Chapter 7: Thermalito Water and Sewer District

This chapter presents a Municipal Service Review (MSR) for the Thermalito Water and Sewer District (TWSD) with details on the district formation, boundary, government structure, population and land use, disadvantaged communities, and the provision of water and wastewater services and facilities. Based on the information included in this report, written Determinations that make statements involving each service factor that the Commission must consider as part of a Municipal Service Review are presented. The Determinations are based upon data presented in this Chapter for the Thermalito Water and Sewer District and are recommended to the Commission for consideration. The Commission's final MSR Determinations will be part of a Resolution that the Commission formally adopts during a public meeting.

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7.1 Agency Profile & Overview

7.1.1 Agency Profile

Type of Agency:	Irrigation District
Principal Act:	California Water Code, Division 11, §20500 et seq
Functions/Services:	• Management of raw water supply, water treatment, and distribution of potable water for residential, commercial, and municipal purposes; • Wastewater collection and transport; and • Solar electricity generation for internal use only.

Main Office:	410 Grand Avenue, Oroville, CA 95965
Mailing Address:	Same
Phone No.:	(530) 533-0740
Fax No.:	None
Web Site:	https://www.twsd.info/
General Manager:	Jayme Boucher at <jboucher@twsd.info>
Alternate Contact:	Chris Heindell at <cheindell@twsd.info>

Meeting Schedule:	3rd Tuesday of the month at 2:00 p.m.
Meeting Location:	District Office Boardroom, 410 Grand Avenue – Oroville, California 95965
Date of Formation:	1922

Area Served: 14,873 acres near Oroville, CA

Population:	Estimate ranges from 11,318 to 12,066 persons
Number of water/sewer connections:	3,116 water connections and 2,365 sewer connections
Gross Revenue:	$4,336,141 in FY20/21
Expenditures:	$4,250,423 in FY20/21

7.1.2 Agency Overview

Originally formed in 1922 as the Thermalito Irrigation District, sanitary sewer collection and conveyance services were added to the District's responsibilities in 1972. The District updated its name to the Thermalito Water and Sewer District (TWSD) in 2008 to reflect the two major public services it provides. TWSD operates under a "principal act," which governs the provision of one or more public services. As an irrigation district under California Water Code, Division 11, §20500 et seq, TWSD is empowered to provide a range of public services to the local community. Currently, the District provides the following services:

- Management of raw water supply, water treatment, and distribution of potable water for residential, commercial, and municipal purposes;
- Wastewater collection and transport; and
- Solar electricity generation for internal use only.

Please note that TWSD is empowered by its Principal Act to provide recreational services; however, it does not currently provide this service which would require approval from LAFCo to activate this latent power. The TWSD administrative office is located at 410 Grand Avenue – Oroville, California 95965. LAFCO's previous MSR for TWSD was adopted on June 1, 2006, via LAFCO Resolution No. 55-M 2005/06.

7.2 Agency Formation and Boundary

7.2.1 Formation

The Thermalito Water and Sewer District was originally organized on April 3, 1922, as Thermalito Irrigation District. The District was formed to provide raw irrigation water to the Thermalito agricultural community. The primary agricultural crops within the area when the District was formed were olive and orange orchards, irrigated pasture, grapes, and a couple of dairy operations (Butte Co. OEM, LHMP, 2019b). The District was authorized to operate by the California Water Code, Division 11, Section 20500 to 29978, derived from the 1897 Irrigation District Law. Soon after formation, the District issued a bond for $270,000 to finance the purchase and construction of irrigation canals, water rights, reservoirs, a reservoir site, and other property necessary for the District. In August 1923, the District purchased land from the Pacific Gas & Electric Company (PG&E) for $10,000 to develop the reservoir. Construction of the Concow Dam on Concow Creek began in November 1923 and was completed in December 1924. The Concow watershed was chosen because it was part of the original water distribution system owned by Pacific Gas & Electric Company. However, the purchase agreement with PG&E did not include the Wilenore/Concow water storage system, and it was essential that the District acquire the old Wilenore dam and land for the water rights. During the early years, Wilenore/Concow Reservoir water was used almost solely for irrigation. There were a few private wells within the District boundaries. However, most residential owners could not afford to dig for water as the hard pan layers under Thermalito made it cost-prohibitive. Therefore, almost all residences used the District

water for domestic purposes (Butte Co. OEM, LHMP, 2019). On July 1, 2008, the District changed its name to Thermalito Water and Sewer District (Butte Co. OEM, LHMP, 2019).

7.2.2 District Boundary

The Thermalito Water and Sewer District's geographic boundary encompasses approximately 14,873 acres (or 23.24 square miles), as seen in Figure 7-1 (next page). The TWSD is primarily located in the southern portion of the County of Butte. The District's main boundary area includes a relatively condensed urban area to the south. The western and northern parts of the boundary area have larger tracts of open and/or sparsely developed lands. In addition, the District encompasses large areas of State lands, including the Thermalito Power Canal, Thermalito Forebay and State Park, and the Oroville Wildlife Area (Butte Co. OEM, LHMP, 2019). For example, TWSD's boundary overlaps with small portions of the Thermalito Forebay, and the State owns this water body. This particular area of overlap is for the purposes of providing water and wastewater services to the land portion of these properties (i.e., water service to the Forebay) (personal communication, C. Heindel, July 2022).

Lake Concow is shown as being part of the District's boundary as the detached area north of the main boundary area in the County's GIS database. There is no requirement for the District's boundary to be contiguous. However, since Lake Concow is the District's primary surface water source, it makes sense that this important facility could be part of the District's SOI /boundary. However, based on information from LAFCo's files, it is not clear when or how Lake Concow came to be considered part of the District's boundary. LAFCo's previous MSRs in 2006 and 2007 did not show Lake Concow within the TWSD boundary in either text or maps. Additional research on this item is recommended.

The Cal Water Company is located to the south of TWSD. A portion of Cal Water's service area overlaps with the TWSD boundaries. This overlap area includes 17 parcels (APNs) and 19.7 acres as shown in Figure 1-2. The Lake Oroville Public Utility District is located east/south of TWSD. A portion of the City of Oroville's boundary and sphere of influence west of the Feather River overlap with the TWSD boundary and SOI. TWSD's boundary area also overlaps with the former County Service Area (CSA) NO. 26 – Thermalito Drainage, which CSA 26 was dissolved in 2019[1].

The District boundary currently includes 3,798 assessor parcels (LAFCO GIS, 2020). There have been no recent annexations. All areas within the boundary receive either water or wastewater service from this District. Some neighborhoods receive both water and wastewater service.

The District's sewer collection service only extends to about 3,680 acres (i.e., 25 percent of the boundary area). Much of the un-served area lies north and west of the current sewerage system infrastructure (TWSD, 2020b). For example, the Airport Industrial Park is an area where TWSD

[1] CSA 26 was managed by Butte County Public Works. CSA 26 was 14,000 acres in size and provided stormwater drainage services per Water Codes, Division 11, Part 1, Section 20500-29978.

only provides water services (the City of Oroville provides wastewater collection services here, and the City's wastewater line joins a TWSD sewer line) (personal communication, Boucher and Heindell, 2021). TWSD staff has indicated that there are no other areas of the District's service area that another agency might serve more efficiently (TWSD, 2021b).

