feature considering the Power Safety Power Shutdowns (PSPS) of the electrical grid by Pacific Gas & Electric in recent years.
- Upgraded pump station controls and monitoring as part of the Reservoir Replacement Project.

Transmission and Distribution System. The District owns and operates approximately 16 miles of transmission and distribution system piping that also includes service lines, meters, hydrants and valves.

Historically the system has performed well. There have been a few major distributions system improvements to the system over the years, other than normal operations and maintenance, including leak repairs. Major distribution system improvements have included:

- **Gayle Loop Project.** The Gayle Loop project consisted of the construction of approximately one mile of pipeline that serves homes that historically did not receive District water and were on failing wells. The project also created a loop within the distribution system that increased system pressure in areas that had low water pressure during peak demand periods. The majority of the cost of the project was borne by homeowners in the project area that received District water. A portion of the project was paid by the District to acknowledge the benefit to existing customers for the operational flexibility and increased pressure in areas of the system with low pressure during peak demand periods.

- **Pressure Reducing Station.** A pressure reducing station (PRS) was installed on Stanley to reduce system pressures in the areas of Stanley and Virginia Drive. The PRS was recently upgraded and upsized to accommodate additional demands since the PRS was installed in the mid-1990s.

- **Hydrants.** Fire hydrants are owned and maintained by the District. The hydrants were installed during the initial construction of the system. Internal components are wearing and result in either a leaking hydrant that will not shut off, or hydrants that will not open correctly. Hydrants are inspected annually and are repaired as necessary, and in some instances replaced as needed. Repair parts for the old hydrants are difficult to obtain.

- **Water Meter Replacement.** Water meters are replaced on an as needed basis when they no longer record water usage or the register is unreadable.

- **Service Line Replacement/Repair.** The original service lines were constructed with copper tubing. Service lines between the main pipeline and service box are repaired as needed, generally they are pinhole leaks. They are either clamped or replaced with high density polyethylene (HDPE) pipe. Many of the problems on service lines are located in, or near the meter box, where the original construction combined copper with steel creating galvanic corrosion or the curb stops are failing. A capital improvement project to address this issue has not been included. These types of failures will be replaced as needed. Future service line connections should be designed to avoid the use of dissimilar metals that result in corrosion.

Overall the transmission and distribution system has operated satisfactorily. However, the system continues to age. Areas of the system have exhibited frequent leaks of various size and failure modes. Eventually the system components will reach the end of their useful life; replacement prior to that time is critical to maintain a safe water supply.

The CIP includes the following for the water treatment plant and distribution system:

- Major asset inventory.
- Condition assessment.
- Estimated useful remaining life and replacement cost for pipelines.
- Cost estimates for major facility replacement along with a timeline based on prioritization.

The CIP plan address each system in separate sections of the report.

Water Treatment Plant

The WTP was constructed and put into service in the early 1960s. Since the original construction the plant upgrades to meet regulatory requirements for drinking water have been completed. Upgrades have also included modernizing the instrumentation and repair and replacement of chemical feed pumps. Two of the original filters have been replaced.

Asset Inventory and Condition Assessment - The inventory was developed utilizing the major system components at the water treatment facility. As noted in the previous section upgrades to the water treatment plant have been ongoing. The majority of the systems are in good working order. The CIP projects identified for the WTP are listed below.

Headworks – The headworks consists of a control valve actuated using a pneumatic actuator that turns the flow on and off and separate flow control valve used to adjust the flow rate. The flow adjusting valve and pneumatic actuator were replaced. The original insertion flow meter is still in place, but does not operate properly and it is not the correct application. Debris in the raw water system wear out the senser and tend to jam it causing the meter to malfunction. The meter should be replaced with a full-bore type magnetic flow meter or other type of sensor to be determined and would not create an obstruction. This is not critical, but would aid in the operation of the system.

Flocculation/Sedimentation Basin. The floc/sed basin is a serpentine basin that provides gentle mixing to form floc that will settle in the basin. The solids are removed prior to filtration to increase the filter performance. There are two floc motors that drive paddles. The units are less then $1,000 and considered to be a maintenance item. Other than that, there are no other mechanical components in the basin. The basin is lined with gunite which is in satisfactory condition but there are cracks developing. Crack repair and application of a second layer of gunite in deteriorated areas will maintain the structural integrity and prevent/minimize leaks from the basin. Work would be anticipated within the next 6-10 year horizon.

Filter Feed Pumps. Three filter feed pumps were replaced as part of the Reservoir Replacement Project. The filter pumps have ample capacity and are in good shape and should operate well over the next ten plus years with proper maintenance.

Filters. Originally three pressure filters were installed at the plant as part of an upgrade to comply with the Surface Water Treatment Rule in the mid 1970's. Two of the filters have been replaced, the third remains in service, but its condition is poor. Table 1 includes the existing filter parameters. Two used filters were located and rehabilitated including new coating, underdrains, media and reinforcement of the interior baffles.

Table 1
Pressure Filter Size and Capacity

Filter ID	Size/Capacity, gpm[(a)]	Status
Filter 1	8'x20'/480 gpm	Replaced one of the original filters after rehabilitation and new media.
Filter 2	8'x20'/480 gpm	Replaced one of the original filters after rehabilitation and new media.
Filter 3 [(b)]	6'x18'/325 gpm	Original filter. Needs to be refurbished or replaced.

Notes:
(a) Based on maximum allowable loading rate of 3 gpm/SF
(b) Last remaining original filter.

The reliability of the third filter in its current condition is questionable. In the event one the large filters were removed from service, the operation of the plant would be more difficult and require much more attention during peak demand periods. One of the large filters can supply just under 700,000 gpd of capacity at the maximum allowable loading rate; peak summer flows are generally in this range. The filter runs would be much shorter with the frequency of backwashing much higher until the other unit could be repaired. A request for customers to reduce water usage could become necessary to avoid a water supply shortage under that condition.

The District has been trying to identify another used filter that could be refurbished and installed. The filter must be of similar size and a 4-cell unit to enable the system to operated in conjunction with the other filters during backwash. Finding a used filter that matches the parameters of the existing filters can be difficult. Options to replace the last remaining filter include:

- Purchase a new filter
- Identify/locate a used filter and refurbish
- Rehabilitate the existing filter (the last remaining existing filter is smaller than Filters 1 & 2).

Rehabilitating the existing filter to provide redundancy will be a much less costly project than replacing the filter with a new or refurbished filter. The existing combination of one large and one small filter will meet current water demands and provide full redundancy of capacity. Adding a larger filter will provide redundance and additional capacity and would be preferred without any financial constraints. If additional capacity were necessary, future growth should pay for that capacity, not existing customers. Rehabilitation of the last original filter is recommended and included in the CIP.

Generator. The existing 65 Kw propane generator was installed as part of the electrical upgrades in the late 1990s. The unit has minimal hours on it and is in good condition. With the addition of the variable speed pumps the generator can operate the plant at full rated capacity. The unit is maintained well and should remain reliable.

SCADA Controls. The SCADA system was upgraded as part of the Reservoir Replacement Project. The system is expandable and additional points can be added over time. A spare programable logic controller are recommended to have on had in case of a failure or the units become discontinued over time.

Cost estimates for the improvements are summarized later in this report.

Transmission and Distribution System

There are approximately 16 miles of pipeline within the District service area. Description of the facilities is included in the this section.

Asset Inventory and Condition Assessment - The asset inventory was developed based on the existing drawings and the geographical information system (GIS) that has been under development for the last three years. The majority of the system was constructed using asbestos concrete (AC) pipe.

