RIO ALTO WATER DISTRICT
LONG RANGE PLANNING (RLRP)
DRINKING AND WASTEWATER SYSTEMS

2024

LIST OF ACRONYMS

ADU	Accessory Dwelling Unit
ADWF	Average Dry Weather Flow
AWWA	American Water Works Association
CCR	Consumer Confidence Report
CEC	California Energy Commission
DWR	Department of Water Resources
ELAP	Environmental Laboratory Accreditation Program
EMS	Emergency Storage
EPA	Environmental Protection Agency
ES	Equalizing Storage
FFS	Fire Flow Storage
GSP	Groundwater Sustainability Plan
HE	Household Equivalent
I&I	Inflow and Infiltration
kW	Kilowatt
LAIF	Local Agency Investment Fund
LPSS	Low Pressure Sewer System
MCL	Maximum Contaminate Level
MDD	Maximum Daily Demand
MG	Million Gallons
MGD	Million Gallons per Day
MHI	Median Household Income
NPDES	National Pollutant Discharge Elimination System
OIT	Operator in Training
OSHA	Occupational Safety and Health Standards
PER	Preliminary Engineering Report

PFAS	Per and Polyfluoralkyl Substances
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctane Sulfonic Acid
PG&E	Pacific Gas & Electric
PHD	Peak Hourly Demand
PWWF	Peak Wet Weather Flow
PWWF-n	Average Peak Wet Weather Flows for a Normal Year
PWWF-w	Average Peak Wet Weather Flows for a Wet Year
RAS	Return Activated Sludge
RAWD	Rio Alto Water District
RCAC	Rural Community Assistance Corporation
ROWD	Report of Waste Discharge
SB	Senate Bill
SCADA	Supervisory Control & Data Acquisition
SDWA	Safe Water Drinking Act
SE &CAP	Sewer System Evaluation and Capacity Assurance Plan
SGMA	Sustainability Groundwater Management Act
SRF	State Revolving Fund (CA)
SWRCB	State Water Resources Control Board (CA)
USDA	United States Department of Agriculture
WAS	Waste Activated Sludge
WWTP	Wastewater Treatment Plant

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2024
(Data through 2024)

1.1 Existing Water Facilities:

The Rio Alto Water District provides potable water and secondary treated wastewater to the community of Lake California. The water system consists of 3 active producing wells, 4 storage reservoirs, approximately 128,715 linear feet of distribution lines, and 247 valves. Wells 5 & 6 pump to the storage tanks located at the southern end of River View in tract 1017. Well 4 feeds directly into the distribution line located on Freshwater Drive. The Distribution system is gravity fed from these storage tanks to the customers through distribution lines and property laterals. The Distribution system is divided into two zones, the upper zone and the lower zone. The upper zone consists of all the tracts excluding tract 1006 which is located in the lower zone. The booster station is located on north River View Drive before it starts down the hill toward Steelhead Landing. The booster station is now being used as a pressure regulating system to the lower zone. Well 5 currently is pumped to the upper tanks but has the capability of being used as a pressure reducing system to feed tract 1006 in the lower zone as redundancy to the booster station. The 3 wells have the combined estimated capability of pumping 2,850 gallons per minute or 4.104MG per 24hour period.

1.2 Water Supply and Water Rights:

The community of Lake California is located just north of the Red Bluff Arch which forms the hydrologic boundary between the Redding and Sacramento Valley Groundwater Basins. Rio Alto Water District provides potable groundwater to the community of Lake California. Rio Alto does not use any surface water, it relies on 3 production wells to supply the community with potable drinking water. Rio Alto Water District draws its groundwater from the Redding Groundwater Basin, Bowman Sub-basin. The Redding Groundwater Basin is estimated to be a 5.5million acre-foot aquifer.

1.3 Existing Water Demands:

Total <u>water produced</u> for the calendar year 2024 was 183.612 million gallons and the total metered <u>water consumed</u> was 169.035MG. This amount serviced 1,432 customers with a water loss of 7.93%. The highest <u>water produced</u> in the last ten-year period was 203.101MG in 2021 of which <u>185.15MG</u> of water was <u>consumed</u> by 1,389 customers with a water loss of 8.83%. At year end in 2024 we have 1432 metered accounts which represents a 16.5% increase in metered accounts in the last ten years.

1.4 Projected Water Demands:

Based on the connection increases in the past ten years, this document will use a 1.65% projected annual increase for water. (16.5% divided by 10 years). Based on the 1.65% projected annual increase the water projections could vary between:

Projected Water Consumption	Current	Projected 2030@1.65%	Projected 2035@1.65%
A. Based on Highest Year Consumption in last ten year period (2020)	187.76MG	207.132MG	224.79MG
B. Based on 2021 consumption less 15% additional Conservation as	157.378MG	173.615MG	188.42MG
C. Based on Pre-Conservation levels in 2013	227.617MG	251.101MG	272.512MG

Based on 1.65% annual projections, by the year 2035 water demands could vary between 188.42MG and 272.512MG (almost 100MG) depending upon weather conditions and conservation requirements. Projection B is based on the consumption in 2021 less 15% to reflect the current conservation practices less an additional 15% conservation as requested by the Governor in 2021. Before Governor Brown left office, he signed into law two bills SB606 and AB1668 that set permanent water conservation rules, even for non-drought years. Under the bills each urban water provider will be required to set target water use by 2022. "Standards will be based on a formula made up of three main factors: 55 gallons per person per day for indoor water use- dropping to 50 gallons by 2030; a yet-to be determined amount for residential outdoor use that will vary depending on regional climates; and a standard for water loss due to leak rates in water system pipes." (San Jose Mercury News, 6/12/2018.) Recent legislation by the State of California is encouraging the building of Accessary Dwelling Units (ADU's) as a solution to the current homeless population. In an effort to keep the cost of ADU's affordable, the law severely limits the amount of building fees that can be billed and collected on the ADU's. The District cannot charge water or sewer connection fees when these ADU's are built. The District has legal counsel reviewing the ability to charge capacity expansion fees. The District's concern is the additional impact and demand placed on current and future water and sewer infrastructure. The growth factor should be re-evaluated at five-year increments to ascertain any notable variances. If any major construction within our aquifer such as Celebrity City or the proposed Dell Webb development should take place, future well recoveries could be affected.

1.5 Existing Water Storage:

As of 2024, the District has 4 welded galvanized steel tanks with a combined storage of 2.149 MG. The .500MG and 100MG gallon tanks were constructed in 1969, the 1.349MG storage tank was constructed in 1991 and the .200MG tank was constructed in 2006. In 2021 the District entered into a 10 year renovation and maintenance contract with Superior Tank Solutions, Inc. Tanks 1A and 2A interiors had their coal tar linings replaced with epoxy 2021 and 2022 respectively. The contract provides annual inspections and exterior renovations in years 2028 and 2029. Recent rate increases and capital improvement projects have been set in place to help fund inclusion of Tanks 1B and 2B in a maintenance contract.

1.6 Projected Storage Demands:

Per California Water Standards, a public water system's water source shall have the capacity to meet the system's maximum day demand (MDD) and be able to meet 4 hours of peak hourly demand (PHD).

	Current	Projected 2030@1.65%	Projected 2035@1.65%
Maximum Daily Demand (MDD)	2.24MG	2.471MG	2.682MG
Maximum Hourly Demand (PHD)x 4 hrs	.936MG	1.032MG	1.120MG
Total:	3.176MG	3.504MG	3.802MG

Based on Engineer's recommended storage capacity including Fire Flow Storage, Equalizing storage and Emergency storage is:

	Current	Projected 2030@1.65%	Projected 2035@1.65%
Equalizing Storage (ES) 20% of MDD	.448MG	.494MG	.536MG
Emergency Storage (EMS) 30% of MDD	.672MG	.741MG	.805MG
Fire Flow Storage	.900MG	.900MG	.900MG
Totals:	2.020MG	2.135MG	2.241MG

Current Daily Pumping Capability	4.104MG
Current Hourly Pumping Capability	.171MG
Current Storage Capacity	2.149MG

These projections indicate the District might start looking into increasing storage capacity by the year 2025.

1.7 Existing Sewer Facilities (Collection, Treatment and Disposal):

The Rio Alto Water District provides secondary tertiary treated wastewater collection, treatment and disposal to the community of Lake California. The master plan for the community included three treatment plants. When the development went bankrupt only one of the three treatment plants was completed (Improvement District #1). Improvement District #1 is the gravity fed collection system that delivers and processes sewage at the plant located at the south-east end of Ventana Drive. The remainder of the Community with the exception of Tract 1018, 1017 and 1009 have septic disposal systems regulated by Tehama County Environmental Health.

1.8 Existing Sewer Collection System:

The Improvement District #1 collection system currently consists of approximately 73,100 feet of collector sewers and 11,500 feet of 12 inch to 30inch main interceptor sewers. Collector sewers are generally 4 to 10 inches in diameter and are used to collect wastewater from the building laterals. The main branches of the collections system, typically called interceptor sewers convey the wastewater to the treatment facility. The sewage is gravity fed to the lift stations and then lifted from there to the treatment plant. As of 2024 we have 7 lift stations and 923 connections to our sewer system which equates to 939 household equivalents.

1.9 Existing Wastewater Treatment Plant Facilities:

The existing wastewater processing treatment plant facilities consist of headworks, (1) oxidation ditch, (2) clarifiers, (2) effluent pumps, (2) return activated sludge pumps, (2) chlorinators, (9) drying beds, (1) secondary holding pond, approximately (2) miles of 10" force main used for secondary holding chlorination time and delivery of effluent to (50) acres of wetted wetlands.

1.10 Existing Sewer Demands:

The Average Dry Weather Flow (ADWF) at the wastewater treatment plant for 2024 was 0.116 MG and the Average Peak Wet Weather Flow (PWWF) was 1.022 MG with a total annual flow of 71.577MG. The current design for the capacity of the wastewater treatment plant is 1.0 MGD. The peak wet weather flows are directly related to precipitation totals and Infiltration and Inflow (I&I) within the district service area. Average Dry Weather Flow for the past 10 years computes to .1147MG with the average Peak Wet Weather Flow of .793MG and average annual total flows of 58.895MG.

1.11 Projected Sewer Demands:

Projecting a 1.15% annual increase based on the average number of sewer connections in 2024, ADWF and PWWF is projected for 2030 and 2035 as follows:

	Current	Projected 2030 @1.15%	Projected 2035 @1.15%
Average Dry Weather Flows	0.116MG	0.124MG	0.135MG
Average Wet Weather Flows	1.022MG	1.095MG	1.159MG
Average Annual Flows	71.577MG	76.66MG	81.17MG

These are very subjective figures because PWWF's are highly influenced by precipitation and I&I.

Again, recent legislation by the State of California is encouraging the building of Accessary Dwelling Units (ADU's) as a solution to the current homeless population. In an effort to keep the cost of ADU's affordable, the laws severely limit the amount of building fees that can billed and collected on the ADU's. The District cannot charge water or sewer connection fees when these ADU's are built. The District has legal counsel reviewing the ability to charge capacity expansion fees. The District's concern is the additional impact and demand placed on current and future water and sewer infrastructure.

1.12 Staffing Analysis:

The current staffing of field and office crew suffered a major setback when the Operations Supervisor retired in 2022. His mechanical and construction knowledge enabled the District to make complex repairs using District staff instead of contracting out. This saved the District considerable amounts of money over the years. An OIT was brought on a year before the Operations Supervisor's retirement to train at the WWTP so that he could get his WWTP Operator Grade II certificate prior to this retirement. This enables the Operator II to work independently at the WWTP and also join in the weekend rotation. A Systems Operator III was promoted to Water Systems Lead Operator and a Systems Operator III was promoted to Sewer Lead Operator. These operators were matched with their knowledge, skill levels and experience in the programs. These two operators really stepped up to the plate and successfully filled the gap of the Supervisor's retirement. Future concerns for the District include retirement of the General Manager, Secretary and Bookkeeper who all are nearing retirement age. Succession training will be necessary for the successful transition in administration of the District. Replacement staff should be working side by side with future retirees for a minimum of 3 months during the transition period. This will create additional cost burdens during that period of time, but money well spent for training and the transfer of historical knowledge.

1.13 Timeline of Areas of Concern for long term operations of Rio Alto Water District and servicing the community of Lake California:

	Deadline
Succession training and transfer of historical knowledge	2025
Cyber Security upgrades	Immediate
Research chlorine alternatives	Immediate
Adding tanks 1A & 2A to maintenance contract	2027
Reduction of I&I – continued slip lining/possible replacement of main sewer line sections	2027
Upgrading Lift Station pumps and motors	2027
Replace or upgrade Muffin Monster	2027
Upgrade the aeration system at WWTP	2027
Upgrade to automated meter reading software/hardware	2027
Upgrade office interior	2030
Well pump and motor replacements as needed	2030
Upgrade to electric vehicles	2030
Purchase a VAC truck	completed
Distribution piping, valves and hydrant rehab and replacement	As needed
Pressure boosting system for tract 1017	As needed
Possible additional water storage tank	As needed
Future Env. Health Disallowance of septic systems	Unknown

1.14 Plan to fund long range plans:

In 2022, the District lost its disadvantaged community status because the American Community Survey reported the Median Household Income (MHI) assigned to Lake California was $88,366 (higher than the average statewide median). Rio Alto authorized Rural Community Assistance Corporation (RCAC) to conduct an income survey. The MHI determined from the income survey was $56,000. This survey enabled the District to regain its disadvantaged community status. The disadvantaged status reduces our annual permit by approximately two thirds and increases our prospects of securing grants for projects. This status is good for five years from 2023. In 2023, the District hired an asset manager to evaluate our assets and establish a funding requirement that can be included in our rate structure. During the asset evaluation, the District hired a consultant for a rate study. The rate study evaluated the water and sewer rates and connection fees and held a successful Proposition 218 process that implemented a staged 5-year rate increase structure for water and sewer effective March 1, 2024. The ten-year financial plan included long-term operating, debt service and capital needs for the water and sewer enterprises. Water and Sewer long range funding and debt service included the following projects:

<u>Water:</u>

- Water Tank Rehab and Maintenance
- New Pumps, Motors and Controls for Wells 5 &6.
- Fire hydrant replacement funding
- Vehicle replacement
- Distribution pipe and valve replacement

Sewer:

- On-Site Hypo Chloride Generation
- Replacement of the Oxidation Aeration System
- Replacing the Muffin Monster with a multi-rake bar screen
- Lift Station Rehab and Maintenance.
- Wastewater Treatment Plant Repair and Replacement
- Vehicle Replacement
- Sewer Pipe Replacement

When preparing for next rate study, it would be recommended to include funding plans for an additional storage tank and solar battery storage for the wastewater treatment plant and possible planning document addressing potential impact on the District if Tehama County Environmental should terminate septic permits on building in the development.