7.2.3 Sphere of Influence

This section briefly describes the existing Sphere of Influence (SOI) for the Thermalito Water and Sewer District. Additional details can be found in Appendix K, SOI Options. Butte LAFCO adopted the original SOI for the TWSD in 1985. Today, the District's SOI encompasses 44,101 acres and includes 4,383 parcels, as shown in Table 7-1 below. As part of this MSR preparation process, District staff indicated that they believed that the Sphere of Influence boundary is adequate for projected future needs due to its large size (TWSD, 2021b).

Table 7-1: Geographic Summary (2021) of Water or Wastewater Services for TWSD

	Boundary Area (All Services)	**SOI (All Services)**	**Total Boundary & SOI**
Total Acres	14,873	44,101	58,974
Square Miles	23.24	68.90	92.15
Number of Assessor Parcels	3,798	4,383	8,181

Source: Butte County GIS Data, 2020

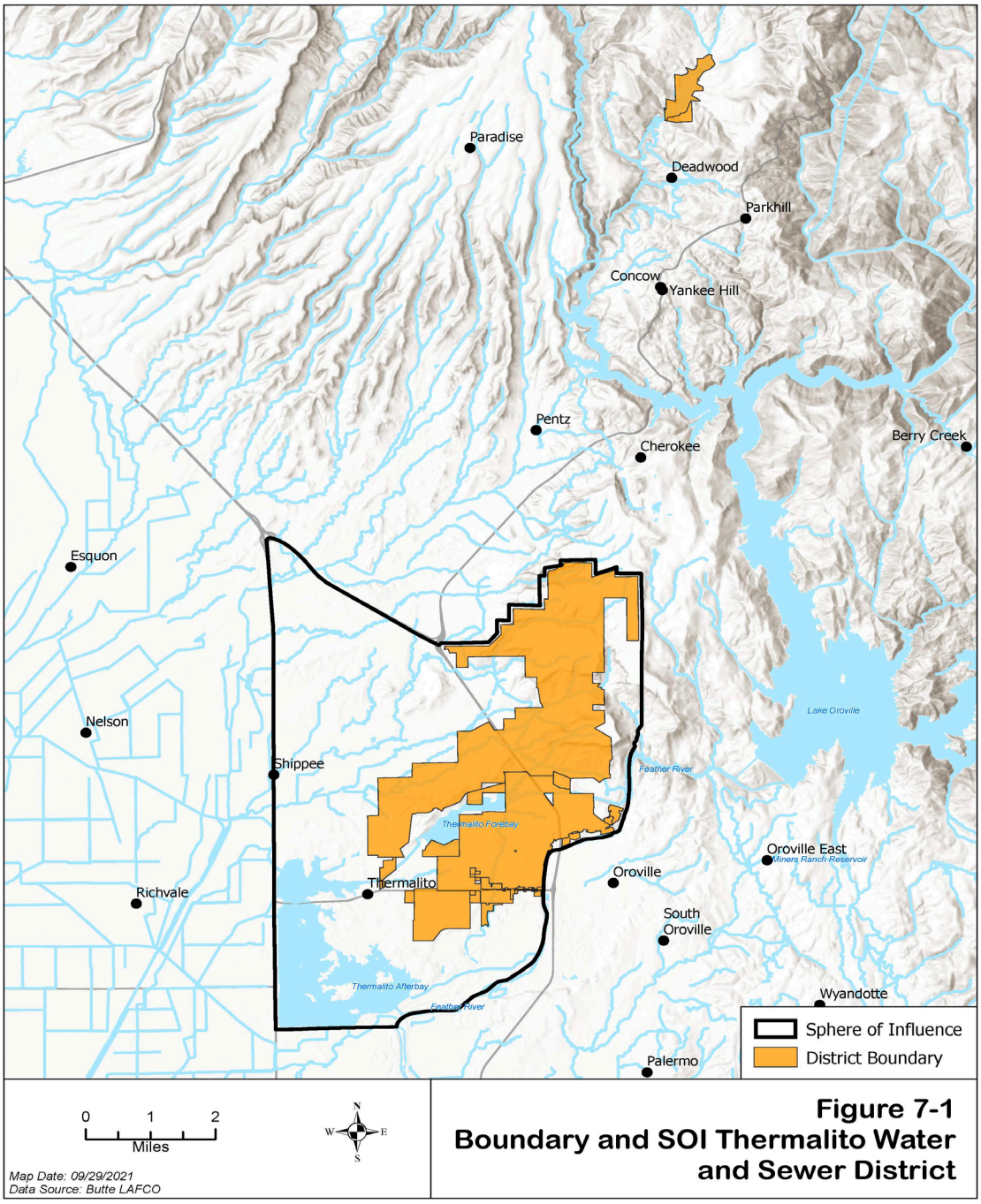
Butte LAFCO's 2006 MSR for Domestic Water and Wastewater Providers noted that the areas to the north, northeast, and west of the current Sphere of Influence are the areas where the District's SOI could be expanded if necessary. The areas immediately southeast of the District's SOI are currently being served by Cal Water - Oroville and SFWPA for water services and LOAPUD and the City of Oroville for wastewater collection services. Therefore, the District's boundaries do not cross the Feather River. Consideration should be given to the reorganization of the SOI for several reasons, including but not necessarily limited to the following:

1) The City of Oroville's sewer infrastructure interconnects to the District's wastewater collection system (the conveyance is by the District, and the City pays the District for utilizing its system);
2) The areas immediately to the southeast of the District are currently served by two domestic water providers and two wastewater collection providers;
3) Much of the District's service area is within the City of Oroville's boundaries;
4) Land east of Highway 70 and north of the Feather River receives wastewater collection service from the City of Oroville and water from the District; and
5) Within the District's service area, a small residential area east of Table Mountain Boulevard known as Rancho Golden is provided water by Cal Water -Oroville and wastewater collection by the City of Oroville.

Data Source: Butte LAFCO, MSR, 2006

Figure 7-1: Boundary Area & SOI for Thermalito Water and Sewer District

This page is reserved for the boundary map, which will be inserted here in a high-resolution format.



7.2.4 Extra-Territorial Services

The TWSD does not provide extra-territorial services outside its District boundary (TWSD, 2021b). The District maintains mutual aid and/or cooperative agreements with nearby water and wastewater service agencies as described in "Facilities Sharing," Section 7.9 in this Chapter.

7.3 District Governance and Accountability

This section describes how performance, accountability, transparency, and public engagement relate to the public's trust in local government. LAFCO is required by the CKH Act to make specific determinations regarding a public agency's government structure and accountability.

7.3.1 Government Structure

The TWSD is a local government agency structured as an Irrigation District consistent with its Principal Act: California Water Code, Division 11, §20500 et seq. The District has five elected Board Members who reside within the community. All registered voters who reside within the District boundaries are eligible to vote for and/or run for a seat on the District Board. The District Board appoints the General Manager (GM). The GM appoints department heads. The District is organized into two divisions, one for water and one for wastewater.