When installed properly, particularly proper bedding material, the AC pipe has a long useful life and provides reliable service. AC pipe is not susceptible to corrosion like steel pipe. AC pipe is susceptible to point loads such as rocks that may place a point load on the pipeline or roots from trees that grow into the trench and can put stress on the pipe. The largest leaks encountered in the District were caused by these types of failures. The second failure mode occurs as the pipe becomes saturated and weaken as the pipe ages. Pipeline failures within the District's system have not been observed.

Useful life estimates vary for AC pipe. The United States Environmental Protection Agency (USEPA), the California Public Utilities Commission (CPUC) and the American Water Works Association (AWWA) have published useful service life estimates for pipelines. The AWWA and CPUC estimates are specific to AC pipe. The AWWA includes a long and short useful service life which is based on a regional basis to account for varying soil types as shown in Table 2.

Table 2
Useful Life Estimates – Asbestos Concrete Pipe

Entity	Years
CPUC	60
USEPA	35-40
AWWA	75 - 105

The estimated useful life values in Table 2 are from the following references:

CPUC – Depreciation Procedures for Small Water and Sewer System Utilities – Standard Practice U-4-SM, 2000
USEPA – Asset Management: A Handbook for Small Water Systems, 2003
AWWA – Buried No Longer – Confronting America's Water Infrastructure Challenge, 2012

The wide span of estimated useful lives is noteworthy. The majority of the AC pipe in the District is 50-60 years old. Based on the performance the estimate from USEPA is likely very conservative. AC pipe was commonly used from the early 1960s through the 1970's. Therefore most of the AC pipelines installed throughout the United States has not been in operation much more than 50 to 60 years, so the useful life estimates are just that, and are affected by the soil conditions, construction quality and water pressure/quality.

A summary of the estimated remaining useful life of the pipelines within the District is included later in this report.

CAPITAL IMPROVEMENT PLAN

The major system assets were summarized in pervious sections of the report. This section includes an estimate of the remaining useful life of the various assets identified in the previous section. Costs to replace facilities are identified with the goal providing and maintaining the necessary level of service while minimizing operations and maintenance costs. Planning level cost estimates are included for various projects over time to provide guidance for budgeting capital improvements. This CIP projects can be used to help guide future revenue requirements for the project in identifying funding including grants, loans and water rate revenue.

Useful Life Estimates - There are many factors affecting the useful life of infrastructure assets. Factors such as installation, materials, poor maintenance, and corrosive environment will shorten an asset's life, while factors such as good installation practices, high quality materials, proper routine and preventative maintenance tend to lengthen an asset's life. Because of these site-specific characteristics, asset life must be viewed on a case-by-case basis and the particular conditions that are site specific.

Water treatment plant assets are relatively easy to assess due to accessibility enabling a thorough condition assessment during daily inspections and operation activities. Pipelines are more difficult to assess other than utilizing historical leak records and investigation of the failure mode.

Useful life estimates from the United States Environmental Protection Agency, the California Public Utilities Commission and the American Water Works Association are available but have a high degree of variability. These typical values have been used as guidance for this analysis and modified based on engineering judgement and the onsite condition assessment of actual conditions. The asset inventory and condition assessment were used to develop useful life estimates included in Table 3 along with cost estimates. The higher useful life estimate by the AWWA (see Table 2) was used for the AC pipe in the system, which makes up the majority of the pipelines.

Cost Estimates – Planning level cost estimates have been developed for the water treatment plant facilities based on specific projects that have been identified. Distribution system improvements are based on unit costs on a per inch diameter for pipelines and unit costs for hydrants and service lines. Unit cost for pipelines was increased by 25-percent in County Roadways to account for additional plan review, testing and inspection costs the result when working in the County rights-of-way. A 25-percent allowance was included in each project for soft costs including admin, engineering and construction administration and inspection.

Capital Improvement Projects - Capital improvement projects are described in this section for the water system. The timing of the projects will likely vary from the target dates provided herein for guidance and planning purposes. Costs presented are based on current Engineering News Record 20-Cities Construction Cost Index (ENR 20 CCI) of 13,000 as of mid-May 2022. The ENR 20 CCI is an index used for adjusting project costs based on inflation specific to the construction industry. Costs of future projects identified are not escalated and inflation should be accounted for in budgeting and rate setting.

Water Treatment Plant. The water treatment plant improvements identified previously in this report are included in the recommended improvements. The District has invested in the WTP on a regular basis making improvements and replacing obsolete equipment and instrumentation. As a result, there are not a lot of major CIP type projects necessary at the WTP for continued operation. The CIP projects identified are intended to maintain the current level of service and will not increase the capacity of the facility. Future improvements to increase capacity should be borne by future development that would be served by the additional capacity. Planning level cost estimates have been provided for each of the improvements along with an anticipated timeline for the improvement. The District has historically budgets approximately $15k per year for replacement of short-term assets, and should remain in future budgets beyond the specific projects identified below.

Costs included below are planning level only. Detailed engineering evaluation will be necessary to refine costs on a project-by-project basis. Costs included below are reasonably conservative should provide adequate funding for future projects.

Headworks – Replace existing influent flow meter. Assumed to use the existing vault and pipeline between the canal and water treatment plant. The control valve was previously replaced and operates well.

Timeline: 1-5 years

Project Cost Estimate: $10,000

Floc/Sedbasin – Crack fill basin and recoat with gunite in areas requiring repair. Baffles have been replaced in previous projects. Gunite is applied at approximately 4-inches thick on the existing basin. It is likely that not all of the basin will require relining, but this is a conservative estimate.Timeline: 6-10 years

Project Cost Estimate: $40,000

Filter 1 & 2 Media Replacement – Filter media will wear out over time as the sand particles rub and erode becoming rounded and less effective in removing solids from the water. Both filters operate well at this time, but eventual replacement of the media will be necessary.

Timeline: 1-5 years

Project Cost Estimate: $20,000 per filter

Replacement of the media in the existing filters can be done in subsequent years depending on budget constraints. Media should be replaced in Filter 2 first which performs well, but shows signs of turbidity breakthrough sooner than Filter 1.

Filter 3 Rehab – Filter 3 is the last remaining original filter installed in the 1970's. The media was replaced in in the late 1990s, but the filter structure itself including internal baffles, underdrain and coating are original. The unit should be rehabilitated along with the filter face piping within the building which has sprung leaks in the past. Filter 3 has been a redundant filter and has not been in service since Filter 2 was installed about 10 years ago.

Timeline: 1-5 years

Project Cost Estimate: $50,000

An alternative would be to replace the filter with a new filter similar in size to Filters 1 & 2. This would add operational flexibility as well as capacity. A new filter and modifications to the building would be necessary. The installation of new filter matching the size of Filters 1 & 2 would be appropriate if the District wanted to increase system capacity, which isn't necessary at this time. A quote was not received for a new filter, but based on other similar project completed by Hydros Engineering, the project cost would likely be over $300,000 including engineering and construction.

Transmission and Distribution System. Ultimately the transmission and distribution system replacement represent a large future cost to the District. The timing of these costs is difficult to determine as evident by the large range of estimated useful life for pipeline facilities previously discussed.

Table 3 includes each segment and the estimated cost to replace, as well as the associated Annual Replacement Revenue Requirement (ARRR) to build a reserve adequate to replace the pipeline within the projected useful life timeline. The sum of each segments' ARRR was then added, that total was then divided by the number of existing service connections to calculate the rate impact. Figure 1 shows prioritization of the various pipelines. Higher priority pipelines will impact more customers than lower priority due to the system layout and lack of looping.