Chapter 2.0 INTRODUCTION AND DEMOGRAPHICS.. 7-16

2.1 General

Rio Alto Water District (RAWD) is a CA Special District formed under California Water Law (Water Code Sections 34000, et seq.). RAWD provides water and sewer services to the Community of Lake California located in the northern tip of Tehama County.

2.2 Service Area Overview

The sphere of influence for Rio Alto Water District is shown on Figure 2.2.1 RAWD's sphere of influence is coterminous with the Lake California Development Boundary. Water Services are currently only constructed to approved tracts within the Development. Tracts 1001, 1004, 1005, 1006, 1009, 1013, 1017(Phase I) and 1018 have water facilities in ground and are currently serviced by the District. In addition to existing approved tracts the District entered in to an agreement with Leviathan when purchasing the acreage for the wetlands to provide services to the lots on the right hand side of Dinghy Lane if they ever developed. The water service area consists of approximately 25 miles of distribution lines. Sewer Improvement District#1 boundary was established when infrastructure was constructed and is limited to those lots within the approved tracts which met gravity fed specifications at the time. Subsequent tracts 1009 and 1018 which include lift stations were added to the gravity fed improvement boundary in 1992 and 1993 respectively. Tract 1017 (Phase I) infrastructure was added to the District service area in 1995. Future growth of the existing service area is limited to the approved tracts. Any new tracts would require a secondary access road to the community. The service area consists of approximately 14 miles of collector sewers and 2.18 miles of main interceptor sewers. The approved tracts and service areas are shown in figure 2.2.2.

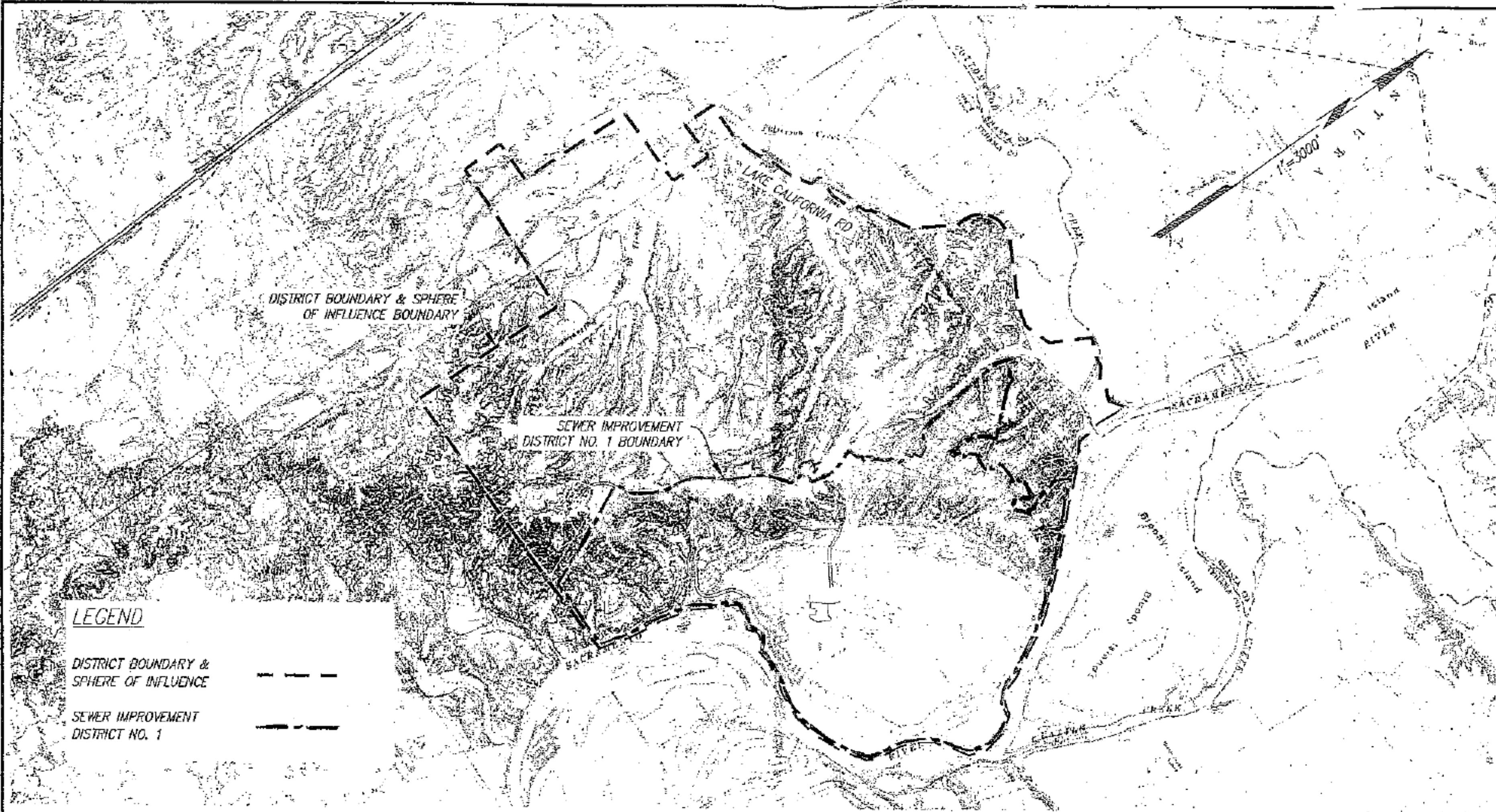
2.3 Location Map:

Figure 2.3.1 shows the location of Lake California relative to the State of California.

2.4 Historical:

Prior to April 28, 1971, Lake California was owned and operated by River Development Company ("River"), which sold lots at Lake California during or about the period commencing February 1969 and ending April 28, 1971. River Development Company was a limited partnership with Lake California Development, formerly Skye, Incorporated, Recreation Environments, Inc., GSC Development Corporation and Great South Western Corporation. "River" went bankrupt and thereafter, Lake California was owned and operated by Superior Equity of California, Inc. which thereafter sold lots at Lake California.

FIGURE 2.2.1

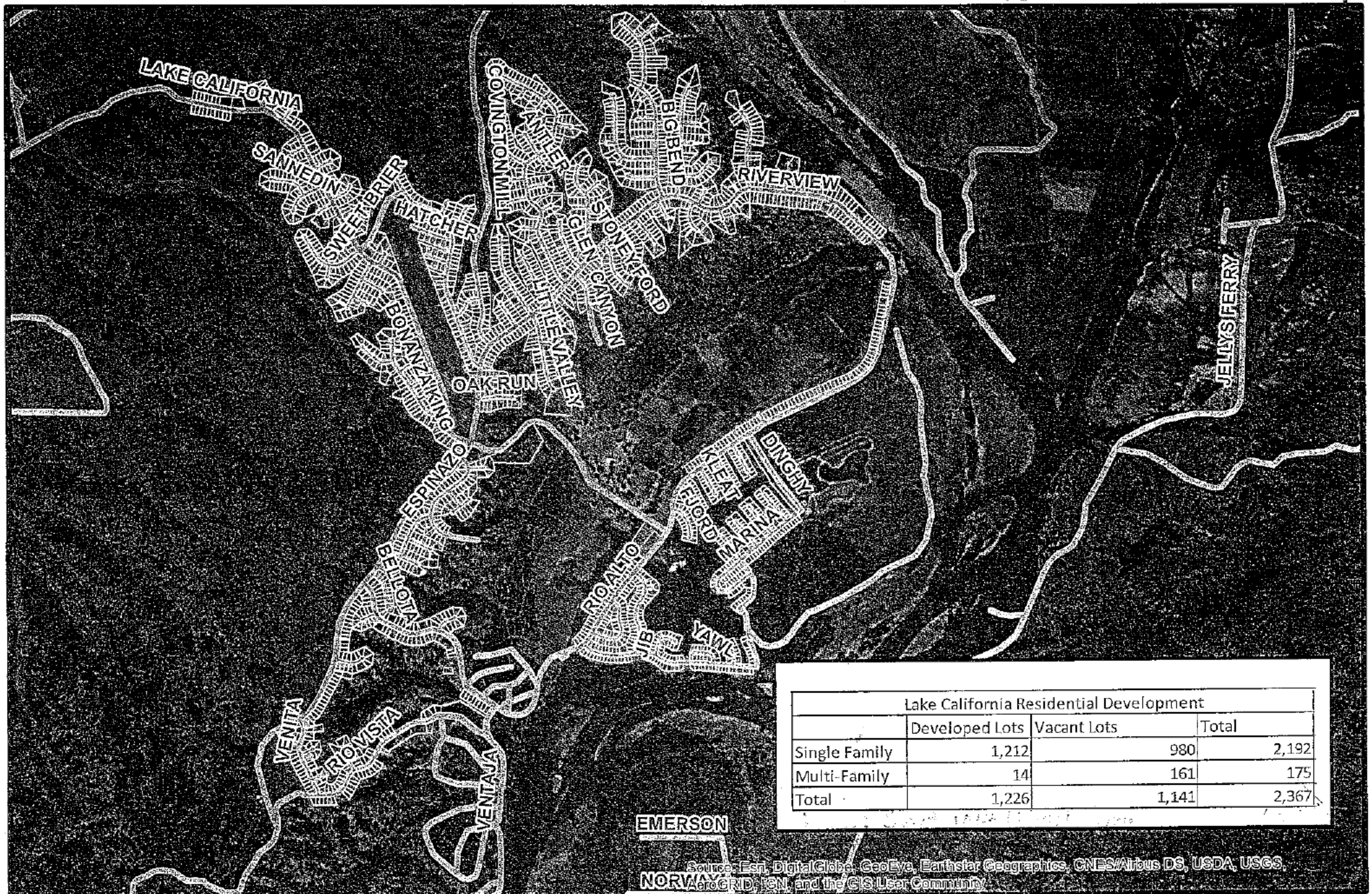


PACE ENGINEERING REDDING, CALIFORNIA	RIO ALTO WATER DISTRICT WWTP IMPROVEMENTS PROJECT WATER/SEWER DISTRICT BOUNDARY	DATE 12/13 JOB #2116.02

Lake California Residential Units and Available Lots

FIGURE 2.2.2

Aerial Map



Lake California Residential Development			
	Developed Lots	Vacant Lots	Total
Single Family	1,212	980	2,192
Multi-Family	14	161	175
Total	1,226	1,141	2,367

4,300 2,150 0 4,300 Feet

N W E S

Tehama County
Source Data:
SHPfileParcels05-19-2020
Based on Accessors Data

In December of 1969, Rio Alto Water District ("District") was formed to provide services to the subdivision. In March of 1970, Rio Alto Water District approved Resolution 8-70 which established rules and regulations for distribution of water and assessment implementation of a rate schedule for metered and standby customers. At this time, construction of the sewer treatment facilities was not complete. Apparently, the sewer facilities were completed by August of 1973 because resolution 9-73 established the rules regulating the use of public sewers, discharge of water and wastes into the public sewer system, setting fees and connection charges for Improvement District 1. A special bond election was passed in December of 1969. Attempts were made to issue water bonds in the amount of $8,430,000 and sewer bonds in the amount of $5,522,000 to cover the cost to complete the entire subdivision. By 1972, it was determined that the bonds could not be sold by refusal of the District Securities Division of the California State Treasurer's Office to approve the sale due to risks associated with the project, limited build out, and potential failure to repay the bonds.

The District did not own the facilities at this point. A class action suit was filed against River Development Company and all of its partners by the County of Tehama, River Lakes Ranch Property Owners Association, Rio Alto Water District, and various property owners alleging the defendants and others, through misrepresentations, the withholding of facts, unfair sales practices, misleading advertising, and other torts or violations of law, to purchase land in the subdivision, and that certain improvements at Lake California had not been completed or were not completed in a timely fashion, all in violation of various California and federal statutes and regulations of common law. An agreement of compromise and settlement of suits and claims relating to River Lakes Ranch Subdivision was signed in June of 1977. Through the settlement agreement GSC Developments Corporation was required to survey, describe, and convey or cause to be conveyed (free of encumbrances) to Rio Alto Water District, existing water and sewer systems covering tracts located in the River Lakes Ranch Subdivision which were described as water or sewer easements in Final Subdivision Maps. The District recorded the original water and sewer facilities at their fair market value when they were deeded to the district. Rio Alto received settlements in the form of cash on various performance bonds which established the Rio Alto Water District sinking funds which are held at LAIF.

According to the Auditor who audited the District for approximately 30 years beginning in the '70's, the District has been considered one district financially. When the development was initially formed, the master plan included 3 sewer treatment plants. After the bankruptcy, and subsequent settlement agreement with the developers, the water and sewer districts were limited to those lots within approved subdivision maps as of the agreement dates. Tracts 1009, 1018 and tract 1017, phase 1, were added to the initial approved tracts because the funds were distributed from the 504 settlement funds held by Tehama County to complete those projects. In addition, Rio Alto Water District received approximately $450,000 for capital projects from the 504 settlement funds. Judge Watkins made a requirement that any disbursements from the fund had to go to capital projects that would benefit the entire community of Lake California. In accordance and within his guidelines, the District used the 504 funds for the construction of Well#3 and our 1.349million gallon water storage tank.

The District subsequently secured adequate and reliable sources of water by constructing 3 additional wells and a 200,000gallon reservoir. Further capital projects have included the installation of telemetry/SCADA to the water and sewer systems, construction of additional drying beds at the wastewater treatment plant, and a District Board Room.