7.3.2 District Board

The District is overseen by an elected five-member Board of Directors that serves as the decision-making authority. Each elected Board Member serves for a term of four years. Each director must be a voter and freeholder of the District and a resident of the Division they represent at the time of nomination and during their term; and shall be elected by voters who are residents of the District (Butte LAFCO, MSR, 2006).

A new Board President is selected by the Board Members each year. The District's active committees include the Administration/Inter-departmental/Personnel Committee, which is one combined committee. Other committees include Concow, SCOR, and Wyandotte Creek GSA committees. The current Board of Director's members, their committee appointments, and their terms' expiration dates are shown in Table 7-2 below.

Table 7-2: Thermalito Water and Sewer District Board of Directors

Division	Name	Title	Term End	Committee Appointments
1	Brad Taggart	Director	12/06/2024	SCOR
2	Trevor Hatley	President	12/06/2024	Not available
3	Scott Koch	Director	12/4/2026	Administration, Concow, WC GSA
4	Bruce Wristen	Vice President	12/06/2024	Administration, Concow, SCOR, WC GSA
5	Mark Clark	Director	12/08/2026	Not available

The District holds regular public meetings on the 3rd Tuesday of the month at 2:00 PM. Meetings are located at the District Office Boardroom, 410 Grand Avenue, Oroville, California, 95965.

Board members received a stipend of $7,200 annually[2] (CA State Controller, 2022). This stipend covers attendance at regular and special Board meetings. The Board's compensation is defined by Section 21166 of the California Water Code, and it is fixed by the adoption of an ordinance in accordance with Section 21166.

All meetings of the District Board and other advisory boards are open to the public in accordance with the Brown Act. The agenda for each District Board meeting includes a public comment period for items not on the agenda. Additionally, the Board meeting minutes reflect that the public is invited to speak on all items included on the agenda. All meeting agendas are publicly posted on a physical bulletin board in the District office and electronically posted on the TWSD website at: *https://www.twsd.info/board-meetings*. (TWSD, 2021b). Meeting minutes are posted on the website after the meeting is held and after the minutes are approved by the Board. On average, zero to three members of the public attend the monthly meetings. The District's legal counsel, who attends all regularly scheduled meetings, is responsible for ensuring District compliance with the Brown Act, new laws pertaining to the provision of related services, and the District's governing codes in consultation with the General Manager (Butte LAFCO, MSR, 2006).

In California, elected members of special district boards are required to comply with three laws regarding accountability and ethics, including: 1) the Political Reform Act; 2) Assembly Bill 1234 (Salinas, 2005), which requires ethics training; and 3) Government Code 53237 et. seq. which mandates sexual harassment prevention training. A description of these three state laws is provided in Chapter 3, Introduction. An assessment regarding the compliance with these three ethics and accountability laws by elected board members of each of the subject water and wastewater-related agencies was made as part of this MSR process.

- Political Reform Act: Each district is required to have a conflict-of-interest code/policy. TWSD's Board adopted a code of ethics on November 19, 2019. TWSD's conflict of interest policy is available to the public at *https://www.twsd.info/board-policy*. The Political Reform Act also requires special district board members to disclose all personal economic interests by filing a "Statement of Economic Interests" with the District Clerk or Butte County. TWSD Directors complete Form 700, and the forms are filed annually with the County Clerk by January 1st. (personal communication, C. Heindell, July 2022). Compliance with this law was assessed by querying the FPPD Complaint and Case Information Portal, which has data for the years from 2010 to 2021 at:

[2] For comparison purposes, LOAPUD Board members are eligible to receive an annual stipend of $4,800 for attendance. SFWPA Board members are eligible to receive an annual stipend of $7,200 for attendance at regular and special Board meetings.

https://www.fppc.ca.gov/enforcement/complaint-and-case-information-portal.html. Query results for the TWSD found no violations.

- Assembly Bill 1234 (Salinas, 2005): Local government officials are required to take ethics training every two years. Compliance with this law was assessed for each water and wastewater agency studied in this MSR. In this case, TWSD posts ethics training certification on its website at: *https://www.twsd.info/board-members-ethics-certificates*. Training is offered on a regular basis. Table 7-3 below shows that all board members (Latulippe and Wristen) have completed this training. Therefore, TWSD's Board is in compliance with AB 1234, and this is an item that needs to be addressed.
- Government Code 53237 et. seq.: Special District Board Members must receive the required sexual harassment prevention two-hour training every two years. Compliance with this law was assessed for each water and wastewater agency studied in this MSR. In this case, TWSD posts certification of the prevention training on its website at: *https://www.twsd.info/board-members-ethics-certificates*. Training is offered on a regular basis. Table 7-3 below shows that all five board members have completed this training. Therefore, TWSD's board complies with Gov. Code 53237 et. seq., and this is an item that needs to be addressed.

Table 7-3: Ethics and Prevention Training By TWSD Board Members

Name	Type of Training	Date of Training
Brad Taggart	AB 1234 – Ethics GC 53237 Harassment Prevention	1/19/2021
Trevor Hatley	GC 53237 Harassment Prevention	10/20/2020
Scott Kock	AB 1234 – Ethics GC 53237 Harassment Prevention	12/13/2022
Bruce Wristen	AB 1234 – Ethics GC 53237 Harassment Prevention	1/19/2021
Mark Clark	AB 1234 – Ethics GC 53237 Harassment Prevention	12/13/2022

Data Source: TWSD, 2021c and personal communication, C. Heindell, July 2022

7.3.3 Accountability and Transparency

Brown Act

The Brown Act is described in Chapter 3, Introduction, of this MSR. All meetings of the District Board and committees are open to the public, consistent with the Brown Act. The agenda for each meeting includes a public comment period, and agendas are made available 72 hours before meetings. Agendas are posted on the District website at *https://www.twsd.info/board-meetings* and distributed via email upon request. Any written document that relates to an agenda item is available for public inspection at the same time the writing is distributed to the members of the

Board of Directors. Written documents are made available to the public at the District Office. The District and its representatives have a solid record of adherence to the requirements of the Brown Act, the Political Reform Act, and similar laws (Butte LAFCo MSR, 2006).

The State Legislature updated the Brown Act in 2016 as codified in Government Code §54954.2 (see also Assembly Bill 2257). These new Brown Act requirements prescribe the methods and location by which an agenda must be accessible on an agency's website for all meetings, as detailed in the Introduction, Chapter 3. The new requirements necessitate that meeting agendas be retrievable, downloadable, searchable, and indexable. As part of this MSR, the website for each water or wastewater agency was evaluated to determine whether meeting agendas are available to the public consistent with AB2257. TWSD makes the current board agenda directly available on the homepage of its website at: *https://www.twsd.info/*. Additionally, from the homepage, one can find meeting minutes and agendas for the current year and past years by following this path from the homepage: "Our District" tab << "Board of Directors" subtab << "Board Meetings" sub-subtab. Once one navigates to the correct webpage, the necessary agenda information, with the most current agenda located at the top of the page, is available. A "quick-link" to the Board Meeting webpage is also available directly from the home page. However, Board packets (which contain staff reports) for regular and special meetings are only available by special request and not provided via the website. The District website agenda distribution meets the minimum requirements of the Brown Act 2016 Updates described in AB2257.