Utilizing the remaining useful life of the various pipelines within the District and assuming that the segment will be replaced by the end of its projected useful life would result in more than $100/month on each water bill beyond the current charges just to accumulate reserves for pipeline replacement. An increase of that magnitude would be devastating to the customers. This estimate is based on the longer estimate useful life proposed by the AWWA of 100 years.

For this analysis the pipelines were not upsized, which would add additional cost to existing residents. If the additional capacity was necessary, the cost to upsize the pipelines would be borne by developers requesting the capacity. As projects are completed, better cost data will be available. The District may desire to upsize portions of the system to increase fire flows, but that determination can be made during design based on economic factors.

Fire hydrant spacing within the District varies and in general the distance between hydrants is further than modern systems. For the cost estimate, new hydrants have been assumed to be located at approximately 500-foot intervals which would increase the number of hydrants from 63 to approximately 190.

Each service is metered to account for water consumption. Meters are replaced on an as needed basis when they quit registering or cannot be read due to fogging or scratches on the register crystal. Converting to a radio read type meter system has been discussed in the past with the Board, and the opinion was to continue utilizing manual read meters. Therefore, a meter replacement program has not been included in this CIP and it is assumed that meters will be replaced on an as needed basis.

Adjusting rates to accumulate reserves to replace all of the pipes as each segment reaches the end of the estimated useful life probably not realistic or palatable from a rate perspective. There is discussion on a regional and national level regarding the need to upgrade water pipeline infrastructure. There may be other