A Cease and Desist Order was issued on our NPDES permit to discharge into the Sacramento River on September 23, 2010. The District evaluated 7 alternatives to resolve the regulatory issue, and in the end, chose to do necessary improvements at the WWTP and construct wetlands for land discharge. The District purchased 78 acres for land disposal and installed a 2 mile pipeline from the WWTP to the wetlands. The current configuration of the wetlands includes 4 ponds, levies reinforced with rock and approximately 2 miles of walking trails. The District began discharging to the wetlands in May of 2016. Improvements at the WWTP included upgrading all the electrical, construction of a second 36-foot diameter clarifier, installation of new RAS, effluent, and chlorine pump stations, and installation of an 187kVA generator for power failures. The project was funded by grants and low interest loans through USDA Rural Development (USDA) and the State Revolving Fund (SRF). A Community Facilities District was approved by a majority vote and a Mello Roos Tax was established to secure payment of the debt by all customers that have sewer or sewer available to their lots. The SRF loan sunsets in 2035 and the USDA loan sunsets in 2054.

2.5 Setting:

Lake California is located along the Sacramento River 3 miles east of U.S. Highway Interstate 5 and approximately midway between the cities of Redding and Red Bluff. This is in the north central portion of Tehama County. The City of San Francisco is 215 miles almost directly south of the property. The Lake California development contains a total of approximately 5,950 acres and extends approximately 4and 1/2 miles along the west bank of the Sacramento River. From the river the property extends westerly across 750 acres of bottom land then into rolling hills covered with oak and manzanita. The maximum difference in elevation is 400'. The river is at an elevation of 350' and a very small portion of land in the southwest corner rises to 750'. Rio Alto Water District's sphere of influence boundary is co-terminus with the Lake California Development boundary.

2.6 Climate:

Lake California is located in Cottonwood, California. The climate in Cottonwood ranges from hot in the summer to cold during the winter. July has an average maximum temperature of 99 degrees Fahrenheit and December temperatures average 38 degrees Fahrenheit. The highest recorded temperature was 118 degrees Fahrenheit in July of 1988. The lowest recorded temperature was 16 degrees Fahrenheit in January of 1988. Average annual precipitation is around 30 inches. February tends to be the wettest month with an average rainfall of 5.5inches Current climate change predicts hotter weather with less snow and prolonged droughts with increased wildfire risks. March of 2023 ended another 3year drought with a "wet year" and currently 2024 has been informally classified as above normal.

2.7 Land Use:

According to the Tehama County General Plan, the existing land use pattern within Tehama County consists of a combination of upland agricultural, exclusive agriculture and public lands. The majority of incorporated and unincorporated developed areas within Tehama County are located in or adjacent to major county or state transportation corridors. Lake California is located in the North I-5 Corridor Planning area. The Lake California planned community currently consists of 2,202 planned residential units. Lake California is considered an unincorporated town center. RAWD provides water and sewer service, the County provides schools, law enforcement and fire protection, and the Property Association provides road maintenance and recreational facilities. The land use for Lake California is Suburban Special Planning with subdivision densities down to ¼ acre. Table 2.7.1 represents the zoning of lots within the Lake California planned development.

Table 2.7.1
Lake California Planned Zoning

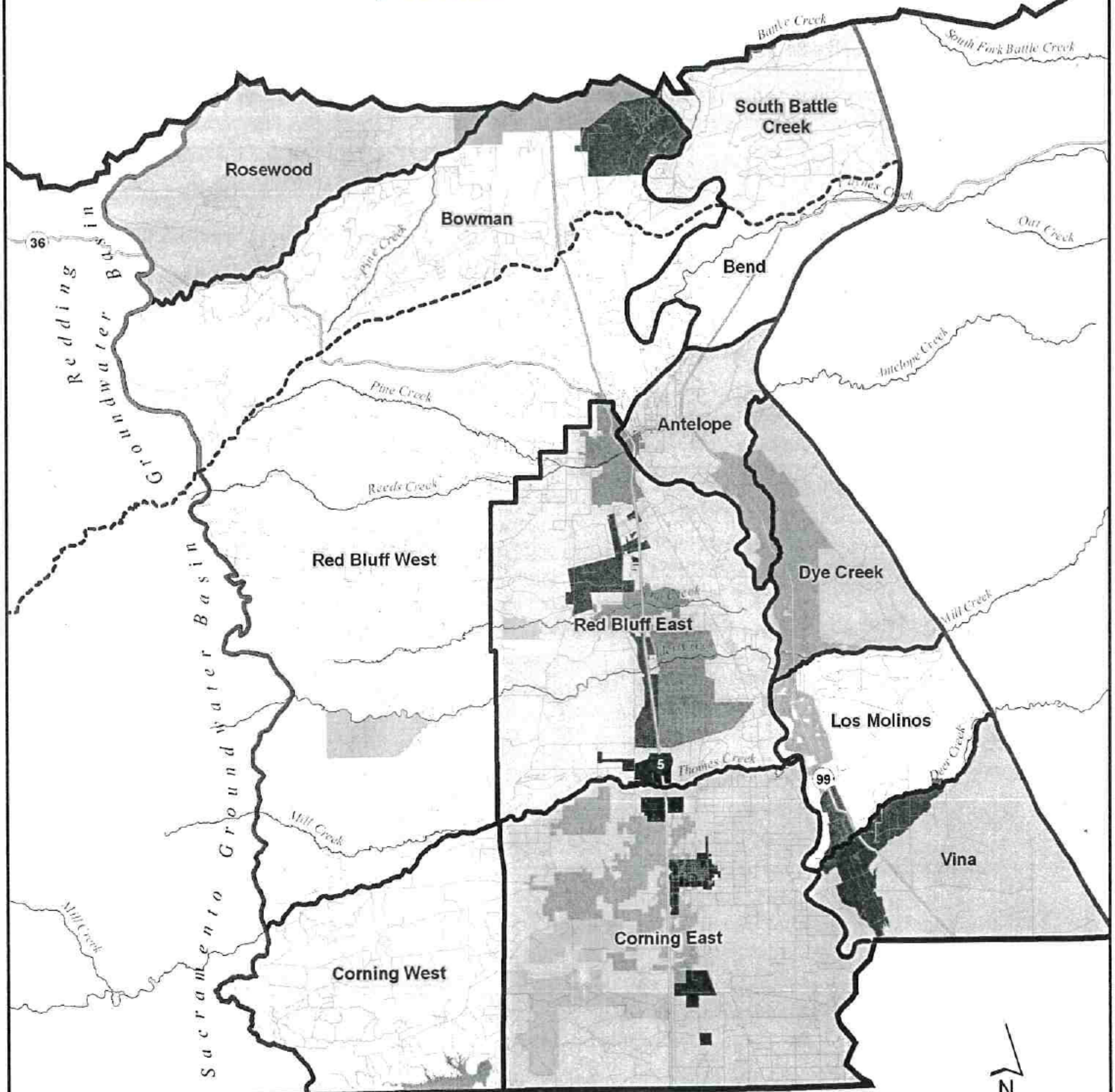
Zoning Category	Zoning Code	Number in Category
Single Family Residential	R1	2028
Duplex Residential	R2	216
Triplex Residential	R3	99
Fourplex Residential	R4	36
Commercial	C-1	31
Commercial Minimum 10,000 Sq. feet	C-1/B10	7
Natural Resource	NR	14
Airport	AV	2
General Recreation	GR	10
Public Authority	PA	2
Total Lots:		2445*

*Includes the 243 undeveloped lots in Tract 1017.

2.8 Water Authority Supply:

The community of Lake California is located just north of the Red Bluff Arch which forms the hydrologic boundary between the Redding and Sacramento Valley Groundwater Basins. Rio Alto Water District draws its groundwater from the Redding Groundwater Basin, Bowman Sub-basin. Figure 2.8.2. The Redding Groundwater Basin is estimated to be a 5.5million acre-foot aquifer. The Bowman Sub-basin is bounded; on the west by the Coast Ranges; on the north by Salt, Dry and Cottonwood Creeks: on the east by the Sacramento River and on the south by the Red Bluff Arch. The Red Bluff Arch is defined as the hydrologic divide between the drainages of Cottonwood Creek and Hooker Creek to the North and the drainages of the Blue Tent Creek, Dibble Creek, and Reeds Creek to the south. (CA Groundwater Bulletin 118) Annual precipitation in our sub-basin ranges from 23 to 27 inches annually. Recharge to the principal aquifer is mostly by infiltration of stream flows at the margins of the sub-basin. Infiltration of applied water and stream flows, and direct infiltration

FIGURE 2.8.2



Irrigation Districts

Aaction	Corning WD	Kirkwood ID	Rawson ID
Anderson-Cottonwood	Deer Creek	LMMWC	Rio Alto WD
City of Corning	El Camino ID	Proberta ID	Stanford Vina
City of Red Bluff	Elder Creek ID	Rancho Tehama	Thomes Creek ID

Legend

- Red Bluff Arch
- Redding Groundwater Basin
- Sacramento Valley Groundwater Basin

BROWN AND CALDWELL	PROJECT 131107	SITE Tehama County	Figure 1-1
	DATE 1/18/07	TITLE Groundwater Sub-Basins	

FILE: \\Bcsac01\GIS\Tehama County\MXD\Ground Water Sub-Basins.mxd of precipitation are the main sources of recharge into the alluvium. (Pierce 1983) The Bowman sub-basin is primarily a rural area, with agriculture throughout the area and new development occurring near I-5. California's Groundwater Bulletin 118 last updated in 2004 states, long term comparisons of groundwater levels indicate slight declines with the 1976-77 and 1987-94 drought conditions, followed by a recovery to pre-drought conditions. The seasonal fluctuation is approximately 5 feet for normal and dry years. Further updated by the Department of Water Resources, records from Spring of 2004 to Spring of 2011, the Redding Groundwater Basin showed an overall net groundwater elevation increase of .5 feet (a 1.2foot decrease in Tehama County and an increase of 1.6 feet in Shasta County.) Northern California had experienced a record 6 year drought that ended in 2016. Mandatory drought water conservation regulations were implemented in August of 2014 and extended and increased in April of 2015. The District was required to reduce total water consumption by 25% in comparison to normal water consumption in 2013. After experiencing a fair water year in spring of 2016, mandatory restrictions were suspended on June 1, 2016. The District purchased a new probe to monitor static levels in Wells#5 & 6 (Wells 3 & 4 do not have adequate space to insert the probe). Year 2019 helped reduce drought conditions but it was not enough because it was followed by a dry year and 2 critical years in 2021 and 2022. Year 2023 helped with a wet year classification and the preliminary 2024 classification is above normal.

Table 2.8.1 shows static water levels for the period March 2014 through December 2024:

Well Static Water Levels
Table 2.8.1

Static Water Level Dates	Well#5 Level at construct 205' (2005)	Well#6 Level at Constr. 277' (2009)	Water Year Classification Sacramento Valley
July 2014	**214.51**	282.41	Critical
March 2015	207.20	280.20	Critical
July 2015	208.92	282.61	Critical
January 2016	204.95	278.59	Below Normal
June 2016	210.60	283.18	Below Normal
September 2016	208.65	281.75	Below Normal
December 2016	204.95	278.98	Below Normal
March 2017	205.37	276.14	Wet
June 2017	206.31	280.41	Wet
September 2017	207.45	281.38	Wet
December 2017	206.16	279.79	Wet
March 2018	205.92	279.86	Below Normal
June 2018	206.29	281.04	Below Normal
September 2018	206.79	280.58	Below Normal
July 2019	206.94	281.14	Wet
September 2019	206.71	281.09	Wet
December 2019	206.86	280.71	Wet
March 2020	206.02	280.26	Dry

September 2020	209.57	281.84	Dry
December 2020	208.17	281.67	Dry
March 2021	208.51	280.09	Critical
June 2021	210.25	**283.22**	Critical
September 2021	209.11	283.00	Critical
January 2022	206.49	280.58	Critical
June 2022	207.98	282.58	Critical
September 2022	209.81	284.33	Critical
Dec 2022	207.61	281.39	Critical
March 2023	204.05	277.14	Wet
September 2023	208.09	282.08	Wet
March 2024	202.64**	276.70**	Above Normal
June 2024	209.42	280.96	Above Normal
Sept. 2024	209.61	281.82	Above Normal
Dec. 2024	207.11	279.86	Above Normal
Highest draw down:	**9.51 ft**	**6.22**	

*Static levels measured in feet below ground level.

** Static levels measured higher than construction levels in March 2024

Both wells recovered to above construction levels as of March 2024. Two large irrigation wells have been installed outside of the community boundary on Lake California Drive. The District will be taking static levels quarterly to see if any trends develop in response to this installation. Currently the state of California is experiencing an unprecedented drought and the Governor is asking for an additional 15% reduction in consumption from 2020 figures. The Groundwater Sustainability Act (SGMA) was passed in 2015. The District is an active member of the Tehama County Sustainability Agency. The Rio Alto Water District General Manager is currently a Commissioner on the Tehama County Water Board. Our District is located in the Bowman Subbasin and is currently rated as a medium priority basin. It was not necessary to prepare a Groundwater Sustainability Plan (GSP) for medium priority basins, but we encouraged the development of a GSP plan for the future. Basically, the plans set thresholds for the aquifer levels and water quality that if triggered would require implementation of mitigation projects and/or curtailment of water extractions until the aquifers return to acceptable levels. If any major construction within our aquifer such as Celebrity City or the proposed Dell Webb development should take place, future well recoveries could be affected. The Groundwater Sustainability Plans for the 5 basins in Tehama County were submitted to the Department of Water Resources in January of 2022. Letters received from DWR in October of 2023 deemed the 5 GSP's incomplete. Fortunately, the issues they asked the Commission to address were not complicated to resolve. In all five instances they wanted more justification for measurable threshold settings. The plans were resubmitted and we are still (Jan. 2025) waiting on determinations. Before Governor Brown left office, he signed into law two bills SB606 and AB1668 that set permanent water conservation rules, even for non-drought years. Under the bills each urban water provider will be required to set target water use by 2022. "Standards will be based on a formula made up of three main factors: 55 gallons per person per day for indoor water use- dropping to 50 gallons by 2030; a yet-to be determined amount for residential outdoor use that will vary depending on regional climates; and a standard for water loss due to leak rates in water system pipes." (San

Jose Mercury News, 6/12/2018.) Rio Alto Water District does not fit the criteria for Urban Water Provider (3,000 connections or 3,000acre feet of water distribution), however the State Water Resources Control Board will eventually extend those restrictions to smaller non-urban water agencies. The onus of enforcement will be placed on the agencies.