Assembly Bill (AB) 361, approved in September 2021, added Section 11133 to the CA Government Code regarding open meetings for state and local agencies using teleconferences. AB 361 authorizes a local agency to use teleconferencing for public meetings during the Covid-19 global pandemic (and other declared states of emergency). When holding a teleconference meeting, local agencies are required to give notice of the meeting and post agendas to allow members of the public to access the meeting and address the legislative body. Agencies are also required to include an opportunity for all persons to attend via a call-in option or an internet-based service option and to conduct the meeting to protect the statutory and constitutional rights of the parties and the public appearing before the legislative body. AB 361 had a sunset clause. On January 5, 2022, Governor Newsome signed Executive Order N-1-22 extending the sunset clause and permitted agencies to continue holding public meetings via teleconference through March 31, 2022. During 2020 -2022 when the Covid-19 pandemic was ongoing. The TWSD Board of Directors continued to hold "in-person" meetings. The option to call in and participate via conference phone was provided to Directors and the general public. For example, one Director was at a higher health risk and chose to call in to meetings (personal communication, Boucher and Heindell, 2021).

Under the Brown Act, closed sessions of Board meetings are not encouraged; however, the Act does provide guidance about exceptions when closed sessions can be held under special circumstances. LAFCO utilizes the number of closed sessions a Board holds during a year as an indicator of transparency since fewer closed sessions indicate better transparency levels. For the TWSD, the number of closed sessions was evaluated. In 2020, the TWSD held a total of 13 meetings, and six of these meetings included closed sessions. In other words, 46 percent of the

TWSD Board meetings in 2020 included closed sessions. The closed sessions dealt with the following topics:

- Conference with Real Property Negotiator regarding potential property acquisition.
- Public Employee Dismissal.
- Conference with Labor Negotiator regarding one employee case.
- Conference with Legal Counsel –Existing Litigation: Litigation against PG&E for damages suffered as a result of the Camp Fire.
- Conference with Legal Counsel – Anticipated Litigation
- Public Employee Appointment: Sewerage Commission-Oroville Region Legal Counsel.

The government code sections applicable to each closed session were listed on the meeting agenda.

Website

The Special District Transparency Act (SB 929 or California Government Code, §6270.6 and 53087.8) requires that special districts have a functional website that lists contact information and contains financial statements, compensation reports, and other relevant public information. Compliance with the Special District Transparency Act is used by LAFCO as one indicator to determine the accountability and transparency of a District.

CONTACT INFORMATION

Thermalito Water and Sewer District
410 Grand Avenue
Oroville, CA 95965
(530) 533-0740
Web Site: https://www.twsd.info/

TWSD's website is kept updated and is easily navigable, with current and past agendas and financial reports available for download. Contact information, consumer confidence reports, and other publications are available for viewing and download on the website. The "contact us" page provides instructions to contact emergency services on a 24/7 basis. However, the District does not seem to have a policy requiring that the TWSD website be user-friendly and contain accurate and up-to-date information. Although the District website partially complies with the requirements of the Special District Transparency Act, there is always room for improvement, and it is recommended that TWSD consider adding the following features associated with its website and other public communication:

- Adopt a policy requiring that the TWSD website be user-friendly and contain accurate and up-to-date information; and
- Create a web page where community members can sign up for a free electronic subscription service to send automatic email notifications when a new agenda is available.
- Create a webpage that contains District news, and that is updated regularly.
- Ideally, all independent districts in California would post their employee wage scale by bargaining unit onto their website as described in the Finance Section 7.8 of this Chapter. Therefore, it is recommended that TWSD Post either the employee compensation rates OR a link to the California State Controller Government Compensation website at:

<https://publicpay.ca.gov/>. (TWSD's existing link does not currently link to helpful information).

General Accountability

The TWSD demonstrated accountability and transparency in disclosing information and cooperation with Butte LAFCO. The District cooperated with LAFCO's requests for information and participated in an interview with the MSR consultants. Additionally, the District works towards accountability through compliance with local, state, and federal regulations. Wastewater Regulations are described in Appendix C. Drinking water regulations are described in Appendix D.

Butte County is required by law to impanel a Grand Jury. The major functions of a Grand Jury are divided into criminal indictments and civil investigations, and the civil investigation portion requires the majority of time. The civil or "watchdog" responsibilities of the Grand Jury include examining all aspects of local government, including cities and special districts, to ensure that these agencies are being governed honestly and efficiently and that monies are being handled appropriately. If an agency is subject to many Grand Jury inquiries, this can be indicative of poor performance or a high number of complaints about an agency. For this analysis, the Butte County Superior Court Grand Jury reports for six years were studied (i.e., Years FY19-20, FY18-19, FY17-18, FY16-17, FY15-16, FY14-15). The results of this analysis indicate that the Thermalito Water and Sewer District has not been the subject of a Grand Jury inquiry in recent years.

Litigation is expensive for public agencies due to the costs of preparing an administrative record, retaining attorneys, and preparing briefs. Avoidance of litigation is an indicator of management's effectiveness in utilizing alternative dispute resolution mechanisms. TWSD is currently involved in litigation against PG&E for damages incurred by the Camp Fire related to operations at the Concow Reservoir and subsequent water quality issues at the District's treatment plant. TWSD's attorney now works on a contingency fee arrangement, meaning that unless resolved in favor of the District, no fees or costs will be incurred by the District other than internal staff expenses and in the event of a resolution in favor of TWSD, and all attorney's fees and costs will be a percentage of its recovery (TWSD, RFI, 2021b).

7.3.4 Management Efficiencies

The General Manager is appointed by and reports to the Board of Directors and is responsible for directing District operations and overseeing and implementing policies on behalf of the Board. Managers at TWSD are responsible for "Exercising management and supervisory authority over all functions and personnel in accordance with policies and procedures of Thermalito Water and Sewer District" (TWSD, 2021b). An essential component of management effectiveness includes adopting a District-wide mission and vision statement. The TWSD Mission statement is: "*The Mission of the Thermalito Water and Sewer District (TWSD) is to provide reliable, high-quality water and sewer services while meeting customer demand and to manage District resources in an open, responsible, environmentally sound manner at the lowest practical cost*," and this Mission Statement is displayed prominently on the District website.

The General Manager oversees a staff of eleven full-time equivalent employees. Butte LAFCO's 2006 MSR found that the ratio of managers to workers is appropriate; the District is not 'top-heavy' in managers. The District has various policies and procedures related to personnel, provision of services, customer relations, operations and maintenance, relationships with other agencies, and the like. The management structure of the District is relatively simple and well-suited to the type of operations undertaken; the linear management structure ensures reportability and accountability. No alternative structures or reorganizations of the staff would result in more efficient operations, and the existing structure is considered appropriate for the District (Butte LAFCO, MSR, 2006). Additionally, the District is subject to yearly financial audits and has accomplished all recommendations from recent audits as described in Section 7.8 in this Chapter.