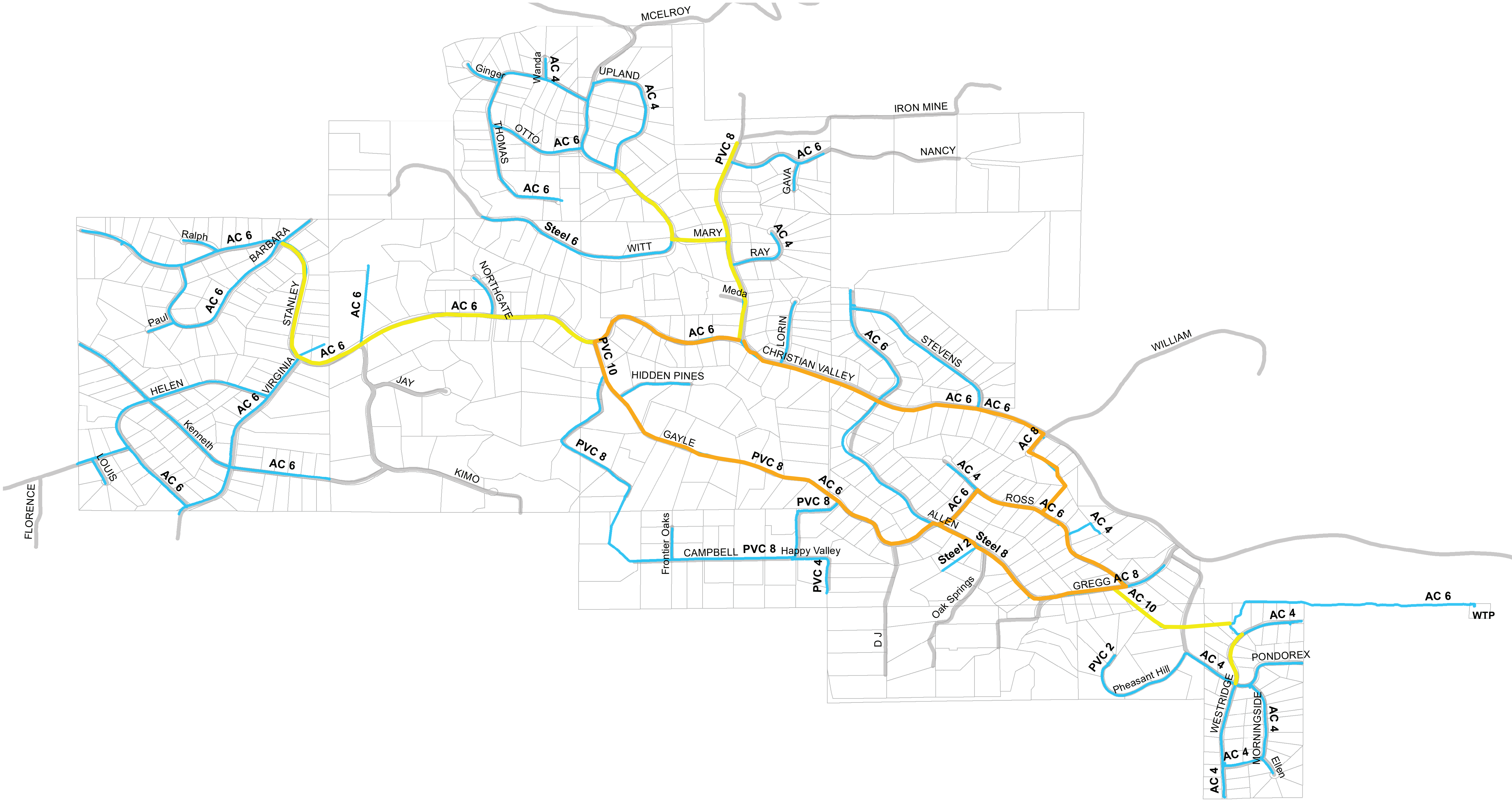
Table 3
Pipeline Replacement Costs

MAINLINE PIPE BY SIZE AND LOCATION	Time Frame	MAINLINE PIPE QTY, FT	UNIT	APPROX YR INSTALLED	CONDITION	District Road/County Road	MAINLINE PIPE UNIT COST ($/FT)	PIPELINE COST,$	MAINLINE VALVES APPROX QTY	MAINLINE VALVES UNIT COST ($) (a)	UNIT	VALVE COST	HYDRANTS APPROX QTY	HYDRANTS UNIT COST ($) (a)	UNIT	HYDRANT COST	SERVICE LINES APPROX QTY	SERVICE LINES UNIT COST ($) (a)	UNIT	SERVICE COST	REPLACEMENT COST	SOFT COSTS (rounded) @20%	TOTAL COST (Rounded up to nearest $1,000)	YEAR INSTALLED	APPROX AGE (YR)	USEFUL LIFE REMAINING LOW - CPUC	USEFUL LIFE REMAINING HIGH - AWWA	REMAINING LIFE, YRS LOW	REMAINING LIFE, YRS HIGH	Annual Replacement Revenue Requirement (ARRR), $/YR (Rounded up to nearest $1,000) LOW	Annual Replacement Revenue Requirement (ARRR), $/YR (Rounded up to nearest $1,000) HIGH
2-inch Diameter Pipeline (PVC) - Pheasant Hill	>10	1,740	LF	1990	Satisfactory	D	$ 60	$ 104,400	2	500	EA	$ 1,000	4	1,500	EA	$ 6,000	7	$ 2,500	EA	$ 17,500	$ 128,900	$ 25,800	$ 155,000	1990	28	60	105	32	77	$ 5,000	$ 3,000
2-inch Diameter Pipeline (PVC) - Mary Extension	>10	620	LF	2015	Satisfactory	D	$ 60	$ 37,200	1	500	EA	$ 500	2	1,500	EA	$ 3,000	2	$ 2,500	EA	$ 5,000	$ 45,700	$ 9,200	$ 55,000	2015	3	60	105	57	102	$ 1,000	$ 1,000
2-inch Diameter Pipeline (Steel) - Extension off of Allen	1-5	350	LF	1965	Poor	D	$ 60	$ 21,000	1	500	EA	$ 500	1	1,500	EA	$ 1,500	2	$ 2,500	EA	$ 5,000	$ 28,000	$ 5,600	$ 34,000	1965	53	55	55	2	2	$ 17,000	$ 17,000
4 - inch Diameter Pipeline (AC) - Gava	>10	370	LF	1965	Satisfactory	D	$ 100	$ 37,000	1	1,500	EA	$ 1,500	1	$ 3,600	EA	$ 3,600	7	$ 2,500	EA	$ 17,500	$ 59,600	$ 12,000	$ 72,000	1965	53	60	105	7	52	$ 11,000	$ 2,000
4 - inch Diameter Pipeline (AC) - Ginger	>10	430	LF	1965	Satisfactory	D	$ 100	$ 43,000	1	1,500	EA	$ 1,500	1	$ 3,600	EA	$ 3,600	5	$ 2,500	EA	$ 12,500	$ 60,600	$ 12,200	$ 73,000	1965	53	60	105	7	52	$ 11,000	$ 2,000
4 - inch Diameter Pipeline (AC) - Lorin	>10	880	LF	1965	Satisfactory	D	$ 100	$ 88,000	1	1,500	EA	$ 1,500	2	$ 3,600	EA	$ 7,200	14	$ 2,500	EA	$ 35,000	$ 131,700	$ 26,400	$ 159,000	1965	53	60	105	7	52	$ 23,000	$ 4,000
4 - inch Diameter Pipeline (AC) - Louis	>10	370	LF	1965	Satisfactory	D	$ 100	$ 37,000	1	1,500	EA	$ 1,500	1	$ 3,600	EA	$ 3,600	6	$ 2,500	EA	$ 15,000	$ 57,100	$ 11,500	$ 69,000	1965	53	60	105	7	52	$ 10,000	$ 2,000
4 - inch Diameter Pipeline (AC) - Morningside	>10	1,700	LF	1965	Satisfactory	D	$ 100	$ 170,000	2	1,500	EA	$ 3,000	4	$ 3,600	EA	$ 14,400	13	$ 2,500	EA	$ 32,500	$ 219,900	$ 44,000	$ 264,000	1965	53	60	105	7	52	$ 38,000	$ 6,000
4 - inch Diameter Pipeline (AC) - Northgate	>10	550	LF	1965	Satisfactory	D	$ 100	$ 55,000	1	1,500	EA	$ 1,500	2	$ 5,500	EA	$ 11,000	6	$ 2,500	EA	$ 15,000	$ 82,500	$ 16,500	$ 99,000	1965	53	60	105	7	52	$ 15,000	$ 2,000
4 - inch Diameter Pipeline (AC) - Paul	>10	300	LF	1965	Satisfactory	D	$ 100	$ 30,000	1	1,500	EA	$ 1,500	1	$ 5,500	EA	$ 5,500	6	$ 2,500	EA	$ 15,000	$ 52,000	$ 10,400	$ 63,000	1965	53	60	105	7	52	$ 9,000	$ 2,000
4 - inch Diameter Pipeline (AC) - Pondorex	>10	1,500	LF	1965	Satisfactory	D	$ 100	$ 150,000	2	1,500	EA	$ 3,000	3	$ 5,500	EA	$ 16,500	16	$ 2,500	EA	$ 40,000	$ 209,500	$ 41,900	$ 252,000	1965	53	60	105	7	52	$ 36,000	$ 5,000
4 - inch Diameter Pipeline (AC) - Ralph	>10	400	LF	1965	Satisfactory	D	$ 100	$ 40,000	1	1,500	EA	$ 1,500	1	$ 5,500	EA	$ 5,500	4	$ 2,500	EA	$ 10,000	$ 57,000	$ 11,400	$ 69,000	1965	53	60	105	7	52	$ 10,000	$ 2,000
4 - inch Diameter Pipeline (AC) - Ray	>10	845	LF	1965	Satisfactory	D	$ 100	$ 84,500	1	1,500	EA	$ 1,500	2	$ 5,500	EA	$ 11,000	12	$ 2,500	EA	$ 30,000	$ 127,000	$ 25,400	$ 153,000	1965	53	60	105	7	52	$ 22,000	$ 3,000
4 - inch Diameter Pipeline (AC) - Ross backcountry	>10	460	LF	1965	Satisfactory		$ 100	$ 46,000	1	1,500	EA	$ 1,500	1	$ 5,500	EA	$ 5,500	4	$ 2,500	EA	$ 10,000	$ 63,000	$ 12,600	$ 76,000	1965	53	60	105	7	52	$ 11,000	$ 2,000
4 - inch Diameter Pipeline (AC) - Upland	>10	1,770	LF	1965	Satisfactory	D	$ 100	$ 177,000	2	1,500	EA	$ 3,000	4	$ 5,500	EA	$ 22,000	11	$ 2,500	EA	$ 27,500	$ 229,500	$ 45,900	$ 276,000	1965	53	60	105	7	52	$ 40,000	$ 6,000
4 - inch Diameter Pipeline (AC) - Wanda	>10	280	LF	1965	Satisfactory	D	$ 100	$ 28,000	1	1,500	EA	$ 1,500	1	$ 5,500	EA	$ 5,500	5	$ 2,500	EA	$ 12,500	$ 47,500	$ 9,500	$ 57,000	1965	53	60	105	7	52	$ 9,000	$ 2,000
4 - inch Diameter Pipeline (AC) - Westridge	>10	3,000	LF	1965	Satisfactory	D	$ 100	$ 300,000	3	1,500	EA	$ 4,500	6	$ 5,500	EA	$ 33,000	29	$ 2,500	EA	$ 72,500	$ 410,000	$ 82,000	$ 492,000	1965	53	60	105	7	52	$ 71,000	$ 10,000
4 - inch Diameter Pipeline (PVC) - Frontier Oaks	>10	420	LF	2008	Satisfactory	D	$ 100	$ 42,000	1	1,500	EA	$ 1,500	1	$ 5,500	EA	$ 5,500	4	$ 2,500	EA	$ 10,000	$ 59,000	$ 11,800	$ 71,000	2008	10	60	105	50	95	$ 2,000	$ 1,000
4 - inch Diameter Pipeline (PVC) - Happy Valley	>10	880	LF	2008	Satisfactory	D	$ 100	$ 88,000	1	1,500	EA	$ 1,500	2	$ 5,500	EA	$ 11,000	3	$ 2,500	EA	$ 7,500	$ 108,000	$ 21,600	$ 130,000	2008	10	60	105	50	95	$ 3,000	$ 2,000
6-inch Diameter Pipeline (AC) - WTP to storage	>10	2,850	LF	1965	Satisfactory	D	$ 120	$ 342,000	3	3,000	EA	$ 9,000	6	$ 5,500	EA	$ 33,000		$ 2,500	EA	$ -	$ 384,000	$ 76,800	$ 461,000	1965	53	60	105	7	52	$ 66,000	$ 9,000
6-inch Diameter Pipeline (AC) - Allen from Gayle to Stevens	>10	3,820	LF	1965	Satisfactory	D	$ 120	$ 458,400	4	3,000	EA	$ 12,000	8	$ 5,500	EA	$ 44,000	28	$ 2,500	EA	$ 70,000	$ 584,400	$ 116,900	$ 702,000	1965	53	60	105	7	52	$ 101,000	$ 14,000
6-inch Diameter Pipeline (AC) - Barbara	>10	3,000	LF	1965	Satisfactory	D	$ 120	$ 360,000	3	3,000	EA	$ 9,000	6	$ 5,500	EA	$ 33,000	22	$ 2,500	EA	$ 55,000	$ 457,000	$ 91,400	$ 549,000	1965	53	60	105	7	52	$ 79,000	$ 11,000
6-inch Diameter Pipeline (AC) - Christian Valley Rd (William to Stanley)	>10	3,600	LF	1965	Satisfactory	C	$ 150	$ 540,000	4	3,000	EA	$ 12,000	8	$ 5,500	EA	$ 44,000	33	$ 2,500	EA	$ 82,500	$ 678,500	$ 135,700	$ 815,000	1965	53	60	105	7	52	$ 117,000	$ 16,000
6-inch Diameter Pipeline (AC) - Christian Valley Rd (Stanley to Mary)	6-10	1,400	LF	1965	Satisfactory	C	$ 150	$ 210,000	2	3,000	EA	$ 6,000	3	$ 5,501	EA	$ 16,503	8	$ 2,500	EA	$ 20,000	$ 252,503	$ 50,600	$ 304,000	1966	52	60	105	8	53	$ 38,000	$ 6,000