2.9 Build Out (Water Customers)

Currently the Lake California Community has reached 65% of its planned development (excluding the undeveloped lots in Tract 1017) as shown in Table 2.9.1:

Table 2.9.1
2024 Lake California Buildout (Meters)

Single Family Residential	1319
Duplexes with one meter	50
Duplexes with two meters (12)	24
Triplex 1 meter	1
Commercial	10
Landscape Meters	26
Public Authority	2
Total Metered Lots:	1432

The Community of Lake California has grown considerably in the last twenty years, with most of that growth seen within years 2002 through 2006 (639 connections). The change in water connections over the past decade is shown in Table 2.9.2:

Table 2.9.2
RAWD 10 Year Water Connection History

Cal. Year	Total Annual Billable Meters Installed	New Residential Connections	New Non-Residential Connections (Including Landscape Meters)	Total Residential Connections	% Incr. Residential	Total Non-Residential Connections (Including Landscape Meters)	% Increase Non Residential
BF:	1256			1245		11	
2015	13	13	0	1258	1.04%	11	0%
2016	10	10	0	1268	.79%	11	0%
2017	17	14	3*	1282	1.10%	14	21.42%
2018	26	25	1**	1307	1.95%	15	7.14%
2019	18	19	-1**	1326	1.45%	14	-6.66%
2020	25	21	4*	1347	1.58%	18	28.57%
2021	24	22	2	1369	1.63%	20	11.11%
2022	23	19	4	1388	1.38%	24	20.00%
2023	5	5	0	1393	1.0%	24	0%
2024	15	13	2	1406	.93%	26	8.33%

End Meters 1432

10 year average 1.65%

*Commercial POA accounts, residential landscape meters, POA landscape meters for parks, Lake California Church ball field meter and Lake California Church meter.
**Landscape meter installed for Resource Conservation District removed in 2019.
Based on Table 2-5 the average annual increase.in Connections the last ten years 1.65%.

2.10 Build Out (Sewer and Septic Customers):

The District has several types of sewer connections; regular, extended and low pressure. A normal residence is charged 1 sewer connection fee and one bimonthly sewer charge. Multiple units are billed the connection fee multiplied by the number of Household equivalents. Bi-monthly sewer charges are billed by household equivalents. A few residences that were not initially in Improvement District #1, but were able to make grade to the closest manhole, were allowed to extend the sewer line (sewer extensions) to their property down the easement. Sewer extension customers were charged a connection fee, a capacity expansion fee, their bimonthly sewer charge is now charged the same rate as regular sewers. In addition, the District allowed several Low-Pressure Systems (LPSS) to be installed. LPSS customers were either cases of septic failures or perk pit test failures that would have deemed the property uninhabitable or unbuildable. LPSS customers are subject to costs involved with construction of the systems, capacity expansion fees, connection fees and higher bi-monthly sewer charges. The variance in the monthly charges reflects the additional costs to maintain and flush the LPSS systems annually. As of 2024 the sewer and septic lot build out statistics are shown in Table 2.10.1:

Table 2.10.1

Description	# of lots	# of lots Connected	Remaining lots available	% of buildout
Improv. Dist # of lots avail	1285	923	362	72%
Septic lots	821	488	333	59%
*Undeveloped Tract 1017	248	0	248	0%

Current sewer connections are classified in the following table 2.10.2:

Table 2.10.2
Current Sewer Connections 2024

Sewer Type	Bill code	Household Equivalents	# of dwellings	# of household equivalents
Standard Residential Sewer	E	1	870	870
Standard Duplex	s	2	13	26
Standard Triplex	f	3	1	3
Sewer Extension	N	1	15	15
Low Pressure Residential Sewer	p	1	18	18
Low Pressure Duplex Sewer	pp	2	2	4
Commercial Sewer	O	1	2	2
½ Sewer Charge	e	1/2	2	1
Totals:			923	939

The change in sewer connections for the past decade is shown in Table 2.10.3:

Table 2.10.3
RAWD 10 Sewer Connection History

Calendar Year	New Residential Connections	New Non-Residential Connections :	Total Residential Connections (Household equivalents)	% Increase Residential	Total Non-Residential Connections	% Increase Non Residential
BBF:	**809**	**1**	**825**			
2015	10	0	835	1.21%	1	0%
2016	6	0	841	0.71%	1	0%
2017	10	0	851	1.19%	1	0%
2018	19	0	870	2.23%	1	0%
2019	13	0	883	1.49%	1	0%
2020	19	1	902	2.15%	2	100%
2021	17	0	919	1.88%	2	0%
2022	11	0	930	1.19%	2	0%
2023	3	0	933	0.32%	2	0%
2024	6	0	939	0.64%	2	0%
Totals:	**923**	**2**	**939**		*2	

*= Lake Club and Lake California Church
** Average annual increase in Household Equivalents is 1.15%

Within the Water District service area, but not included in the Improvement District, are an estimated 821 lots in the septic areas of the development. Approximately 488 septic approved lots are currently developed. Roughly 333 septic lots remain undeveloped.

2.11 Population Growth Projections:

The Decennial Census of 2020 reports the estimated population of Lake California to be 3,377 which is a 10% increase over a ten- year period from estimate reported in 2010 of 3,054. Goals and Policies of the Tehama County Housing Element of 2024 state that Tehama County will promote the development of housing in community areas with existing infrastructure and services. Keeping this in mind and noting the significant increase in connections from the period of 2002 through 2006, it is reasonable to use an average of 1% annual increase in our population projections. In addition, the District has seen growth in building directly related to the Carr, Camp and Dixie fires of 2018 and 2021. The average annual increase in connections in the last ten years was 1.65%.

Table 2.11.1 represents the projected population, housing numbers, and percentage of build-out based using:

- 1% population growth factor on the 2020 Decennial Census Estimate.
- A 1.65% average annual connection increase.

Table 2.11.1
RAWD Projected Connection and Population Growth

	Decennial Census Est. 2020	2024 Actual Connections/Decennial Census Projected Population	Estimated 2030	Estimated 2035
Population*	3377	3512*	3768	3960
# of Residential Connections	1365	1406**	1516**	1614**
# of Commercial & non Residential connections	18	26**	28**	30**
# of residential lots with infrastructure in ground**	2202***	2202***	2202***	2202***
% of total lots built out	61%	65%	70%	75%

*Estimated Population balances from 2020 Decennial Census plus 1% annual increase.
**@2024 Actual connections plus 1.65% annual increase.
***Does not include balance of 2017 lots without infrastructure.

This growth factor should be re-evaluated every five years to test its validity in measuring the actual growth within the community of Lake California.

Chapter 3.0 POTABLE WATER SYSTEM FACILITIES 17-20

3.1 Wells:

When Rio Alto Water District was formed, its water producing capability consisted of the two working wells of the former Price Ranch. Well#1 was located on North Marina Drive and Well#2 was located at the corner of Dinghy and North Marina Drive. Both wells produced 1200 gallons per minute with 125 horse-power pumps. Having both wells located in the lower zone and the two existing storage tanks located in the upper zone made it necessary to pump the water from the lower zone to the upper zone for distribution and storage. Both wells were constructed in the 1950's with 22" casing to 120 feet and open holes to 426 feet. In addition, both wells were located within the flood plain. During flood events the ground around the wells could erode, possibly creating unsafe conditions or a pathway for surface water and contaminants to enter the well. Flooding can cause damage to the well casing and/or a loose well cap can all increase the risk of contamination. In the case of a flood, when a water supply well has been affected by flood waters, the water within the well may be contaminated with waterborne pathogens that can cause serious illness in humans and pets. The District felt it was necessary to construct wells in the upper zone to reduce the contamination threat and pumping costs. The District constructed Wells 3, 4, 5 and 6 in the upper zone. Both Wells#1 and #2 have subsequently been abandoned. In 2023 Well #3 was taken out of production.

The wells, pumps and piping are housed in well houses as referenced in Table 3.1.1:

Table 3.1.1
Well Inventory

Pump Station	Date of Constr.	Sq. Ft	Type of Construction	Pumping Unit
Well House #3	91/92	160	Brick Masonry/Tile Roof	50 hp Submersible-Well
Well House #4	98/99	160	Brick Masonry/Tile Roof	100 hp Submersible
Well House #5	04/05	400	Brick Masonry/Tile Roof	150 hp Submersible
Well House #6	07/08	266	Brick Masonry/Tile Roof	175 hp Submersible

3.2 Pressure Zones:

Rio Alto Water District's distribution system is gravity fed. Currently, Well#5 and Well#6 pump water to the main storage reservoirs located at the south west end of River View Drive. There are two pressure zones within the District, the upper and the lower zone. The booster station and tank located on the north end of River View are used as a down feeding station for tract 1006 pressure regulation. Well #5 also has the capability for down feeding to Tract 1006 in the event of the booster station and tank needing to be taken off-line. The booster station and well#5 tanks are kept at levels to reduce and equalize pressure to Tract 1006. Tract 1017 has the lowest pressure due to its close proximity to the storage tanks. If development occurs in the undeveloped portion of Tract 1017, the developer will have to include a pressure regulating tank in the infrastructure to ensure the residences will have adequate residential fire sprinkler pressure as required by State Law.

3.3 Storage Facilities:
Rio Alto Water District currently has 4 storage reservoirs as listed below in Table 3.3.1.

Table 3.3.1

Tank Name	Location	Constr. Year	Construction Type	Storage Capacity
2B -Large Tank	Well 3 Site River View SW	1991	Welded Steel with epoxy interior lining	1.349 MG
2A -Medium Tank	Well 3 Site River View SW	1969	Welded Steel with new epoxy interior lining 2023	.500MG
1A- Tank near booster station	River View N	1969	Welded Steel with new epoxy interior lining 2022	.100MG
1B- Tank located at Well#5	Well 5 Site Rio Alto Dr. SW	2006	Welded Steel with epoxy interior lining	.200MG
			Total:	2.149MG

In September of 2021 the District sent out a request for proposals for rehab and maintenance on tanks 1A and 2A. The Contract was awarded to Superior Tank Solutions to maintain both tanks annually for the duration of 10 years. In 2022 and 2023 Tanks 1Aand 2A had the interior coal tar removed and replaced with a two-part epoxy and the appurtenances brought up to OSHA and AWWA standards. The exteriors of tanks 1A and 2A are scheduled for exterior rehabs and painting years 2028 and 2029. During the term of the contract, the two tanks will be inspected annually and cleaned every three years. Cost of the renovations and maintenance are spread over the 10 year contract.

3.4 Distribution and Transmission Facilities

The distribution system for potable water consists of approximately 128,175 linear feet of piping as shown in Table 3.4.1:

Table 3.4.1
Distribution Piping

Pipe Composition	Pipe Diameter	Linear Feet
Asbestos Cement Pipe ACP	4”	28,840 lft
Asbestos Cement Pipe ACP	6”	19,318 lft
Asbestos Cement Pipe ACP	8”	28,251 lft
Asbestos Cement Pipe ACP	10”	25,464 lft
Asbestos Cement Pipe ACP	12”	4973 lft
Asbestos Cement Pipe ACP	14”	4901 lft
PVC Schedule 900	4”	2279 lft

PVC Schedule 900	6"	3158 lft
PVC Schedule 900	8"	5627 lft
PVC Schedule 900	10"	5364 lft
	Total lft:	128,175 lft

In addition, the distribution system includes approximately 247 valves in the various sizes listed below in Table 3.4.2:

Table 3.4.2

Valve Size		Quantity
4" Valves		76
6"Valves		55
8" Valves		60
10" Valves		47
12" Valves		3
14" Valves		2
12" ARV Valve		2
10" ARV Valve		2
Total Valves:		247

Worthy of note, Table 3.4.3 indicates the following appurtenances associated within the distribution system:

Table 3.4.3

Appurtenance	Quantity
Reducers	17
Tees of various sizes	118
Blowoffs	81

The older water lines are constructed of asbestos cement piping that was installed in or around 1970. The newer tracts #1009, #1018 and #1017 water lines are PVC Schedule 900 and were installed in 1993 and 1995 respectively.

3.5 Existing System Operations

The District can successfully fill the tanks during winter low demand periods running one well for approximately six hours, but during high demand periods such as the summer, the tanks require approximately 18 hours of continuous run to be replenished. Wells 5 & 6 are the high producing wells and are used to fill the tanks. The water is pumped to tanks 2A and 2B, then gravity fed to the customers. Well#4 which is located on Freshwater is periodically run and adds directly to the main line on Freshwater. Pumping is generated on the off- peak hours to take full advantage of the lowest PG&E rates. Tanks 2A & 2B are filled to 36 feet and the pumps will turn off when they reach that level. Tanks 1A and 1B are filled to 16 feet and 13 feet respectively.

3.6 Solar:

The District completed a solar project in 2020 with sites located at Well#6, Well#5, the office and the Wastewater Treatment Plant. Well#6 and Well#5 solar sites directly offset current and future costs of pumping water to the customers. The Photovoltaic systems have a collective size rating of 375.7 kW. The year 2020 was the 1st year of solar power generation and the District is currently evaluating the power expended versus the solar power generated to maximize the energy cost savings. The District was able to purchase the solar equipment with a 1% loan from the California Energy Commission (CEC). The loan payments were structured to match the existing cost/payments to PG&E for energy charges at the time of the loan. Table 3.6.1 shows the last ten year PG&E expenses at the solar sites:

Table 3.6.1
Solar site PG&E annual costs 7/1/15 through 6/30/24

Fiscal Years Status	Well#5	Well#6	Office	WWTP
2015/2016 Pre Solar	$28,133	$42,831	$5,885	$33,516
2016/2017 Pre Solar	$32,581	$42,153	$5,502	$44,015
2017/2018 Pre Solar	$26,492	$52,995	$5,353	$35,294
2018/2019 Pre Solar	$26,894	$54,013	$5,920	$37,787
2019/2020 Partial Solar	$13,120	$45,898	$903	$16,525
2020/2021 Full Year Solar	$4,558	$4,705	$433	$2,370
2021/2022 Full Year Solar	$1,459	$4,630	$89	$2,607
2022/2023 Full Year Solar	($795)	$1,601	$33	$9,213
2023/2024 Full Year Solar	$2,473	$2,933	$375	$20,478

The annual payments remain fixed for the life of the loan in the amount of $103,576 which will be paid off in year 2038. There is a cost savings initially and gradually growing as PG&E rates increase annually while the loan payments remain fixed.