7.3.5 Staffing and Training

District staffing is very efficient with 13 full-time equivalent (FTE) employees, with the part-time employees being counted as a ratio of the FTE number. Staffing includes Administration (4); Operations (6); and Treatment (3) (TWSD, 2021b). The State Controller's Office lists a total of fourteen positions (including both full- and part-time) as listed below:

- General Manager
- District Engineer
- General Foreman
- Office Manager
- Chief Plant Operator
- Utility Worker II
- Utility Worker I
- Water Treatment Plant Operator I
- Meter Reader/Repair Person
- Customer Service Representative
- Sr. Customer Service Representative
- Concow Caretaker

The annual salary paid to each employee is listed in the Finance Section 7.8 of this chapter.

7.3.6 Determinations for Governance and Accountability

Based on the information included in Sections 7.1 through 7.3 above, the following written determinations make statements involving each service factor that the Commission must consider as part of a Municipal Service Review. The determinations listed below in Table 7-4 are based upon the data presented and are recommended to the Commission for consideration. The Commission's final MSR determinations are part of a Resolution that the Commission formally adopted during a public meeting.

Table 7-4: MSR DETERMINATIONS: ACCOUNTABILITY FOR COMMUNITY SERVICE NEEDS, INCLUDING GOVERNMENT STRUCTURE AND OPERATIONAL EFFICIENCIES		
Number	**Indicator**	**Determination**
TWSD-Acc-1	Number of closed sessions during the year 2020 (ideally fewer than 50%).	In the year 2020, the TWSD held a total of 13, and six of these meetings included closed sessions. In other words, 46 percent of the TWSD Board meetings in 2020 included closed sessions. The government code sections applicable to each closed session were listed on the meeting agenda.
TWSD-Acc-2	Does the agency's Website comply with the 2016 updates to the Brown Act described in Government Code §54954.2 and enacted by Assembly Bill 2257?	The District website agenda distribution meets the minimum requirements of the Brown Act 2016 Updates described in AB2257. It is recommended that Board packets also be made available via the website.
TWSD-Acc - 3	Compliance with the Special District Transparency Act (SB 929 or California Government Code, §6270.6 and 53087.8) requires special districts to have a functional website that lists contact information and contains financial statements, compensation reports, and other relevant public information.	It is recommended that TWSD consider adding the following features associated with its website and other public communication: • Adopt a policy requiring that the TWSD website be user-friendly and contain accurate and up-to-date information; and • Create a web page where community members can sign up for a free electronic subscription service to send automatic email notifications when selected website information is updated. • Create a webpage that contains District news, and that is updated regularly. • Ideally, all independent districts in California would post their employee wage scale by bargaining unit onto their website as described in the Finance Section of this Chapter. Therefore, it is recommended that TWSD Post either the employee compensation rates OR a link to the California State Controller Government Compensation website at: <*https://publicpay.ca.gov/*>. (TWSD's existing link does not currently link to helpful information). The addition of these proposed website features will aid the TWSD towards full compliance with the Special District Transparency Act (SB 929 or California Government Code, §6270.6 and 53087.8).

TWSD-Acc-4	Terms of office and the next election date are disclosed for District Board members, and committee appointments are online.	TWSD's website discloses the terms of office for each District Board member. Although the next election date for District Board members and committee appointments can be determined by making a special inquiry to District staff, this information is not currently available online. This is an item that needs improvement, and it is recommended that the TWSD website be updated to disclose the terms of office and the next election date.
TWSD-Acc-5	Do elected Board members submit required forms and receive required trainings as prescribed by the three state laws regarding accountability and ethics, including: 1) the Political Reform Act; 2) Assembly Bill 1234 (Salinas, 2005) which requires ethics training; and 3) Government Code 53237 et. seq. which mandates sexual harassment prevention training?	TWSD's elected Board members must submit required forms and receive required trainings as prescribed by the three state laws regarding accountability and ethics, including: 1) the Political Reform Act; 2) Assembly Bill 1234 (Salinas, 2005) which requires ethics training; and 3) Government Code 53237 et. seq. which mandates sexual harassment prevention training. 1) The Political Reform Act: TWSD's Board has a code of ethics adopted on November 19, 2019. TWSD's conflict of interest policies are available to the public at *https://www.twsd.info/board-policy*. The Political Reform Act also requires special district board members to disclose all personal economic interests by filing a "Statement of Economic Interests" with the District Clerk or Butte County. TWSD Board members submit the forms to the County Clerk annually. Additionally, there have been no complaints to the CA FPPC regarding filing Economic Statements of Interest required under the Political Reform Act. 2) Ethics training as required by AB 1234: TWSD posts certification of the ethics training on its website at: *https://www.twsd.info/board-members-ethics-certificates*. Training is offered on a regular basis. All TWSD board members have completed this training. Therefore, TWSD's Board complies with AB 1234. 3) Special district board members must receive the required sexual harassment prevention two-hour training every two years per Gov. Code 53237 et. seq. TWSD posts certification of the prevention training on its website. Training is offered on a regular basis. All five board members have completed this training. Therefore, TWSD's Board complies with Gov. Code 53237 et. seq.

TWSD-Acc-6	Does the agency work to inform and educate homeowners regarding water or wastewater safety and prevention consistent with Butte County General Plan Objective 6.2.5?	TWSD works to inform and educate homeowners regarding water or wastewater safety and prevention consistent with Butte County General Plan Objective 6.2.5 through the following Public Outreach programs: 1) informational fliers distributed in the monthly bill statements and 2) notices posted on the District website. There are sufficient opportunities for local involvement in District activities, and information regarding the District is available to members of the public.
TWSD-Acc - 7	Current litigation and/or grand jury inquiry.	TWSD is currently involved in litigation against PG&E for damages incurred by the Camp Fire related to operations at the Concow Reservoir and subsequent water quality issues at the District's treatment plant. TWSD has not been subject to a grand jury report in recent years.

7.4 Growth & Population Forecasts

The growth and population projections for the affected area is a determination that LAFCO is required to describe, consistent with the MSR Guidelines from the Office of Planning & Research (OPR) as set forth in the CKH Act. This section provides information on the existing population and future growth projections for the Thermalito Water and Sewer District. Historical and anticipated population growth is a factor which affects service demand. Appendix A at the end of this MSR/SOI Update provides detailed demographic and socio-economic information for the County of Butte and the City of Oroville. An economic forecast for the County of Butte is provided in Appendix B.

7.4.1 Existing Population

The community of Thermalito is in a "Census Designated Place" (CDP) per the U.S. Census Bureau. The CDP has a total area of 13.0 square miles (8,320 acres). The population in the Thermalito CDP as of 2020 is 6,894 persons. However, the CDP and census tracts do not directly correspond with District boundaries, and the CDP is 56 percent smaller in size compared to the TWSD boundaries. Therefore, this MSR inputs data into calculations to provide a closer approximation to the existing population of the District. Table 7-5 below provides current population estimates for the TWSD boundary and SOI. The provision of both the lower and the higher population estimates is useful for better understanding the possible range of population dynamics, which change periodically depending on local conditions. For example, Butte County's population declined by three percent in 2021 to 202,669 from the 2020 estimate of 208,951. This decline could be due to numerous factors such as age or economics. However, continuing ramifications from the Camp Fire in the Town of Paradise could also be a contributing factor in the decline.