6-inch Diameter Pipeline (AC) - Christian Valley Rd (Mary to Nacy)	>10	1,100	LF	1965	Satisfactory	C	$ 150	$ 165,000	2	3,000	EA	$ 6,000	3	$ 5,502	EA	$ 16,506	9	$ 2,500	EA	$ 22,500	$ 210,006	$ 42,100	$ 253,000	1967	51	60	105	9	54	$ 29,000	$ 5,000
6-inch Diameter Pipeline (AC) - Florence	>10	590	LF	1965	Satisfactory	C	$ 150	$ 88,500	1	3,000	EA	$ 3,000	2	$ 5,500	EA	$ 11,000	3	$ 2,500	EA	$ 7,500	$ 110,000	$ 22,000	$ 132,000	1965	53	60	105	7	52	$ 19,000	$ 3,000
6-inch Diameter Pipeline (AC) - Gayle	>10	2,790	LF	1965	Satisfactory	D	$ 120	$ 334,800	3	3,000	EA	$ 9,000	6	$ 5,500	EA	$ 33,000	20	$ 2,500	EA	$ 50,000	$ 426,800	$ 85,400	$ 513,000	1965	53	60	105	7	52	$ 74,000	$ 10,000
6-inch Diameter Pipeline (AC) - Gregg from 10" toward CV Rd	>10	650	LF	1965	Satisfactory	D	$ 120	$ 78,000	1	3,000	EA	$ 3,000	2	$ 5,500	EA	$ 11,000	7	$ 2,500	EA	$ 17,500	$ 109,500	$ 21,900	$ 132,000	1965	53	60	105	7	52	$ 19,000	$ 3,000
6-inch Diameter Pipeline (AC) - Helen	>10	3,200	LF	1965	Satisfactory	C	$ 150	$ 480,000	4	3,000	EA	$ 12,000	7	$ 5,500	EA	$ 38,500	23	$ 2,500	EA	$ 57,500	$ 588,000	$ 117,600	$ 706,000	1965	53	60	105	7	52	$ 101,000	$ 14,000
6-inch Diameter Pipeline (AC) - Kenneth	>10	3,400	LF	1965	Satisfactory	C	$ 150	$ 510,000	4	3,000	EA	$ 12,000	7	$ 5,500	EA	$ 38,500	33	$ 2,500	EA	$ 82,500	$ 643,000	$ 128,600	$ 772,000	1965	53	60	105	7	52	$ 111,000	$ 15,000
6-inch Diameter Pipeline (AC) - Mary	>10	3,100	LF	1965	Satisfactory	C	$ 150	$ 465,000	4	3,000	EA	$ 12,000	7	$ 5,500	EA	$ 38,500	25	$ 2,500	EA	$ 62,500	$ 578,000	$ 115,600	$ 694,000	1965	53	60	105	7	52	$ 100,000	$ 14,000
6-inch Diameter Pipeline (AC) - Nancy	>10	1,150	LF	1965	Satisfactory	D	$ 120	$ 138,000	2	3,000	EA	$ 6,000	3	$ 5,500	EA	$ 16,500	5	$ 2,500	EA	$ 12,500	$ 173,000	$ 34,600	$ 208,000	1965	53	60	105	7	52	$ 30,000	$ 4,000
6-inch Diameter Pipeline (AC) - Otto	>10	1,100	LF	1965	Satisfactory	D	$ 120	$ 132,000	2	3,000	EA	$ 6,000	3	$ 5,500	EA	$ 16,500	6	$ 2,500	EA	$ 15,000	$ 169,500	$ 33,900	$ 204,000	1965	53	60	105	7	52	$ 30,000	$ 4,000
6-inch Diameter Pipeline (AC) - Ross	>10	2,200	LF	1965	Satisfactory	D	$ 120	$ 264,000	3	3,000	EA	$ 9,000	5	$ 5,500	EA	$ 27,500	30	$ 2,500	EA	$ 75,000	$ 375,500	$ 75,100	$ 451,000	1965	53	60	105	7	52	$ 65,000	$ 9,000
6-inch Diameter Pipeline (AC) - Stanley (Christian Valley Rd to Gayle)	>10	1,900	LF	1965	Satisfactory	C	$ 150	$ 285,000	2	3,000	EA	$ 6,000	4	$ 5,500	EA	$ 22,000	14	$ 2,500	EA	$ 35,000	$ 348,000	$ 69,600	$ 418,000	1965	53	60	105	7	52	$ 60,000	$ 9,000
6-inch Diameter Pipeline (AC) - Stanley (Gayle to Virgina)	6-10	3,500	LF	1965	Satisfactory	C	$ 150	$ 525,000	4	3,000	EA	$ 12,000	7	$ 5,500	EA	$ 38,500	28	$ 2,500	EA	$ 70,000	$ 645,500	$ 129,100	$ 775,000	1965	53	60	105	7	52	$ 111,000	$ 15,000
6-inch Diameter Pipeline (AC) - Stanley (Virginia to End of Line)	>10	4,000	LF	1965	Satisfactory	C	$ 150	$ 600,000	4	3,000	EA	$ 12,000	8	$ 5,500	EA	$ 44,000	28	$ 2,500	EA	$ 70,000	$ 726,000	$ 145,200	$ 872,000	1965	53	60	105	7	52	$ 125,000	$ 17,000
6-inch Diameter Pipeline (AC) - Stevens	>10	2,000	LF	1965	Satisfactory	D	$ 120	$ 240,000	2	3,000	EA	$ 6,000	4	$ 5,500	EA	$ 22,000	20	$ 2,500	EA	$ 50,000	$ 318,000	$ 63,600	$ 382,000	1965	53	60	105	7	52	$ 55,000	$ 8,000
6-inch Diameter Pipeline (AC) - Thomas	>10	3,200	LF	1965	Satisfactory	D	$ 120	$ 384,000	4	3,000	EA	$ 12,000	7	$ 5,500	EA	$ 38,500	26	$ 2,500	EA	$ 65,000	$ 499,500	$ 99,900	$ 600,000	1965	53	60	105	7	52	$ 86,000	$ 12,000
6-inch Diameter Pipeline (AC) - Virginia	>10	2,650	LF	1965	Satisfactory	C	$ 150	$ 397,500	3	3,000	EA	$ 9,000	6	$ 5,500	EA	$ 33,000	18	$ 2,500	EA	$ 45,000	$ 484,500	$ 96,900	$ 582,000	1965	53	60	105	7	52	$ 84,000	$ 12,000
6-inch Diameter Pipeline (PVC) - Hidden Pines	>10	800	LF	2008	Satisfactory	D	$ 120	$ 96,000	1	3,000	EA	$ 3,000	2	$ 5,500	EA	$ 11,000	3	$ 2,500	EA	$ 7,500	$ 117,500	$ 23,500	$ 141,000	2008	10	60	105	50	95	$ 3,000	$ 2,000
6-inch Diameter Pipeline (Steel) - Witt	1-5	2,300	LF	1965	Poor	D	$ 120	$ 276,000	3	3,000	EA	$ 9,000	5	$ 5,500	EA	$ 27,500	12	$ 2,500	EA	$ 30,000	$ 342,500	$ 68,500	$ 411,000	1965	53	55	55	2	2	$ 206,000	$ 206,000
8-inch Diameter Pipeline (AC) - From Ross to William and CV Road	>10	1,350	LF	1965	Satisfactory	D	$ 160	$ 216,000	2	3,500	EA	$ 7,000	3	$ 5,500	EA	$ 16,500	8	$ 2,500	EA	$ 20,000	$ 259,500	$ 51,900	$ 312,000	1965	53	60	105	7	52	$ 45,000	$ 6,000
8-inch Diameter Pipeline (PVC) - Campbell	>10	3,800	LF	2008	Satisfactory	D	$ 160	$ 608,000	4	3,500	EA	$ 14,000	8	$ 5,500	EA	$ 44,000	15	$ 2,500	EA	$ 37,500	$ 703,500	$ 140,700	$ 845,000	2008	10	60	105	50	95	$ 17,000	$ 9,000
8-inch Diameter Pipeline (PVC) - To CCC	>10	260	LF	2010	Satisfactory	C	$ 200	$ 52,000	1	3,500	EA	$ 3,500	1	$ 5,500	EA	$ 5,500		$ 2,500	EA	$ -	$ 61,000	$ 12,200	$ 74,000	2010	8	60	105	52	97	$ 2,000	$ 1,000
8-inch Diameter Pipeline (PVC) - Gayle Loop	>10	2,400	LF	1965	Satisfactory	D	$ 160	$ 384,000	3	3,500	EA	$ 10,500	5	$ 5,500	EA	$ 27,500	16	$ 2,500	EA	$ 40,000	$ 462,000	$ 92,400	$ 555,000	1965	53	60	105	7	52	$ 80,000	$ 11,000
8-inch Diameter Pipeline (PVC) - Sunshine Meadow	>10	2,300	LF	2008	Satisfactory	D	$ 160	$ 368,000	3	3,500	EA	$ 10,500	5	$ 5,500	EA	$ 27,500	6	$ 2,500	EA	$ 15,000	$ 421,000	$ 84,200	$ 506,000	2008	10	60	105	50	95	$ 11,000	$ 6,000
8-inch Diameter Pipeline (Steel) - Gregg to Allen	1-5	2,300	LF	1965	Poor	D	$ 160	$ 368,000	3	3,500	EA	$ 10,500	5	$ 5,500	EA	$ 27,500	23	$ 2,500	EA	$ 57,500	$ 463,500	$ 92,700	$ 557,000	1965	53	55	55	2	2	$ 279,000	$ 279,000
10-inch Diameter Pipeline (AC) - Main system feed (cross country)	6-10	1,450	LF	1965	Satisfactory	NA	$ 180	$ 261,000	2	5,000	EA	$ 10,000	3	$ 5,500	EA	$ 16,500		$ 2,500	EA	$ -	$ 287,500	$ 57,500	$ 345,000	1965	53	60	105	7	45	$ 50,000	$ 8,000
10-inch Diameter Pipeline (PVC) - Gayle from Sunshine Meadow to Stanley	>10	480	LF	2008	Satisfactory	D	$ 200	$ 96,000	1	5,000	EA	$ 5,000	1	$ 5,500	EA	$ 5,500		$ 2,500	EA	$ -	$ 106,500	$ 21,300	$ 128,000	2008	10	60	105	50	95	$ 3,000	$ 2,000
																													Total	$ 2,540,000	$ 814,000
																													Avg Monthly Increase per Customer	$ 339	$ 109
																												No. Cust.	625		