PG&E claims to promote solar are questionable when they restructure peak hour times and increase rates exponentially while decreasing solar compensation. When size requirements and cost of batteries becomes reasonable it would benefit the District to invest in battery storage at the WWTP so we could run off solar generated power during peak hours. Unfortunately, the WWTP requires 24/7 power and cannot be preset to run on non-peak hours only.

Chapter 4.0 WATER DEMAND AND SUPPLY 21-27

4.1 Existing and Historical Water Demands

Table 4.1.1 shows the total water produced and consumed for the last ten year period along with the corresponding number of connections to the system:

Table 4.1.1
Water Produced, Consumed and Number of Connections for 10year period

Year	2015	2016	2017	2018	2019	**2020**	2021	2022	2023	2024
Wtr Produced*	170.246	169.647	186.708	190.217	185.677	200.668	**203.101**	184.359	176.322	183.612
Wtr Consumed*	155.580	156.210	172.20	173.32	168.76	**187.76**	185.15	173.792	162.06	169.035
Est. Wtr Loss	14.666	13.437	14.508	16.897	**16.917**	12.908	17.951	10.567	14.264	14.577
% Wtr loss	8.61%	7.92%	7.77%	8.88%	**9.11%**	6.43%	8.83%	5.70%	8.08%	7.93%
Highest Month	July	Aug	**July**	July	Aug	Aug	July	Aug	July	July
Highest Produced	21.658	25.020	**27.810**	27.746	26.280	27.520	25.697	23.825	25.586	27.150
Average Daily	0.6986	0.807	**0.897**	.0895	0.848	0.895	0.888	0.769	0.825	0.876
# of Connect.	1269	1279	1296	1322	1340	1365	1389	1412	1417	1432

*reported in million gallons
**Average Daily figures calculated by dividing monthly demand by # of days in month.
***Bold numbers are highest

Based on Table 4.1.1 the highest statistics reported in the last ten years are:

Water Produced: 203.01 (**2021**)
Water Consumed: 187.76 (**2020**)
Highest Water Loss: 9.11% (**2019**)
Highest Water Production Month: 27.810 (**2017**)
Highest daily Average Produced: 0.897 (**2017**)

Based on Table 4.1.1, the estimated average household water consumed for the highest consumption year in the last ten years (2020) is 187.76MG divided by the number of connections (1365) averages household consumption as:

<u>Gallons</u>	<u>Cubic Feet</u>
137,553 annually	18,389 annually
11,463 monthly	1,532 monthly
377 daily	50 daily

It is worthy to note, the lowest water consumption year 2015 (155.580 MG), divided by the number of connections (1269), was experienced during the mandatory drought restrictions with average household water consumption as:

<u>Gallons</u>	<u>Cubic Feet</u>
122,600 annually	16,390 annually
10,216 monthly	1,366 monthly
336 daily	45 daily

Comparing the highest consumption period within the last 10 years (2020) with the lowest consumption period (2015) full year of mandatory conservation restrictions in force, the average household savings was 10% as shown in Table 4.1.2:

Table 4.1.2
Average Highest vs Lowest Household Consumption Years

Average Household Consumption	Average Annual Household	Average Monthly Household	Average Daily Household
Calendar Year	Annual Cubic Ft	Monthly Cubic Ft	Daily Cubic Ft
Highest Consumption Period in last 10 years (2020)	18,389cft	1,532cft	50cft
Mandatory Drought Consump 2015	16,390cft	1,366cft	45cft
Conservation Savings:	1,999cft	166cft	5cft
Percent Savings:	10%	10%	10%

The District increased connections by 16.5% from 2015 to 2024 and saved on water consumption by 10% at the same time.

It is important to note that prior to conservation implementation, the consumption in 2013 was (227.617mg). This number divided by the number of connections (1259) computes average household usage for 2013 compared the as follows:

Year 2013

Gallons	Cubic Feet
180,792 annually	24,170 annually
15,066 monthly	2,014 monthly
495 daily	66 daily

Comparing 2013 consumption (227.61mg) with 1259 connections with the highest consumption in the last ten year period 2020 (187.76) with 1365 connections, the community had already reduced its consumption by 32% while experiencing an over 8% increase in growth.

	Average. Monthly Consumption in cft	Average Daily Consumption in cft
2013 Pre-conservation	2,014 cft monthly	66 cft daily
20 15 Post Conservation	1,366 cft monthly	45 cft daily
Savings Percent	32%	32%

California Waterworks Standards define maximum day demand (MDD) as the amount of water utilized by consumers during the highest day of use (midnight to midnight) in the last ten year period, excluding fire flow. Peak hour demand (PHD) is defined as the amount of water utilized by consumers during the highest hour of use during the maximum day, excluding fire flow (CCR, Title 17) **When daily information is not available, the MDD and PHD are calculated using the following formulas:**

MDD = highest daily average of the highest month of the most recent 10year period x (1 - 2.5) peaking factor
PHD = average hourly flow of the highest month of the most recent 10year period x (1 – 2.5) peaking factor

To reflect the worst case scenario, this formula will reflect the highest peaking factor of (2.5):

RAWD's current MDD = 0.897 x 2.5 = 2.243mg
RAWD's current PHD = 2.243mg /24 = .0934mg x 2.5 = .0.234mg

Table 4.1.4 estimates future maximum day and maximum hourly demands with the 1.65% growth factor:

Table 4.1.4
Projected MDD and PHD with 1.65% Growth Factor

	Highest Reported in last 10 years	Estimated 2030	Estimated 2035
# of connections (2024)	**1432**	1544	1644
Highest Annual Water Consumed (2020)*	**187.76MG**	207.13MG	224.79MG
Est. MDD-2017**	**2.243MG**	2.471MG	2.682MG
Est. PHD 2017**	**0.234MG**	0.256MG	0.278MG

*Used the highest consumption year (2020) year for a base starting point.
**Computed all MDD and PHD's based on 2017(monthly highest usage times 1.65% per year.)

4.2 Groundwater Pumping Capacity:

Tables 4.2.1, 4.2.2, & 4.2.3 indicate the current PG&E winter/spring/summer schedule for peak/off-peak/super off- peak hours that changed in 2021:

Table 4.2.1
PG&E Summer Peak/Partial Peak/Off-peak Schedule
June 1 through September 30th

Summer Peaks	Hours	Days	#of hours
Peak	4:01p.m. – 9:00p.m.	7 days per week	5
Partial Peak	9:01p.m. – 11:00p.m.	7 days per week	2
	2:01p.m. – 4:00p.m.	7 days per week	2
Off Peak	11:01p.m. – 2:00p.m.	7 days per week	15
	123 days in Summer Schedule		

Table 4.2.2
PG&E Winter Peak/Off-Peak Schedule
Oct. 1st through February 28th

Winter Peaks	Hours	Days	# of hours
Peak	4:01 p.m. – 9:00 p.m.	7 days per week	5
Off Peak	9:01 p.m. – 3:59p.m.	7 days per week	19
	92 days in Spring Schedule		

Table 4.2.3
PG&E Spring Peak/Off-Peak/Super Off Peak
March 1 through May 31

Spring Peaks	Hours	Days	# of hours
Peak	4:01 p.m. – 9 p.m.	7 days per week	5
Off Peak	9:01 p.m.- 8:59a.m.	7 days per week	12
	2:01 p.m.- 4:00 p.m.	7 days per week	2
Super Off Peak	9:00 a.m. – 2:00 p.m.	7 days per week	5
	122 days in Winter Schedule		

Current estimated total pumping capacity and optimum pumping is shown in Table 4.2.4:

Table 4.2.4
Current Estimated Optimum Pumping Capacity

Well	Const Date	Well depth	Average Gals per minute	Maximum **Winter** Daily Gal. output on **off peak hours 19 hrs, 151 days**	Maximum **Spring** Daily output on **Super off peak hours 5 hrs, 92 days**	Maximum **Summer** Daily output Gal. on **off peak hours 15hrs, 122 days**	Daily maximum potential 24 hour output (All peaks) **24 hrs, 365 days**
4	98/99	495ft	650	0.741MG	0.195 MG	0.585MG	.936MG
5	04/05	660ft	1000	1.140MG	0.300 MG	0.900MG	1.440MG
6	07/08	790ft	1200	1.368MG	0.360MG	1.080MG	1.728MG
		Daily	Totals:	3.249MG	0.855MG	2.565MG	4.104MG
		Annual	x # days	490.59MG	78.66MG	312.93MG	1,497.96MG

Table 4.2.5
Potential Optimum Pumping Annual Production

PG&E Billing Cycle	Daily pumping times # of days in cycle
Winter Off Peak Cycle 151 days	490.59MG
Spring Super Off Peak Cycle 92 days	78.663MG
Summer Off Peak Cycle 122 days	312.93MG
Total Potential Off Peak Annual Production	882.18MG

4.3 Seasonal and Daily Demand Variations and Peaking Factors:

The District reads meters every two months and well meters are read once a month. Based on the data provided in Table 4.3.1, there is a significant seasonal difference in water consumption. The months of July and August are consistently the highest consumption periods in the last ten years and January and February are equally consistent as the lowest consumption periods. It is safe to assume that January/February consumption is fairly representative of indoor water consumption while July/August represents a combination of both indoor/outdoor consumption. Outdoor watering increases the demand for water by nearly 333%.

Table 4.3.1
10 Year Water Consumption by Billing Periods

	Consump MG	Consump MG	Consump MG	Consump MG	Consump MG	Consump MG	Consump MG
Year	Jan-Feb.	Mar-Aprl	May-June	July-Aug	Sept.-Oct	Nov.-Dec	Year
2015	15.80	23.89	31.84	39.10	30.31	14.64	155.58
2016	13.28	17.57	36.37	41.04	33.27	14.68	156.21
2017	11.65	15.58	42.82	48.54	36.48	17.13	172.20
2018	13.41	16.45	39.44	50.76	31.98	21.28	173.32
2019	13.56	15.36	36.95	48.61	32.95	21.33	168.76
2020	14.74	20.24	37.80	53.79	37.94	23.27	187.76
2021	14.36	23.72	40.75	51.07	33.51	21.74	185.15
2022	17.99	21.85	34.99	49.21	33.64	16.11	173.79
2023	14.20	15.84	34.34	47.31	33.61	16.75	162.06
2024	14.25	15.63	36.38	48.23	38.02	16.53	169.04
Average	**14.32**	**18.61**	**37.17**	**47.77**	**34.17**	**20.25**	**170.39**

4.4 Projected Water Demands:

Future year well pumping capacity projections are based on historic consumption and estimated number of new connections and population growth. The Governor of California is currently asking for an additional 15% of water conservation based on year 2020 production levels.

It is the intent of the following Table 4.4.1 to project that 15% conservation with a 1.65% growth factor and also include a contrast of non-conservation levels based on the highest water produced in the last 10 year period (2013). This table shows over an 80MG difference between conservation and non-conservation water production over the next 10 years. It is necessary to project best and worst case scenarios to ensure the District has adequate system requirements and pumping capabilities well into the future.

Table 4.4.1
Projected 10 Year Water Production
at conservation, non-conservation and current levels

Baseline Year and amount	2024 Actual	2030 Projected	2035 Projected
Yr 2020 200.668MG Production (Less 15% conservation levels) **Conserv.lvls**	175.23	181.62	183.25
Yr 2013 242.61,MG Water Production **non-conserv levels**	251.46	267.64	290.46
Projected at **Current Production levels**	183.61	202.56	219.83
Projected # of Connect.	1432	1544	1644

*reported in million gallons

If the community should revert to pre-conservation practices, the estimated production could increase totals in year 2035 by about 70MG from our current production levels.

Accordingly, if you compare projected 2035 annual water production at non conservation levels of 290.46MG (Table 4.4.1) with our potential optimum pumping annual totals of 882.18MG (Table 4.2.5), the District can produce more than 3 times the amount of water required to supply the community. Because the highest consumption would fall in summer months, the concern would be whether the District could achieve max day and max hour demand. Projected maximum daily demand in the year 2035 is projected to be 2.682MG (Table 4.1.4) and the optimum maximum optimum pumping hours capacity in the summer is estimated to be 2.565MG (Table 4.2.4). This could be supplemented by additional .116MG drawdown from the tanks. Our maximum daily pumping on peek and non-peak capability is 4.104MG, it could be done by running the wells in all peaks but it would be more costly.

4.5 Unaccounted for Water

Drought and other water shortage issues highlight the need to manage water loss in water distribution systems. Water loss is determined by subtracting the amount of water consumed from the amount of water produced. In the case of Rio Alto Water District our losses include water used when flushing hydrants. Water used at the Wastewater Treatment is metered and included in the consumption totals. Other water loss can result from seepage, leaks, and pipe failures due to aging infrastructure and/or errors in data, and water theft. Residential construction water is metered and larger scale construction water is metered through hydrant meters. Water utilities can increase water supplies and recover revenue by identifying the scale and cost of these losses. Senate Bill (SB) 606 adopted in 2018 required DWR to submit to the Legislature a final report with recommendations on the feasibility of developing and enacting water loss reporting requirements for urban wholesale water suppliers (3,000 connections or provider of 3,000 acre feet of water). This report was submitted in May 2020. DWR now requires water loss audits by urban wholesale water suppliers. The Water Loss Audit Reporting Program provides guidance on how water agencies can identify and eliminate water loss in water distribution systems. The audit uses local water agency data over a defined period to identity water losses. Once an agency has determined the water losses and performed a benefit-cost analysis to verify economic feasibility of addressing losses, a leak detection program may be established. Rio Alto Water District is currently not an urban water provider but is still required to report annual water losses. Estimated annual water losses for years 2015-2024 are shown in Table 4.5.1:

Table 4.5.1
Estimated Water Losses last 10 years

Year	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Est. Wtr Loss	14.666	13.437	14.508	16.897	16.917	12.908	17.951	10.567	14.264	14.577
Wtr Produced*	170.246	169.647	186.708	190.217	185.677	200.668	203.101	184.359	176.322	183.612
Percntge	8.61%	7.92%	7.77%	8.88%	9.11%	6.43%	8.83%	5.7%	8.08%	7.93%

4.6 Water Reliability:

The Redding Groundwater Basin is estimated to be a 5.5million acre-foot aquifer. The Bowman Sub-basin is bounded; on the west by the Coast Ranges; on the north by Salt, Dry and Cottonwood Creeks: on the east by the Sacramento River and on the south by the Red Bluff Arch. Recharge to the principal aquifer is mostly by infiltration of stream flows at the margins of the sub-basin. Infiltration of applied water and stream flows, and direct infiltration of precipitation are the main sources of recharge into the alluvium. (Pierce 1983) The seasonal fluctuation is approximately 5 feet for normal and dry years. Further updated by the Department of Water Resources, records from Spring of 2004 to Spring of 2011, the Redding Groundwater Basin showed an overall net groundwater elevation increase of .5 feet (a 1.2foot decrease in Tehama County and an increase of 1.6 feet in Shasta County.) As of September 2022, the 3rd year of our current drought, the static water levels for Wells 5 & 6 showed a decrease of 4.81 ft and 7.33 ft respectively from levels at construction. Both wells recovered to above construction levels as of March 2024. A Ground Water Sustainability Plan has been developed for the Bowman Subbasin by the Groundwater Sustainability Agency to help protect this aquifer from future non-sustainable water depletions.