A high population estimate of 11,318 persons was generated in Table 7-5 using the known value of 5,659 registered voters residing in the TWSD boundary per the Butte County Elections Office. A multiplier of "2.0" was calculated based on the average number of residents per voter in Butte County as a whole. TWSD's Urban Water Management Plan (UWMP) (2020) analyzed the population data, considered the number of water connections, and calculated a population of 3.87 persons per water connection (TWSD, 2023).

Table 7-5: Existing Population Estimates (High, Medium, and Low), TWSD, 2020

Description	Known Value in Boundary		Multiplier	Population in Boundary	Population in SOI
Number of Registered Voters in boundary	5,659*		2	11,318	n/a
Number of water customers in boundary	3,116**		3.8725	12,066	n/a
Number of parcels in boundary	3,798***		2.22****	8,428	9,336

Data Sources:

*Registered Voter data provided by Butte County Elections Office, Denlay, Keaton, August 9, 2021. As of 2020, Butte County had a Total Registered Voters of 116,182 and a total population of 208,951, yielding a population-to-voter ratio of 2.
**TWSD, UWMP, 2020. Then a multiplier of 3.3 persons per water connection was applied.
***GIS Data provided by Butte LAFCO.
****There is an average of 2.13 persons per parcel in unincorporated Butte County and 2.4 persons per parcel average within the City of Oroville and these averages are based on 2020 CA DOF population data and 2021 GIS data. 2.22 is the average for TWSD as a multiplier.

Approximately 33 percent of the TWSD population resides in the City of Oroville, and 67 percent reside in unincorporated Butte County.

7.4.2 Existing Population in SOI

The population in TWSD's SOI and outside the District Boundary is estimated to be 9,336 people based upon an average number of 2.13 persons per Assessor's Parcel in the unincorporated area.

7.4.3 Projected Population Growth

Projecting the future population of a District is complicated due to varying annexation rates and census tracts that do not match District boundaries. Additionally, the Camp Fire has resulted in a re-distribution of the regional population, and the Covid-19 pandemic has slowed population growth in California. The DOF provides population projections at the County level, and the growth rate for the County of Butte is utilized to extrapolate population growth rates by Butte County Association of Governments (BCAG) and other agencies. Table 7-6 shows an estimated future population projection for the TWSD. Please note that LAFCO's 2006 MSR on Domestic Water

Table 7-6: Total Estimated and Projected Population (2020 – 2045) for TWSD

	2020	2025	2030	2035	2040	2045	Percent Increase 2020 to 2045	Numeric Increase 2020 to 2045	CAGR 2020 to 2045
Low Start Scenario*	8,428	8,651	8,881	9,116	9,358	9,605	13.97	1,177	0.52 percent
Medium Growth**	11,318	11,418	11,518	11,619	11,722	11,825	4.48	507	0.18 percent
High Growth Scenario***	12,066	12,635	13,204	13,773	14,342	14,911	24	2,845	0.85 percent

Data Sources:

**The low start scenario is based on calculations of the number of parcels in boundary with a 2.65 percent average growth rate from the 2015 UWMP and from LAFCO's 2006 MSR which is translated to a compound growth rate of 0.52 percent.*

***Medium growth scenario is based on a population projection calculated as a percentage of the County of Butte's future growth as projected by the California Department of Finance. Demographic Research Unit. January 2019 Table P-1: Total Estimated and Projected Population for California and Counties: July 1, 2010 to July 1, 2060 in 1-year Increments. This information was used to establish the control total for BCAG's high forecast scenario for housing at 0.88 percent.*

****High Growth Scenario is based on TWSD's 2020 UWMP, Table 3-1.*

and Wastewater utilized an annual average population growth rate of 2.6 percent for TWSD (Butte LAFCO, MSR, 2006). TWSD's 2015 UWMP also utilized this 2.6 percent growth rate. However, BCAG utilized a 0.88 percent estimated growth rate in their Post Camp Fire Study 2018 – 2045 Forecast for the Oroville region. Table 7-6 provides three growth scenarios for the TWSD. In the "low start" scenario, the lower existing population estimate is utilized along with LAFCO's faster 2.6 percent annual growth rate. In the "high growth" scenario, the larger current population estimate in Table 7-5 is per TWSD's 2020 UWMP. By the year 2045, it is estimated that TWSD's existing boundary will encompass a population ranging from 9,605 to 14,911 persons.

The projected growth rate for the County of Butte anticipates development throughout the entire County. The addition of 507 to 2,845 more people to the TWSD by 2045 is possible as the District contains under-developed areas within the existing boundaries that could potentially be available for more intensive residential development. Areas located in the southern portion of the District, which are part of the City of Oroville, where single-family subdivision development continues to occur and expand, have a high probability of developing over the next twenty years. The City of Oroville has plans to annex all of the Thermalito area, which could spur growth, as shown in Figure 7-4 (page 7-30). Additional details on planned future development are described in Section 7.4.5 Potential Future Development.

7.4.4 Existing Land Use

Land-use is a factor that affects population growth and, therefore, demand for public services. However, the TWSD is not a land-use authority. Currently, the primary land uses within the service area for the District are residential, commercial, industrial, agricultural, and open space. Those portions of the boundary located within the City of Oroville are developed with a range of land uses, including residential (low, medium, and high density), commercial development along the Highway 70 Corridor, and industrial development near the airport. For example, several commercial and industrial uses are found primarily along major roads in the District, such as Oro-Dam Boulevard West (State Route 162/SR 162) and Grand Avenue. The Airport is within the District's service area, but the area between the Thermalito Afterbay and the Airport is outside TWSD's service area. Several large subdivision developments have been constructed on the west side of the Oroville Municipal Airport. The Thermalito Elementary School District has schools in the vicinity. The Thermalito area also contains several areas of open space. For example, Ruddy Creek is the main drainage course for a significant portion of the Thermalito area. Oak trees and willows are located adjacent to the creek in some areas.

TWSD's reservoir (Lake Concow) is located in the center of a rural community called Concow. Concow is an unincorporated community and census-designated place (CDP). Due to a decline in employment and repeated wildfires, the population has declined to 402 persons. The Camp Fire destroyed Concow and the adjacent municipality of Paradise on November 8, 2018.

Butte County General Plan 2030

Approximately 67 percent of TWSD's boundary and all of its Sphere of Influence area is unincorporated and subject to the land-use policies and regulations of Butte County. Most land-use decisions in the unincorporated areas are initiated by private property owners and are secured via entitlements and land-use permits from Butte County and other agencies. In addition, the County plans for its future growth through its General Plan, which is a long-term comprehensive framework to guide physical, social, and economic development within the community's planning area. The General Plan contains a land-use map and associated policies that identify the types and intensities of permissible uses in relation to different land-use designations. The Butte County General Plan 2030 was updated and adopted on October 26, 2010 (County Resolution No. 10-152) and Amended on November 6, 2012 (County Resolution No. 12-124). The Oroville Area Land Use Plan of the Butte County General Plan designates a large portion of the TWSD boundary and SOI as Agricultural-Residential (A-R). This Agricultural-Residential designation allows agricultural uses and single-family dwellings at rural densities. This area's farms and ranches receive water from rainfall or groundwater, depending on the specific location. Farms and ranches in the TWSD boundary and SOI contribute to the agricultural sector's economic prosperity in Butte County by producing a wide variety of farm products.