Notes:

1) All costs based on 20 Cities ENR Construction Cost Index of 13,000 - May 2022

2) Unit cost for pipelines in County roads increased by 20% to account for County requirements including review, testing and inspections.



Christian Valley Park CSD 2018 CIP

Figure 1 – Distribution system – Pipeline prioritization

Roads | Parcels | Low Priority Pipelines
High Priority Pipelines | Medium Priority Pipelines

NORTH
Not To Scale

COORDINATE SYSTEM:
CALIFORNIA STATE PLANE, ZONE II, NAD83, U.S. SURVEY FEET

SOURCES:
- HYDROS ENGINEERING
- PLACER COUNTY GIS DATA

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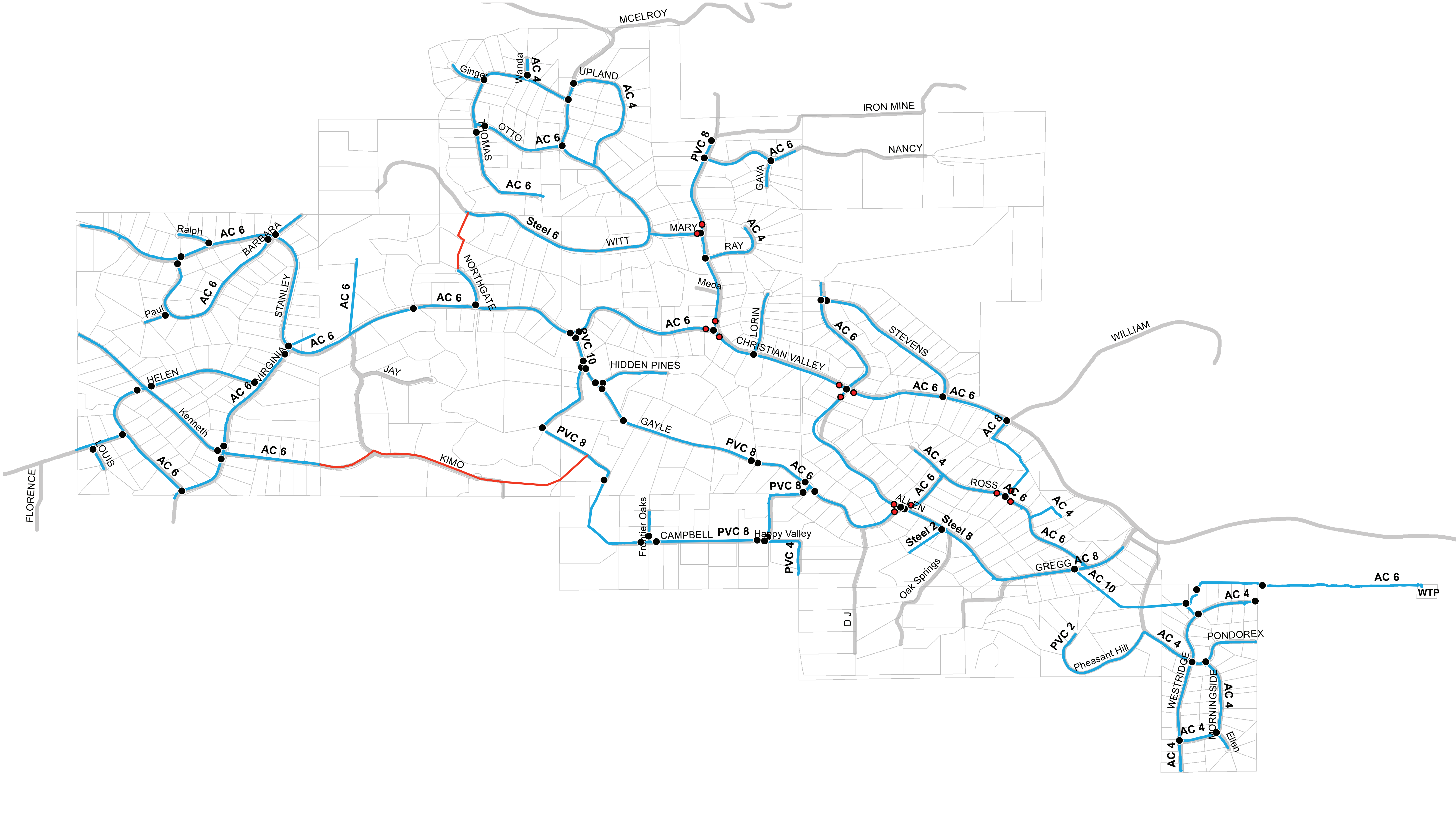
sources of funding beyond water rates at the State or Federal level. New technology is also being developed involving in place (in situ) rehabilitation that avoids or minimizes excavation. Lastly, the actual longevity of the pipes may be longer than estimated. For the purpose of this CIP the upper end of the useful life was used; the risk being if the actual useful is less than that used for cost estimating.