5. POTABLE WATER REGULATIONS & DESIGN CRITERIA........................28-33

RAWD has established a level of service that complies with state and federal potable water regulations in order to insure that potable water distributed within its service area meets public health and safety standards.

5.1 Drinking Water Quality Standards

Rio Alto Water District's potable water is subject to the Safe Water Drinking Act. In order to ensure that tap water is safe to drink, the U.S. Environmental Protection Agency (EPA)and the State Water Board Division of Drinking Water. prescribe regulations that limit the amount of certain contaminants in a water provided by public water systems. The EPA has established a number of rules codifying the regulations applying to drinking water supplies

- The **National Primary Drinking Water Standards**, which establish mineral and microbiological quality of water supplies.
- The **National Secondary Drinking Water Standards,** which establish certain recommendations for aesthetic water quality.
- The **Consumer Confidence Report Rule,** which requires distribution of water quality information to consumers.
- The **Total Coliform Rule**, which regulates microbiological quality of water supplies.
- The **Arsenic Rule**, which establishes a more stringent limit (10 parts per billion) for arsenic than previous regulations.
- The **Lead & Copper Rule,** which regulates lead and copper concentrations in drinking water supplies at the tap, and establishes requirements for minimizing the leaching of lead and copper from household plumbing fixtures.
- The **Chemical Contaminant Rules**, which regulate the concentrations of specific organic and inorganic chemicals in drinking water supplies.
- The **Unregulated Contaminant Monitoring Requirements**, which require monitoring for various unregulated chemicals of emerging concern in drinking water supplies. EPA uses the program to collect data for contaminants suspected to be present in drinking water, but that have health-based standards set under the SDWA.

In California, these federal regulations are administered by the California State Water Board Division of Drinking water.

5.2Water Testing:
Bacteriological testing is performed weekly on our distribution system. We have 8 sample stations located strategically within the service area as shown in Table 5.2.1:

Table 5.2.1

Station	Location
#1	Lake California Drive
#2	Freshwater Drive
#3	Big Bend
#4	Well#2
#5	Starboard
#6	Booster Station
#7	River View Drive
#8	Rio Alto Water District Office- River View Dr.

In 2023, the District installed repeat sample stations upstream and downstream from the existing sample stations. One sample per week is drawn and forwarded to an outside laboratory that reports the results to Rio Alto and the Water Board. If a sample is positive for coliform, the District is required to retest the site and test upstream and down-stream from the positive test site. In addition to weekly bacteriological testing the District is subject to a rigorous schedule of testing on our wells and distribution system. Results of those tests can be found in our Consumer Confidence Report posted annually on our website at RAWD.org.

As of 2024, the District is not required to treat the water. The District is one of the few Districts left that does not have to chlorinate their water and there is always the chance that this could be changed in the future. This would be a costly endeavor for the District.

The following table 5.2.2 Testing Schedule for Well#6 fairly represents the testing required for each well:

Table 5.2.2
Sample Well Testing Schedule

PSCODE	GC	GROUP/ANALYTE	LESS THAN	REPORTING LEVEL	LAST RESULT	COUNTING ERROR (±)	UOM	MCL	DLR	LAST SAMPLE	COUNT OF RESULTS	FREQ MON THS	MOD	NEXT SAMPLE DUE	NOTES
CA5210005_006_006		RIO ALTO WATER DISTRICT					WELL 06								
	GP	SECONDARY/GP													
		1928 ALKALINITY, BICARBONATE		0.000	110.000	0.000	MG/L	-----	-----	9/21/2016	1	108		2025/09	
		1919 CALCIUM		0.000	12.000	0.000	MG/L	-----	-----	9/21/2016	1	108		2025/09	
		1929 ALKALINITY, CARBONATE	<	10.000	0.000	0.000	MG/L	-----	-----	9/21/2016	1	108		2025/09	
		1017 CHLORIDE		0.000	2.300	0.000	MG/L	500	-----	9/21/2016	4	108		2025/09	
		1905 COLOR	<	0.000	0.000	0.000	UNITS	15	-----	9/21/2016	4	108		2025/09	
		1022 COPPER, FREE	<	50.000	0.000	0.000	UG/L	1000	50	9/21/2016	4	108		2025/09	
		2905 FOAMING AGENTS (SURFACTANTS)	<	0.000	0.000	0.000	MG/L	0.5	-----	9/21/2016	4	108		2025/09	
		1915 HARDNESS, TOTAL (AS CACO3)		0.000	62.900	0.000	MG/L	-----	-----	9/21/2016	1	108		2025/09	
		1021 HYDROXIDE AS CALCIUM CARBONATE	<	10.000	0.000	0.000	MG/L	-----	-----	9/21/2016	1	108		2025/09	
		1028 IRON	<	100.000	0.000	0.000	UG/L	300	100	9/21/2016	4	108		2025/09	
		1031 MAGNESIUM		0.000	8.000	0.000	MG/L	-----	-----	9/21/2016	1	108		2025/09	
		1032 MANGANESE	<	20.000	0.000	0.000	UG/L	50	20	9/21/2016	4	108		2025/09	
		1920 ODOR	<	1.000	0.000	0.000	TON	3	1	9/21/2016	4	108		2025/09	
		1925 PH		0.000	8.010	0.000		-----	-----	9/21/2016	4	108		2025/09	
		1050 SILVER	<	10.000	0.000	0.000	UG/L	100	10	9/11/2019	4	108		2028/09	
		1052 SODIUM		0.000	13.000	0.000	MG/L	-----	-----	9/21/2016	1	108		2025/09	
		1064 CONDUCTIVITY @ 25 C UMHOS/CM		0.000	197.000	0.000	US	1600	-----	9/21/2016	4	108		2025/09	
		1055 SULFATE		0.500	1.200	0.000	MG/L	500	0.5	9/21/2016	4	108		2025/09	
		1930 TDS		0.000	169.000	0.000	MG/L	1000	-----	9/21/2016	4	108		2025/09	
		0100 TURBIDITY	<	0.100	0.000	0.000	NTU	5	0.1	9/21/2016	4	108		2025/09	
		1095 ZINC	<	50.000	0.000	0.000	UG/L	5000	50	9/21/2016	4	108		2025/09	
	IO	INORGANIC													
		1002 ALUMINUM	<	50.000	0.000	0.000	UG/L	1000	50	9/11/2019	4	108		2028/09	
		1074 ANTIMONY, TOTAL	<	6.000	0.000	0.000	UG/L	6	6	9/11/2019	4	108		2028/09	
		1005 ARSENIC		2.000	4.000	0.000	UG/L	10	2	9/11/2019	3	36		2022/09	
		1010 BARIUM	<	100.000	0.000	0.000	UG/L	1000	100	9/11/2019	4	108		2028/09	
		1075 BERYLLIUM, TOTAL	<	1.000	0.000	0.000	UG/L	4	1	9/11/2019	4	108		2028/09	
		1015 CADMIUM	<	1.000	0.000	0.000	UG/L	5	1	9/11/2019	4	108		2028/09	
		1020 CHROMIUM	<	10.000	0.000	0.000	UG/L	50	10	9/11/2019	4	108		2028/09	
		1025 FLUORIDE		0.100	0.100	0.000	MG/L	2	0.1	9/21/2016	4	108		2025/09	

	1035	MERCURY	<	1.000	0.000	0.000	UG/L	2	1	9/11/2019	4	108	2028/09
	1036	NICKEL	<	10.000	0.000	0.000	UG/L	100	10	9/11/2019	4	108	2028/09
	1039	PERCHLORATE	<	2.000	0.000	0.000	UG/L	6	2	8/11/2021	5	36	2024/08
	1045	SELENIUM	<	5.000	0.000	0.000	UG/L	50	5	9/11/2019	4	108	2028/09
	1085	THALLIUM, TOTAL	<	1.000	0.000	0.000	UG/L	2	1	9/11/2019	4	108	2028/09
NI	**NITRATE/NITRITE**												
	1040	NITRATE		0.400	0.804	0.000	mg/L	10	0.4	9/15/2021	7	12	2022/09
	1041	NITRITE	<	0.400	0.000	0.000	mg/L	1	0.4	9/11/2019	3	36	2022/09
RA	**RADIOLOGICAL**												
	4109	GROSS ALPHA PARTICLE ACTIVITY	<	3.000	0.000	0.000	PCI/L	15	3	9/6/2017	6	108	2026/09
	4030	RADIUM-228	<	1.000	0.000	0.000	PCI/L	------	1	9/6/2017	6	108	2026/09
S1	**REGULATED VOC**												
	2981	1,1,1-TRICHLOROETHANE	<	0.500	0.000	0.000	UG/L	200	0.5	5/12/2021	6	72	2027/05
	2988	1,1,2,2-TETRACHLOROETHANE	<	0.500	0.000	0.000	UG/L	1	0.5	5/12/2021	6	72	2027/05
	2985	1,1,2-TRICHLOROETHANE	<	0.500	0.000	0.000	UG/L	5	0.5	5/12/2021	6	72	2027/05
	2978	1,1-DICHLOROETHANE	<	0.500	0.000	0.000	UG/L	5	0.5	5/12/2021	6	72	2027/05
	2977	1,1-DICHLOROETHYLENE	<	0.500	0.000	0.000	UG/L	6	0.5	5/12/2021	6	72	2027/05
	2378	1,2,4-TRICHLOROBENZENE	<	0.500	0.000	0.000	UG/L	5	0.5	5/12/2021	6	72	2027/05
	2968	O-DICHLOROBENZENE	<	0.500	0.000	0.000	UG/L	600	0.5	5/12/2021	6	72	2027/05
	2980	1,2-DICHLOROETHANE	<	0.500	0.000	0.000	UG/L	0.5	0.5	5/12/2021	6	72	2027/05
	2983	1,2-DICHLOROPROPANE	<	0.500	0.000	0.000	UG/L	5	0.5	5/12/2021	6	72	2027/05
	2413	1,3-DICHLOROPROPENE	<	0.500	0.000	0.000	UG/L	0.5	0.5	5/12/2021	6	72	2027/05
	2969	P-DICHLOROBENZENE	<	0.500	0.000	0.000	UG/L	5	0.5	5/12/2021	6	72	2027/05
	2990	BENZENE	<	0.500	0.000	0.000	UG/L	1	0.5	5/12/2021	6	72	2027/05
	2982	CARBON TETRACHLORIDE	<	0.500	0.000	0.000	UG/L	0.5	0.5	5/12/2021	6	72	2027/05
	2380	CIS-1,2-DICHLOROETHYLENE	<	0.500	0.000	0.000	UG/L	6	0.5	5/12/2021	6	72	2027/05
	2964	DICHLOROMETHANE	<	0.500	0.000	0.000	UG/L	5	0.5	5/12/2021	6	72	2027/05
	2992	ETHYLBENZENE	<	0.500	0.000	0.000	UG/L	300	0.5	5/12/2021	6	72	2027/05
	2251	METHYL TERT-BUTYL ETHER	<	3.000	0.000	0.000	UG/L	13	3	5/12/2021	6	72	2027/05
	2989	CHLOROBENZENE	<	0.500	0.000	0.000	UG/L	70	0.5	5/12/2021	6	72	2027/05
	2996	STYRENE	<	0.500	0.000	0.000	UG/L	100	0.5	5/12/2021	6	72	2027/05
	2987	TETRACHLOROETHYLENE	<	0.500	0.000	0.000	UG/L	5	0.5	5/12/2021	6	72	2027/05
	2991	TOLUENE	<	0.500	0.000	0.000	UG/L	150	0.5	5/12/2021	6	72	2027/05
	2979	TRANS-1,2-DICHLOROETHYLENE	<	0.500	0.000	0.000	UG/L	10	0.5	5/12/2021	6	72	2027/05

	2984	TRICHLOROETHYLENE	<	0.500	0.000	0.000 UG/L	5	0.5	5/12/2021	6	72	2027/05
	2218	TRICHLOROFLUOROMETHANE	<	5.000	0.000	0.000 UG/L	150	5	5/12/2021	6	72	2027/05
	2904	TRICHLOROTRIFLUOROETHANE	<	10.000	0.000	0.000 UG/L	1200	10	5/12/2021	6	72	2027/05
	2976	VINYL CHLORIDE	<	0.500	0.000	0.000 UG/L	0.5	0.5	5/12/2021	6	72	2027/05
	2955	XYLENES, TOTAL	<	0.500	0.000	0.000 UG/L	1750	0.5	5/12/2021	6	72	2027/05
S2	REGULATED SOC											
	2414	1,2,3-TRICHLOROPROPANE	<	0.005	0.000	0.000 UG/L	0.005	0.005	11/23/2021	5	36	2024/11

5.3 Drinking Water Regulations Impacts on RAWD:

The Environmental Protection Agency (EPA) is the government agency in charge of environmental protection. They oversee water, air, and soil quality laws and regulations across the country. The Safe Drinking Water Act (SWDA) was passed by Congress in 1974 and amended in 1986 and 1996 to protect drinking water and its sources, rivers, lakes, reservoirs, springs, and groundwater wells. The SWDA sets the national standards for drinking water, both naturally occurring and man-made contaminants that may be found in drinking water. States then adopt general water quality standards. California, in general, adopts more stringent water quality standards than is required by the SWDA. As new contaminants emerge, Districts are required to test and comply with new limits imposed on those contaminants or be subject to major fines and even imprisonment for negligence. Testing and major projects to comply with these regulations is a costly endeavor which in the end, Districts have to pass on to their customers. September 25, 2012, Governor Jerry Brown amended the water code to include " Every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking and sanitary purposes." Current legislators are attempting to set requirements for Districts to offer low-income discounts in response to this amendment. The implementation of low-income rates requires finding a source of revenue that is not encumbered by Proposition 218 rules.