The County's General Plan Housing Element was subsequently updated on August 26, 2014, through County Resolution No. 14-112. Butte County has opted to update its housing elements every eight years. The 2022 update to the Housing Element will aim to align with their Regional Transportation Plans (updated every four years) and the housing plans in the Regional Sustainable Communities Strategy (See BCAG). The County General Plan and associated Housing Element influence both the type and the rate of growth within the unincorporated areas, such as most of the TWSD's boundary and SOI.

Figure 7-2 (page 7-26) provides a map that merges the County's General Plan Land Use Map with the City's General Plan Land Use Map through the use of crosswalks to show the spatial relationships in land use designations graphically. There are considerable differences between the County and the City of Oroville's General Plans. The County of Butte's General Plan map has lower residential densities with minimum lot sizes of approximately one to five acres. Butte County's map designates several areas in Thermalito as Rural Residential (RR) with large residential lot sizes. For example, the local "Ghianda Heights" subdivision has lot sizes of ~16,000 square feet (~0.4 acre). This can be contrasted with the City of Oroville's General Plan map, which shows residential densities of 3 to 6 units per acre. Please note that in TWSD's SOI, the County General Plan designates land mainly as Agricultural.

Oroville General Plan 2030

Approximately one-third of the TWSD boundary is located in the City of Oroville and is subject to the City of Oroville General Plan Land Use Map, which designates a portion of TWSD's boundary as residential, including low, medium, and high-density residential. The Oroville 2030 General Plan was adopted in 2009 and updated in March 2015. The General Plan serves as a comprehensive guide for making decisions about land use, community character, circulation, open space, the environment, and public health and safety. The City General Plan contains

guiding principles related to livability, enhanced mobility, a vibrant local economy, natural resources, environment, recreation, community infrastructure, health and safety, and an involved citizenry (COOR, 2015). The General Plan provides the legal foundation for the zoning ordinance and other ordinances. The General Plan recognizes the water and wastewater services provided to City residents by other service providers, including Thermalito Water and Sewer District (TWSD), Lake Oroville Area Public Utility District (LOAPUD), South Feather Water & Power Agency (SFWPA), and California Water Service (Cal Water). The City's General Plan contains numerous policies regarding the provision of water and wastewater municipal services. The City's General Plan designates land uses within the incorporated areas of the TWSD boundary as Residential (low, medium, and high density), commercial, retail, and industrial, as shown in Figure 7-2.

Open Space & Agriculture

Butte LAFCO aims to protect open space and agriculture. For this MSR analysis, the spatial distribution of agricultural land was derived from the California Department of Conservation. The types of farmlands within the TWSD boundary and SOI include grazing land, prime farmland, farmland of statewide importance, and unique farmland, as depicted in Figure 7-3. TWSD does not provide raw (untreated) irrigation water to agricultural areas. Additionally, TWSD does not provide wastewater collection services to agricultural customers. Therefore, local agricultural areas are rainfall or groundwater-dependent and may also utilize individual septic systems for wastewater collection. LAFCO has an interest in documenting the conversion of agricultural and open space lands to other land use types, such as residential use.

7.4.5 Potential Future Development

Future population growth within the local community served by TWSD depends on zoning, general plan policies, and land use designations by the City of Oroville and Butte County. Given existing land-use patterns, most of the residential growth expected to be serviced by the TWSD will likely occur in the City of Oroville and the immediately surrounding areas. Butte County is embarking on an update of its current General Plan, which may refine development requirements. The City's General Plan indicates that the entire Thermalito area will likely develop with some form of urban/suburban use in the future. Additionally, new state laws (SB-9) encouraging the construction of accessory dwelling units may promote infill development in some neighborhoods. For purposes of this MSR Analysis, it is assumed that the average annual future growth rate (AAGR) within the TWSD boundaries will range from 0.88 percent to 2.65 percent, as listed in Table 7-6 above.

Figure 7-2: General Plan Land Use Map for TWSD Boundary Area

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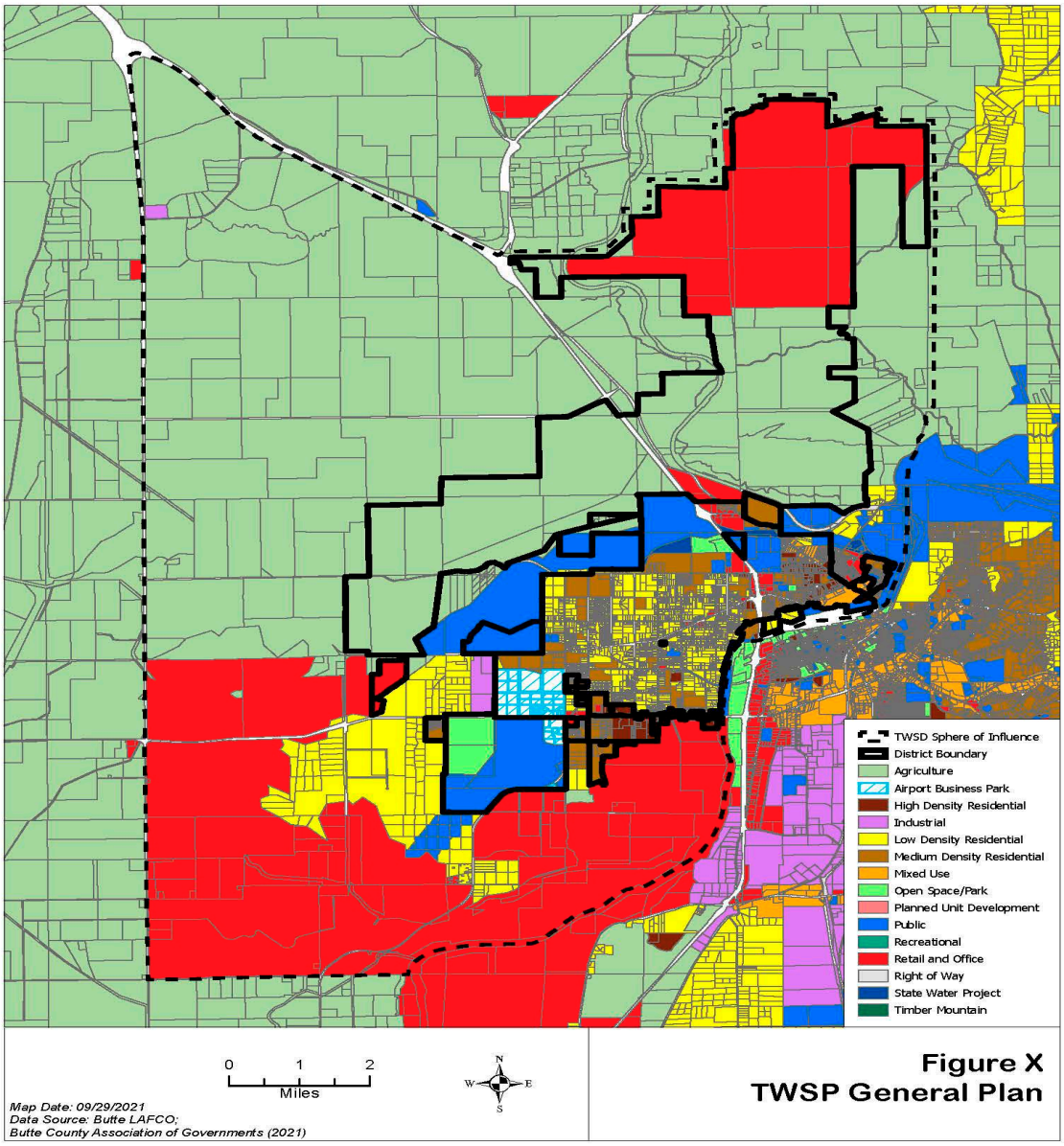