Over time the frequency of pipeline failures will increase as the system ages. When this occurs is unknown, but replacing significant portion of the distribution system by that point is unlikely. A category of improvements deemed Reliability and Redundancy Improvements (RRI) has been identified throughout the distribution system. The RRIs include the creation of loops and addition of valves to provide operations staff the ability to isolate smaller portions of the system when making repairs. Shutdowns resulting in service interruptions will be reduced. The RRIs will reduce the urgency of full pipeline replacement projects and are shown on Figure 2. Projects include the RRIs discussed below in addition to the pipeline replacement projects.

Recommended projects are summarized herein along with a possible timeline. As noted below, there may be a need to make adjustments to reduce the costs depending on rate impacts and it is likely that the schedule outlined in this report will need to be modified based on available funding. Figure 3 includes the projects identified between the 1-10 year horizon.

The 1-5 year projection is the most important to create a rate structure that provides funding for the projects. Proposition 218 limits rate setting to a maximum of 5-years in California. There are approximately $1.3 million dollars of projects identified within the 1-5 year horizon. These are projects that address known problem areas previously discussed as well as reliability and redundancy projects. The CIP can be used for projecting future rates and identifying funding sources. There may be a need to reconsider the projects and possible delay or reduce the scope of the project(s) to reduce costs.



NORTH
Not To Scale

COORDINATE SYSTEM:
CALIFORNIA STATE PLANE, ZONE II, NAD83, U.S. SURVEY FEET

SOURCES:
- HYDROS ENGINEERING
- PLACER COUNTY GIS DATA

Christian Valley Park CSD 2018 CIP

Figure 2 - Reliability Improvement Projects

Proposed Valves	Roads	Existing Mainline Valves
Proposed Pipelines	Parcels	Existing Pipelines

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The 6-10 year interval includes approximately $2.3 million of improvements. The distribution system makes about $2.2 million of which $750,000 includes the Kenneth Loop. The loop is a large project and would provide a significant level of redundancy to the system, although may be cost prohibitive.

Projects beyond 10-years will consist of addressing problematic areas in the system as they arise, similar to those already known to be problematic. Estimated costs for replacement of these pipelines in today's dollars is about $13.8 million. Accuracy of the cost estimates decreases the further out the project planning horizon moves. Figure 3 includes the various projects throughout the District between the 1-10 years.

1 to 5 Year Projects – These include the elimination of known problem areas. These include:

- Allen Drive Extension – Replacement of a 2-inch diameter steel pipeline extending from Allen up to three homes at the top of the hill. The pipeline goes cross country through easements on private property. The pipeline has exhibited leaks and is in poor condition. Additionally there are pressure problems due to buildup of nodules restricting flow in the pipe. This section of pipe runs through private property, presumably through an easement which will enable replacement of the pipe along the same alignment. Approximately 150 feet of the end of the line was replaced in May 2022.

- Allen Drive – Replace 8-inch mortar lined and coated steel pipe. This type is uncommon within the District's system. There have been large leaks in past particularly at service connections in the past, however it has been a number of years since the last problem.

- Witt Road – Replace 6-inch mortar lined and coated steel pipe (similar to a portion of Allen Drive). Pipe has leaked in past, steel is susceptible to corrosion. No isolation valve on Witt, shutdown affects large area including Mary, Thomas, Upland, Otto, etc. In May 2022 a small leak was repaired on the main line. It was on steel pipe, so there are at least two different types of pipe material along the Witt Road alignment.

- Reliability/Redundancy Project – Valve Clusters - Install valve clusters to provide ability divert flow and isolate problems to minimize shutdowns. See Figures 2 and 3 for proposed locations. Original construction drawings show that valves were planned for some of these areas, however they have not been found. During the course of the work, the valves may be present and could possibly eliminate some of these projects.

Total estimated cost of the projects in 2022 dollars is $1.3 million and distributed as shown on Table 4

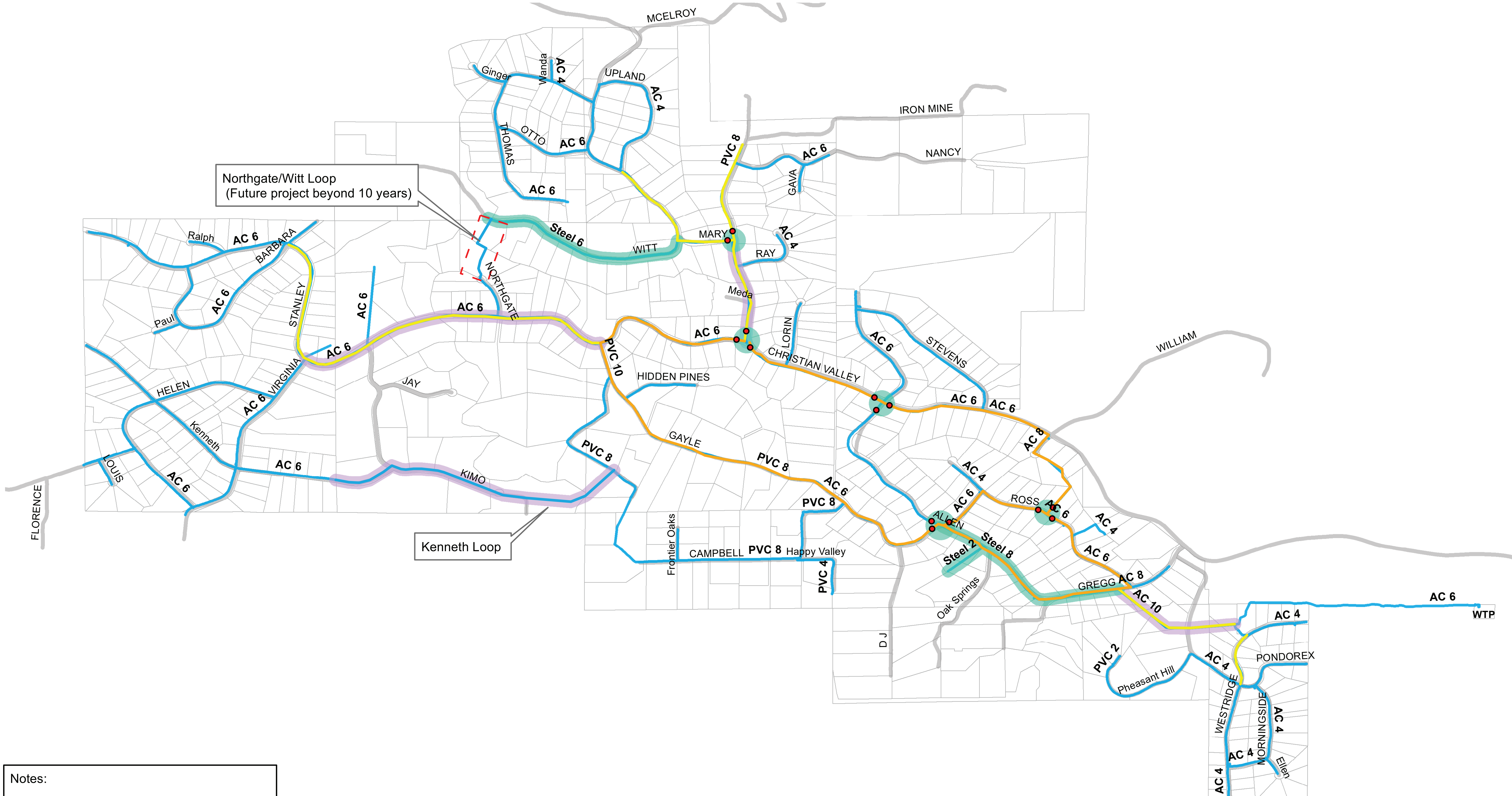
6 to 10 Year Projects – Projects in this time period include some of the high priority pipeline segments as shown in Figure 3. To date these facilities have not been problematic but are critical to maintaining service. Replacement of these mains should be reevaluated as time goes on, other areas of the system may become problematic as they continue to age. If that is the case, funding for projects listed below could be reallocated. Projects include:

Table 4
10-Year Project Costs

Numerical Year	1	2	3	4	5	6	7	8	9	10
Calendar Year	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**
Water Treatment Plant										
1 to 5 Years										
Headworks Flow Meter	$ 10,000									
Filter 3 Rehab		$ 50,000								
Media Replacement Filters 1 & 2				$ 20,000	$ 20,000					
General Repair/Replace Short Term Assets	$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000					
6 to 10 Years										
Floc/Sed Basin Rehab - Gunite						$ 40,000				
General Repair/Replace						$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000
Transmission and Distribution										
1 to 5 Years										
2-inch Extension on Allen			$ 35,000							
6-inch - Witt Rd Replacement				$ 410,000						
8-inch - Allen Replacement (steel portion)			$ 560,000							
Valves - Total of 5 - (Reliability/Redundancy Project)	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000					
6 to 10 Years										
10-inch From Reservoir to Greg						$ 345,000				
6-inch - CVR (Stanley to Mary)							$ 300,000			
6-inch - Stanley (Gayle to Virginia)								$ 775,000		
Kenneth Loop (Reliability/Redundancy Project)									$ 350,000	$ 400,000

Notes:
1) All costs based on 2022 ENR 20 Cities Construction Cost Index - 13,000 (mid-May 2022)

1 to 5 Total		**6 to 10 Total**	
Dist	$ 1,130,000	Dist	$ 2,170,000
Plant	$ 175,000	Plant	$ 115,000
Total	**$ 1,305,000**	**Total**	**$ 2,285,000**



Notes:

1) Existing valves not shown

NORTH

Not To Scale

COORDINATE SYSTEM:
CALIFORNIA STATE PLANE, ZONE II, NAD83, U.S. SURVEY FEET

SOURCES:
- HYDROS ENGINEERING
- PLACER COUNTY GIS DATA

Christian Valley Park CSD 2018 CIP

Figure 3 – One to Ten Year CIP Projects (with pipeline priority)

1 - 5 Years | 6 - 10 Years | Proposed Valves | Roads | Parcels
High Priority Pipeline | Medium Priority Pipeline | Low Priority Pipeline

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- Stanley From Gayle Road to Virginia – Replacement 6-inch diameter pipe. This is a critical section of pipeline. Historically has not been problematic, but is currently the only segment of pipeline that service the eastern portion of the District. There have been service line leaks in on this segment. The construction of the Kenneth Loop would reduce the importance of this segment. If the Kenneth Loop were constructed, reevaluation of whether this segment would be needed from a reliability and redundancy perspective.

- Christian Valley Road From Stanley to Mary – Replace 6-inch diameter pipeline from Stanley to Mary. This segment provides service to the northern end of the District. There is a creek crossing as well. Failure on this segment would interrupt service to the California Conservation Corp, Upland, Mary, Thomas, etc. Historically this segment has not been problematic. The Wit Road loop to Northgate would provide redundancy to this portion of the District's service area, and could delay the necessity of this project.

- Reliability/Redundancy Project –Kenneth Loop - Intertie the east and west side of the system with a parallel pipeline to the Stanley main. This improvement would provide a substantial amount of reliability. There is also the potential to add approximately 10 new connections if there was a desire by the land owners to receive service. Acquiring easements and right of way will be necessary and could be time consuming and should occur early in the planning phase. See Figures 2 and 3 for the project area.

Total estimated cost of the 6-10 year projects in 2022 dollars is $2.2 million and distributed as shown on Table 4.

> 10 Year Projects – Projects in this realm will address areas of the system that become problematic. As noted, if all of the distribution system projects identified between 1-10 years were completed, over $13.5 million of projects will remain and consist primarily of pipeline replacement projects.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions and recommendations resulting from the CIP are included in this section.

Conclusions

Conclusions include:

1. The District owns and operates the water system including treatment plant, storage reservoir and transmission/distribution system. The system complies with State and Federal drinking water requirements.
2. Over the years improvements have been made to the water treatment plant in increase reliability and meet changing regulatory requirements. There have not been many major distribution system projects other than the Gayle Loop project. There are about 16 miles of pipe in the system. The average age is just over 50 years. There are known problem spots in the distribution system that have a high occurrence of leaks, but overall the system operates well.
3. The District is has replaced the original inground reservoir with two steel tanks. The 2013 rate increase covers debt service on the storage tank project.

4. The majority of the system was constructed using AC pipe. The estimated useful life of AC pipe varies, but the AWWA suggests that in the Western United States it can be up to 105 years on the upper range. 105 years was used as the projected useful life for this analysis, but considered the least conservative approach from a funding perspective.
5. Projects have been identified within the treatment plant and distribution system. Funds should be accumulated for pipeline repair and replacement. The majority of the costs are in the distribution system, with a small portion of the remainder at the water treatment plant.
6. Improvements have been identified for the 1-5 year, 6-10 year and >10 year time horizons.
7. An estimate of the average annual repair and replacement revenue requirement to customer bills would need to increase by nearly $100 per month in order to accumulate reserves to replace all of the pipelines before the end of their useful life. Such an increase is not realistic and some type of loan(s) will likely be necessary.
8. A CIP plan was developed for the next 10 years. Five year increments 1 to 5 and 6 to 10 years were used.
9. An additional $13.5 million of pipeline work is estimated beyond 2032.

Recommendations include:

1. The District Board of Directors review this Draft CIP Plan. If acceptable, provide the information to the Financial Consultant for evaluation of rate impacts. Based on the results of the rate evaluation, reevaluate CIP and determine if the plan should be adjusted to increase more or less budget for projects.
2. Utilize the finalized CIP for budgeting and setting rates for a repair and replacement program.
3. Proceed with recommend CIPs from the finalized CIP; adjust priority of the replacement projects based on system status and operation.
4. Adjust the CIP as projects develop based on system performance and revenue requirements as time goes on.
5. The reliability projects listed should be a priority to provide operational flexibility and limit the number of affected customers in the event of a problem in the distribution system.