5.4 Impending Regulatory Issues:

In January of 2021 the District received a Salt Control Program Notice to Comply. An option to participate in a Prioritization and Optimization Study for 10 to 15 years was offered in lieu of hiring a consultant and preparing our own study. This study participation, to date, has cost the District:

Year	Annual Participation Cost
2021	$760
2022	$802
2023	$880
2024	$965

In the forefront of impending regulations, the constituents of concern for water quality are Per- and- polyfluoroalkyl substances also known as PFAS. There are thousands of PFAS chemicals, but the EPA & State Water Resources are currently focusing on 2 (PFOA & PFOS). These contaminants have negative health and environmental implications. These groups of man-made chemicals can be found in a wide range of consumer products from food wrappers to Teflon coatings, to fire extinguishing foam and wastewater biosolids. The MCL was established at 4 parts per trillion (ppt). The District had these tests performed in late 2024 and Wells 4,5, & 6 all tested non-detect. Had those tests come back detectable above the MCL it would have forced the District to treat it's wells. The District will be doing repeat samples as required in April of 2025.

In 2023, the District complied with the enhanced Lead & Copper rulings that required the District to assess all properties built before 1986 for lead and copper piping leading from the meters to the homes. The District did not find any residential lead and copper.

Another constituent of concern is microplastics. Microplastics have been detected in drinking water, beer and food products, including seafood and table salt. In a recent study of eight individuals from eight different countries, microplastics were recovered from stool samples of every participant. The MCL and testing procedures have not been established yet, but they are currently assessing this.

6.0 WATER STORAGE..34-35

6.1 While the production of water may be attainable, it is necessary to have adequate storage to support that production. Table 6.1.1 below indicates the current water storage capacity for Rio Alto Water District:

Table 6.1.1
Current Tank Storage

Tank Name	Location	Construction Year	Storage Capacity
2B -Large Tank	Well 3 Site River View SW	1991	1.349 MG
2A -Medium Tank	Well 3 Site River View SW	1969	.500MG
1A- Tank near booster station	River View N	1969	.100MG
1B- Tank	Well 5 Site Rio Alto Dr. SW	2006	.200MG
		Total:	2.149MG

Reservoirs should have adequate capacity to provide continuous domestic flow in the event of a disruption of the reservoir refilling system. They must also have adequate storage to provide anticipated fire flows for a reasonable duration. **California Waterworks Standards state that at all times a public water system's water source(s) shall have the capacity to meet the system's maximum day demand (MDD). For systems with 1,000 or more service connections, the system shall be able to meet 4 hours of peak hourly demand (PHD) with source capacity, storage capacity, and/or emergency source connections. (CCR, Title 17)** Based on those requirements, the current minimum required storage for the District is .936MG. (.234(PHD) x 4hrs). Table 6.1.2 shows the estimated necessary storage using the California Water Works Standards (in million gallons):

Table 6.1.2
Minimum storage requirements per California Waterworks Standards

	2024	2030	2035
Minimum Storage Requirement 4hrs(PHD)	0.936MG	1.032MG	1.120MG
Existing Storage	2.149MG	2.149MG	2.149MG
Remaining Capacity	+1.213MG	+1.117MG	+1.029MG

While that may be the minimum storage requirement per California Waterworks Standards, it is more prudent to consider other factors when computing storage requirements. Engineers recommend storage to be calculated with several different factors such as equalizing storage, emergency storage and fire flow storage.

Equalizing storage is the amount of water needed over and above the maximum daily demand rate (24-hour average) to satisfy peak demands of the day. This is often found to be between 15 and 20% of the MDD, and engineering practice is to use 20% for design purposes.

Fire storage is usually based on the theoretical amount that could be used to combat a major fire in the high value district.

Emergency Storage is the amount of water necessary to continue service in the event of power failure or some other failure of the supply system. This is usually assumed to be the MDD rate multiplied by some interval of time that might occur during a power outage.

Recommended storage is typically equalizing storage plus the larger quantity of either fire storage or emergency storage.

Equalizing Storage: 0.20 x MDD
Emergency Storage: 0.30 x MDD
Fire Flow Storage: 3000 GPM x 5 hrs (Per Tehama County, required amount through build out of all existing approved lots. Up to 2,470 lots and a population of 10,470).

This formula is computed as the sum of equalizing storage plus the greater of emergency storage or fire flow storage. Table 6.1.3 projects future storage requirements based on the engineer's preferred formula.

Table 6.1.3
Recommended Storage Requirements in Million Gallons

	2024	2030	2035
Equalizing Storage(ES)(20%of MDD)	0.448	0.494	.536
Emergency Storage(EMS)(30% of MDD)	0.672	0.741	**.805**
Fire Flow Storage(FFS)	**.900**	**.900**	**.900**
Subtotal= ES + >of EMS or FFS	1.348	1.394	1.436
Existing Storage	2.149	2.149	2.149
Remaining Capacity	0.801	0.755	0.713

Note there is a considerable discrepancy between the minimum required storage from Department of Public Health and engineering professional's recommendations. Engineering recommendations take into account that it is more economical and reliable to provide stored water supply needed during fire demands, peak demands in excess of MDD, and in the event of an emergency such as a power outage. The District has adequate storage until the year 2035.

7.1 Collection System:

The District was required by the California State Water Resources Control Board (SWRCB) to prepare a Sewer System Evaluation and Capacity Assurance Plan in 2009 (2009 SE &CAP). This document was prepared by PACE Engineering with assistance from District staff. The SE & CAP is to determine hydraulic capacity of key sanitary sewer systems for peak flow conditions. The SE & CAP prepared by PACE is attached to this report for reference. The report evaluates the capacity of the collection system for long range planning. PACE's evaluation examines the years 2009 through 2029.The growth factor for the wastewater treatment plant and the collections system will be based on the average annual increase in Household equivalents of the last ten year period of 1.15%. The Rio Alto sewer system currently consists of approximately 73,100 feet of collector sewers and 11,500 feet of 12 inch to 30 inch main interceptor sewers. Collector sewers are generally 4 to 10 inches in diameter and are used to collect wastewater from the building laterals. The main branches of the collections system, typically called interceptor sewers convey the wastewater to the treatment facility. (SE&CAP)

7.2 Wastewater Treatment Plant Capacity:

The District was issued a Cease and Desist Order by the Regional Water Quality Control Board on September 23, 2010 on the NPDES permit to Discharge the effluent to the Sacramento River. The District hired an engineering firm to evaluate our alternatives. After careful consideration, the District chose to eliminate the NPDES discharge to the Sacramento River and change to land discharge. To accomplish this change and ensure reliability, it was necessary to purchase land, make improvements to the existing facilities, install a two-mile pipeline, construct a second clarifier, upgrade the effluent pumps, upgrade all of the electric at the WWTP, create 4 ponds with walking trails, and install backup generation. The discharge is now subject to a Report of Waste Discharge (ROWD) instead of a NPDES permit. NPDES permits are subject to review and renewal every five years and the ROWD is subject to review every ten years. According to the Preliminary Engineering Report (PER) prepared by the project engineers, the project increased operations capacity of the Wastewater Treatment Plant as reported in Table 7.2.1:

Table 7.2.1
Design Criteria Capacity before & after Project

Description	WWTP Original Design	Existing WWTP Operations	Proposed WWTP Operations
Estimated Population	6400	2000	4180
Plant Capacity (MGD)			
ADWF	.64	.13	.27
PWWF	- .	.67	1.0
Raw Sewage Loadings			
Biochemical oxygen demand (BOD5) mg/l	200	150	150
Lb/Day @ADWF	-	160	340

Suspended Solids mg/L	250	165	165
Lb/Day @ADWF	-	180	370
Headworks			
# of comminutors	1	1	1
Comminutor Max Cap.(MGD)	5.0	5.0	5.0
Number of barscreen Channels	1	1	1
Bar Screan Channel Width	24	24	24
Oxidation Ditch			
# of oxidation ditches	1	1	1
Water Depth	7	7	7
Effective Water Volume (cf)	38,000	38,000	38,000
Effective Water Volume (Gal)	284250	252000	252000
Organic Loading lbs Bod/1000 cf) @ADWF	-	4.8	10.1
Hydraulic Detention Time Hr @ADWF	-	46.5	22.4
@ PWWF	-	9.	6.
Oxygen Supplies (Lbs/day) @ ADWF	-	1080	1080
Rotors (NO.)	2	2	2
Secondary Clarifier			
Circular Clarifier Diameter (ft)	1@36	1@36	2@36
Effective Water Depth (Ft)	8.0	8.0	8.0,14.0
Surface Area of Clarifier (SF)	1017	1017	2030
Overflow Rate CGPD/SF @PWWF	630	660	490
Effective Volume (CF)	8140	8140	22375
Effective Volume (Gal)	60880	60880	167360
Dentention Period (Hr) @PWWF	2.3	2.2	4.
Secondary Effluent Holding Pond	1	1	1
Capacity (Gal)	211,000	180,000@5 ft	180,000 @5ft
Detention Period (Hr)	7.9	6.5	4.3
Secondary Effluent Pumps	2	2	2
Capacity per pump	300	300	700
TDH (Ft)	70	70	100
Hp per pump	7.5	7.5	30
Pressure Sand Filters			
Number	1	3	3
Capacity per pump (Gpm)	450	450	450
Total Filter Bed Area (SF)	90	130	130
Filter rate (GPM/SF) @PWWF	4.9	3.63	3.6
Return Sludge Pump			

Number	2	2	2
Capacity per pump (GPM)	450	450	450
Head of pump (Ft)	28	28	28
H.P. per pump	7.5	10, 7.5	10, 7.5
Chlorination Chamber			
Number	1	1	1
Average Water Depth	10	10	10-inch Force Main will be utilized in addition to existing
Volume (CF)	7,500	7,500	6,500
Volume (Gal)	52,550	52,550	49,000
Dentention Period (Hr) @PWWF	1.97	1.9	1.5
Chlorinators			
Number	2	2	2
Capacity per Chlorinator(Gal NaOCI/day)	-	60,24	60,24
Total Capacity (Gal NaOCI/day)	-	84	84
Sludge Drying Beds			
Number	1	5	9
Area (SF)	6,400	13,720	20,920
Wetlands			
Total Area	1	1	78
Total Wetted Area (Acres)	-	-	50
Surface Loading Rate	-	-	0.2

With the completion of the Wastewater Treatment Plant and Wetlands Project, PACE Engineering's study indicates the capacity in the sewer treatment plant and its components will be adequate for the entire build out of the current approved tracts with Tehama County. Table 7.2.2 represents the average dry weather flow (ADWF) and the peak wet weather flows (PWWF) for the last 10 years:

Table 7.2.2
Average Dry Weather Flows/Average Peak Wet Weather Flows

Year	ADWF (MG)	PWWF (MG)	Total Annual Flow	Total Household Equivalents
2015	0.102	0.427	42.477	834
2016	0.113	0.705	59.326	840
2017	0.119	0.850	65.651	850
2018	0.115	0.598	54.206	869
2019	0.118	0.986	70.778	882
2020	0.125	0.576	50.466	901
2021	0.114	0.748	56.975	918

2022	0.114	1.110	49.818	929
2023	0.111	0.914	68.681	932
2024	0.116	1.022	71.577	939

Using the data from Table 7.2.2 the average ADW, PWWF and annual flows for the last ten years are:

10 Year Average Flows	
ADWF (MG)	0.1147
PWWF (MG)	0.793
Average Annual	58.895

Table 7.2.3 reflects the projected ADWF and PWWF based on annual increase in number of Household Equivalents:

Table 7.2.3
Projected ADWF and PWWF with 1.15% annual increase in HE Equivalents

Year	2024	2030	2035
ADWF	0.116MG	0.126MG	0.127MG
PWWF	1.022MG	1.095MG	1.159MG
Average Annual flow	71.577MG	76.66MG	81.171MG
Estimated Connections HE's	939	1006	1065

7.3. Connections and Capacity:

The District has several different types of sewer connections that are charged at different rates. A normal residence is charged 1 sewer connection fee and one sewer bimonthly charge. A few residences that were not initially in the Improvement District #1, but were able to make grade to the closest manhole, were allowed to extend the sewer line (sewer extensions) to their property down the easement. These customers were charged an additional capacity expansion fee but effective 2024 they pay the same monthly rate. In addition, the District allowed several Low Pressure Systems to be installed. These customers were either cases of septic or perk pit test failures that would have deemed the property uninhabitable or unbillable. These customers were subject to capacity expansion fees and slightly higher connection fees. There is an additional annual charge to flush the lines so the monthly fees are slightly higher than regular sewer monthly charges. Sewer connections are classified in the following Table 7 .3.1:

Table 7.3.1
Sewer Connection Classifications 2024

Sewer Type	Billcode	Household Equivalents	# of dwellings	# of household equivalents
Standard Residential Sewer	E	1	870	870
Standard Duplex	s	2	13	26
Standard Triplex	t	3	1	3
Sewer Extension	N	1	15	15
Low Pressure Residential Sewer	p	1	18	18
Low Pressure Duplex Sewer	pp	2	2	4
Commercial Sewer	O	1	2	2
½ Sewer Charge	e	1/2	2	1
			923	939

The change in sewer Household Equivalents for the past decade is shown in Table 7.3.2:

Table 7.3.2
RAWD 10 Sewer Connection History

Calendar Year	**New Connections**	New Non-Residential Connections	Total HE Equivalents Connections	% Increase HE Equivalents
BBF:	807	1	824	
2015	10	0	835	1.21%
2016	6	0	841	0.71%
2017	10	0	851	1.19%
2018	19	0	870	2.23%
2019	13	0	883	1.49%
2020	19	1	902	2.15%
2021	17	0	919	1.88%
2022	11	0	930	1.19%
2023	3	0	933	0.32%
2024	6	0	939	0.64%
Totals:	921	2	939	

*= Lake Club, RAWD and Lake California Church
** Average annual growth in HE Equivalents 1.15%

7.4 Lift Station Facilities:

Currently, the District's collection system has seven lift stations that serve to pump wastewater from low lying areas to the inceptor sewers. There are two large lift stations (capacity over .9MGD and 5 smaller satellite lift stations that serve small subservice basins. The following Table7.4.1 from the SE & CAP Report lists the lift station design capacities:

Table 7.4.1
RAWD Lift Station Capacity

Lift Station	Pump Type	Number of Pumps	Current Effective Capacity (MGD)	Estimated Peak Wet Weather Flow 2009	Estimated Peak Wet Weather Flow 2029
1	Dry Pit	2	1.06	.961	1.170
2	Dry Pit	2	.91	.561	.662
3	Submersible	2	.25	.027	.069
4	Submersible	2	.24	.011	.029
5	Submersible	2	.27	.007	.014
6	Submersible	2	.36	.054	.092
7	Submersible	2	.19	.004	.008

Based on the information provided in the SE & CAP report, all lift stations with the exception of lift station #1 appear to have adequate peak wet weather flow capacity until beyond the year 2029. Lift station #1 reaches its peak wet weather flow in the year 2019. The District should begin evaluating the cost to increase the capacity of lift Station #1. Both lift station #1 and lift station #2 were constructed with the ability to add a third pump to increase capacity. It appears the balance of the collection system has the capacity to meet peak wet weather flows through the year 2029.

In order to prepare the 2009 SE&CAP report, District Engineering staff reviewed the collection system mapping and confirmed pipe size, slope, length and material for input into modeling software. Staff from PACE conducted a field study during a rain event to obtain information for the hydraulic model study to determine the amount of wastewater flow and Infiltration and Inflow (I&I) into the system as required by SWRCB. A Hydraulic Model Sewer Capacity and Flow Summary was prepared and is included in the SE & Cap report found at the end of this report.

Chapter 8.0 WASTE WATER OPERATIONAL DEMAND 42-43

8.1 Existing Sewer Operations:

Raw sewage is pumped from Lift Station #1 to the headworks of the Wastewater Treatment Plant. Once received at the headworks, the sewage is processed through the muffin monster which grinds the solids. The sewage proceeds to the oxidation ditch where air is added to the solution through the aeration brushes. Providing aeration to the treatment process promotes bacterial growth to dissolve the solids and produce effluent. The effluent leaves the oxidation ditch through pipes and valving and goes to a clarifier where the solids settle to the bottom of the clarifier allowing the clear effluent to overflow out of the clarifier to the lauder where chlorine is added and it flows through piping to the holding pond. The settled solids in the clarifier are returned to the headworks via RAS pumps where they get reintroduced to the treatment process. Approximately every two weeks thickened solids that settle in the bottom of the clarifier are pumped to drying beds via the waste activated pumps (WAS). Once the effluent in the pond has attained adequate contact time it is removed from the pond by the effluent pumps and enters the pipeline where it is chlorinated before its approximate 1hour journey to the wetlands. When the effluent pumps are called to run, the valve at the discharge point at the wetlands is opened. The discharge leaves the pipe and cascades down the rocks on the island in pond #1. Solids are dried in the drying beds then stacked for disposal once a year at the landfill.

8.2 Seasonal and Daily Demand Variations:

Table 8.2.1 compares estimated seasonal demand process times for Average Dry Weather Flows (ADWF), Average Peak Wet Weather Flows for a normal year (PWWF-n) and Peak Wet Weather Flows for a wet year (PWWF-w):

Table 8.2.1
Comparison of seasonal demands

Process	ADWF <.400 mg daily	PWWF-n >.400-.700 mg daily	PWWF- w > 700-1.00 mg daily
Muffin Monster hrs of oper.	1.5 hrs day	20 hrs day	24 hrs day
Aeration Brush run time	12 hrs per day	18 hrs per day	18 hrs per day
Chlorine Demand	30 gal per day	40 gal per day	45 gal per day
Discharge	3 hrs per day	6 hrs per day	9 hrs per day
RAS pumps	24 hrs per day	24 hrs per day	24 hrs per day
Clarifiers	1	1	2
WAS pumps	10 min	1 hour	2 hours

8.3 Projected demands:

Based on Table 7.2.2 the projected ADWF and PWWF and number of connections for year 2035 are:

Year	ADWF	PWWF	# of Sewer Connections
2035	.127 MG	1.159	1065

Obviously, dry weather flow is not an issue of concern, but unless improvements are made to the inflow and infiltration we will continue to see increased wet weather flows that will exceed our WWTP limit of 1.0MG, Climate change predicts more precipitation and less snow pack.

Chapter 9.0 WASTE WATER REGULATIONS ....44- 46.

9.1 **Waste Water Regulations**:

Rio Alto Improvement District No. 1 is currently regulated by the California Regional Water Quality Control Board Central Valley Region. The discharge was redirected from secondary disinfected wastewater discharge to the Sacramento to percolation/evaporation wastewater disposal ponds. Instead of being regulated by a NPDES permit the District is now regulated by a Report of Waste Discharge subject to monitoring requirements. Rio Alto is required to furnish, under penalty of perjury, technical and monitoring program reports to support the relationship between the land discharge and potential impacts to groundwater quality. Discharge of wastes to surface waters or surface water drainage courses is now prohibited. The ponds are considered a landscape impoundment per Title 22, Section 60301.550 and landscape impoundments require recycled water sources have a water quality of "at least disinfected secondary-23." Disinfected secondary-23 recycled water is required to be sampled daily for coliform bacteria and analyzed by an approved laboratory. Rio Alto currently holds a certification on its lab. Our ROWD states "Effluent flows from the WWTP shall not exceed ADWL of .27MGD and PWWF limits of 1.0 MGD." Effluent discharged to the percolation/evaporation ponds shall not exceed the limits listed in Table 9.1.1 as follows:

Table 9.1.1
Current Effluent Limits

Constituent	Units	Limit	Basis of Compliance Determination
BOD	mg/L	30	30-day Average
BOD	mg/L	45	7-day Average
Total Suspended Solids	mg/L	30	30-Day Average
Total Suspended Solids	mg/L	45	7-Day average
Total Coliform Organisms	MPN/100mL	23	7-Day Median
Total Coliform Organisms	MPN/100mL	240	Monthly Maximum
pH	S.U.	6.0-9.0	Instantaneous Range

With the change to land disposal, the District was required to install four groundwater monitoring wells. These groundwater wells are subject to their own limitations. Initially the District was required to gather background water quality numbers and testing was required every quarter to assure the groundwater did not exceed either the Primary or Secondary MCLs established in Title 22 of the California Code of Regulations. After three years of quarterly sampling, the Regional Board, based on our results, is now allowing the District to reduce that sampling requirement to twice a year. The effects of our discharge cannot impact the groundwater as follows in Table 9.1.2:

Table 9.1.2
Groundwater Limitations

Constituents	Units	Limit	Basis of Compliance
All Title 22 MCLs	Primary MCL	Not to exceed any	Exceedance of MCL
All Title 22 MCLs	Secondary MCL	Not to exceed any	Exceedance of MCL
Total Coliform Organism	MPN/100mL	2,2	Over any 7-day period
Nitrate (as nitrogen)	mg/L	10	
pH	S.U.	<6.5 or >8.5	Instantaneous Range
Taste/odor, toxic or nuisance or adversely affect beneficial uses			

9.2 Regulations and Impacts on RAWD:

As with water regulations, increased regulations in wastewater are major cost drivers to processing wastewater. We redirected the discharge to help reduce the frequency of permit renewals which always included updated more stringent regulatory requirements. In 2021, our ground water monitoring requirements were reduced in their frequency, but any cost savings resulting from this reduction were eliminated by the ever increasing costs of our permits, lab certification costs, and chemical costs that have more than doubled in the last three years. With climate change, the likelihood of more atmospheric rivers may require upgrades in sizing at headworks functions to assure the District remains in compliance with regulatory requirements and avoid fines for sewer system overflows. Table 9.2.1. reflects the cost of our WWTP permits for the last ten year:

9.2.1
10 year historical costs of Wastewater Permits

Year	Wastewater Treatment Plnt	Collection System	Elap Permit
2015 *	$4,537	$2,088	$2,741
2016	$14,929	$2,088	$2,741
2017	$14,929	$2,088	$2,741
2018	$16,347	$2,286	$2,741
2019	$18,767	$2,625	$3,289
2020	$20,362	$2,848	$4,511
2021	$23,783	$3,326	$8,550**
2022	$24,687	3,453	$8,550**
2023	$26,785	$3,746	$4,615
2024	$32,505	$3,945	$4,615

*Partial Year
**Includes required lab assessment fees

9.3 Capacity:

After the addition of the second clarifier and the new sludge drying beds with the 2016 Wastewater Treatment Plant Improvements project, the processes should have more than adequate capacity to accept the additional loading through new build out of the approved tracts within Lake California. As mentioned in 9.2 more flows could during wet weather could require we make improvements to the headworks. The Peak Wet Wastewater Flows have exceeded out existing permit in several isolated weather events. Reduction of I&I needs to be addressed. 0The land we purchased for the wetlands is more than adequate for expansion of additional ponds if necessary.


Potential Solar Area
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Chapter 10.0 WATER, WASTEWATER SYSTEMS EVALUATIONS 47-48

10.1 Source Areas of Concern to prepare for:

Funding will need to be secured to continue with the rehab and maintenance contract for Tanks 1A and 2A as well as additional funding to include the other two tanks on a rehab and maintenance contract.

The District needs to maintain adequate funding for replacement of well pumps and motors on our highest producing wells 5 & 6.

The District needs to always be aware of the possibility of losing our status of non-treatment of our water due to constituents of concern.

10.2 Distribution System Areas of Concern to prepare for:

If development occurs in the undeveloped portion of tract 1017, the developer will have to include a pressure regulating tank in the package of infrastructure to ensure the residences will have adequate residential fire sprinkler pressure as required by State Law.

The majority of distribution piping and valves are over 50 years old. The District's water is relatively non corrosive and has experienced very few water line breaks. Most of the repairs to the water lines have been the result of outside contractors breaking the lines. The absence of chlorine helps extend the useful life of the lines, but eventually this infrastructure will need to be replaced.

10.3 Collection System Areas of Concern to prepare for:

There is over 600% difference between Average Dry Weather Flows and Peak Wet Weather Flows. Obviously, precipitation plays a major in this increase, but the District needs to concentrate on reducing the inflow and infiltration (I&I). District staff has made slip line repairs to the main sewer lines when we have found major contributors, but there is concern that another major contributor is the lateral trench lines that act as conduits for the water to flow down to the main where the laterals connect. Cracks in the clay piping allows water to infiltrate through the pipes and increases our flows. Our slip line repairs can only repair in between the laterals. We may find it necessary to replace sections of the main sewer lines to reduce our I&I. As reported in the SSMP report if Wet Weather flows continue to increase it may be necessary to install a third pump in lift stations# 1 and #2.

We have started replacing older pumps and motors in lift stations and need to take an aggressive approach to continue this. The interior of Lift Station #1 was rehabbed and recoated in 2022 and the ladder was brought up to OSHA standards.

10.4 Wastewater Treatment Plant Areas of Concern to prepare for:

The Muffin Monster currently has been rebuilt twice by our operators and it has outlived its useful life. It is working at a reduced capacity and impedes flows. The Muffin Monster could be replaced with another one or replaced with an automated bar screen (the preferred, but more expensive alternative).

The aeration system located in the oxidation ditch is over 45 years old. Components of the brushes have been replaced over the years and in 2020 we had to replace a torsion coupler that was only manufactured in Germany. This coupler took almost a year to receive due to the pandemic and supply shortages. Newer more efficient systems have been developed in the last 45 years that could replace this system, save the District on energy costs, and increase processing.

Availability and cost of Chlorine (a required component of our wastewater treatment process) is becoming problematic. Shasta Lake City has invested in a self-generating chlorine process where salt is turned into a brine, then a charge is added to it to produce Chlorine. Addressing this issue would have an immediate impact on our budget. The last 10 years of chlorine expenses are summarized below:

Year	Annual Expense
2015	$20,987
2016	$23,170
2017	$23,180
2018	$22,825
2019	$28,311
2020	$24,754
2021	$28,018
2022	$37,571
2023	$44,212
2024	$49,954

In the last ten years this cost has risen over 238%.

11. 0 ADMINISTRATIVE EVALUATION……………………………………………49-49

11.1 Administrative Areas of Concern:

Three employees of the District will be retiring within the next five years. The three tentative retirement dates are set at:

Position	Proposed Retirement Date
General Manager	April 30, 2026
Bookkeeper	August 31, 2025
Secretary	December 31, 2025

The General Manager, the Bookkeeper and the Secretary have already reached retirement age. The District will contract with a temporary agency to find applicants for the bookkeeper and secretary. The temporary agency does background and reference checks and will perform necessary skills testing. The District will then hire the successful candidate through the temporary agency as a temporary employee. If the candidate is a good fit for the District, we will in turn hire the candidate after the required period by the temporary agency has be met to avoid additional fees. This will increase the payroll and benefit expenditures during this period but will provide the benefit of working with the candidate before committing to long term employment.

The position for General Manager will be advertised through professional groups such as ACWA, WRMS and BC Water. I would recommend the emphasis be placed on administrative responsibilities and finance background.

Cyber security has become a real threat to public water and wastewater systems and the cost to stay current on the latest security will increase administrative costs to the District.

Poor economic conditions and stock market declines will continue to boost Public Employee's retirement costs.

Increased healthcare costs will continue to drive costs and the OPEB liability.

Continued growth of the community will necessitate hiring of more certified operators. If the District can secure grant funding to fund automated meter reading this could free up the field crew from meter reading which currently takes 4 operators two eight hour days and two office staff workers at least eight hours per billing cycle.

Eventually the District office will need to be upgraded with new flooring, carpet, office furniture and countertops.