Figure 7-3: Agriculture within TWSD Boundary Area
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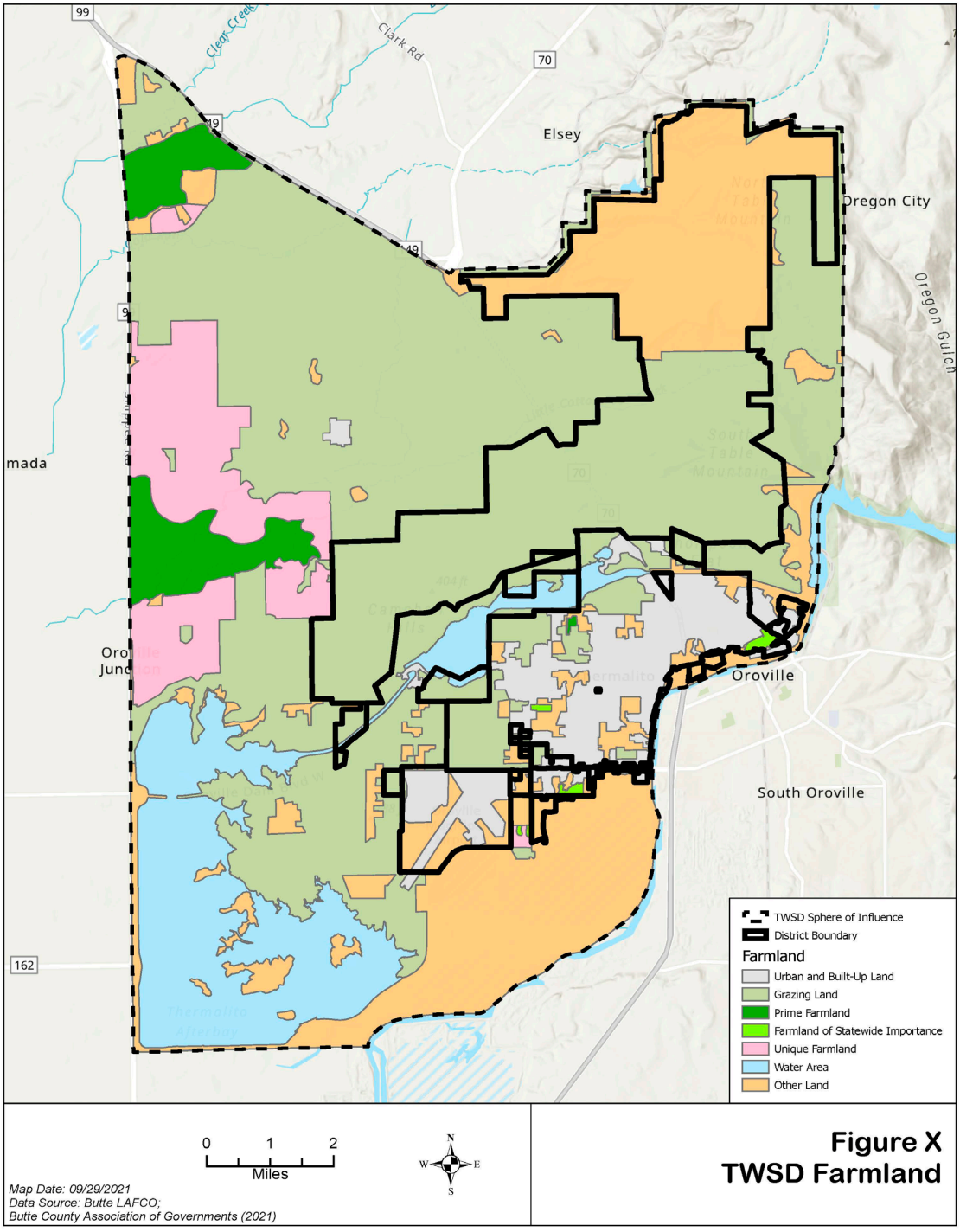


When a private property owner proposes a new development, TWSD will coordinate with the respective City and County Planning Departments by providing information on the adequacy of its water supply, distribution system, and water rates to meet the area's current and future growth needs. Concurrently, information about the wastewater collection system (infrastructure and fees) will also be provided. Generally, the Lead Agency (such as the Planning Department for the City/County) will process applications for subdivisions and commercial developments and invite TWSD to comment on any service-related issues or associated environmental issues. The District participates and provides information as requested.

Much of TWSD's service area is within the City of Oroville's boundary. Some areas are outside the City's boundary, but they are close enough to the City that they can be expected to grow at a similar rate. The District has been experiencing growth westward along Highway 162 to Highway 99. If the City decides to annex areas, they are requested to collaborate with TWSD to determine whether a new wastewater lift station is needed and the mechanism to fund this infrastructure. Generally, the City of Oroville pays for City initiated projects (personal communication, Boucher and Heindell, 2021).

Significant additional growth is anticipated north of the Thermalito Diversion Canal within the District's service area in an unincorporated area of the County (Butte LAFCO MSR, 2006). Additionally, new development is expected to occur in the future in the areas to the east and west of the TWSD boundary and within the TWSD SOI. If the City allows new development to be located outside of the TWSD SOI in the future, TWSD staff indicates they could potentially provide services; however, it would need to be studied in detail on a case-by-case basis. For example, if sewer service were requested, it could be a complex proposition, and it might necessitate the construction of a new sewage treatment plant and/or the construction of a sewer line over a bridge. Similarly, the provision of water service to new geographic areas may also necessitate the installation of new water pipes and other infrastructure, depending on the location. (personal communication, Boucher and Heindell, 2021). Two development projects are proposed in the Thermalito area as listed below:

- The Village at Ruddy Creek is a proposed 97-lot subdivision at the southeast corner of 18th Street and Feather Avenue. The Oroville City Council originally approved the project in 2007 as a 172-lot subdivision, but the project was never annexed and constructed. The project was redesigned at a smaller scale with 97 homes and approved by the City Council in 2020. The re-zoning will become effective upon annexation to the City of Oroville. TWSD would be requested to provide water and wastewater collection services to the project.
- Diamond Oaks TSM 05-14, located north of Oro Dam Boulevard. and south of Grand Avenue on 23.9 acres And consisting of 98 single-family lots. Tentative Map extension to 8/23/2022 in the Thermalito area of Butte County.

Within the City boundaries, two new subdivisions are proposed in the area as listed below:

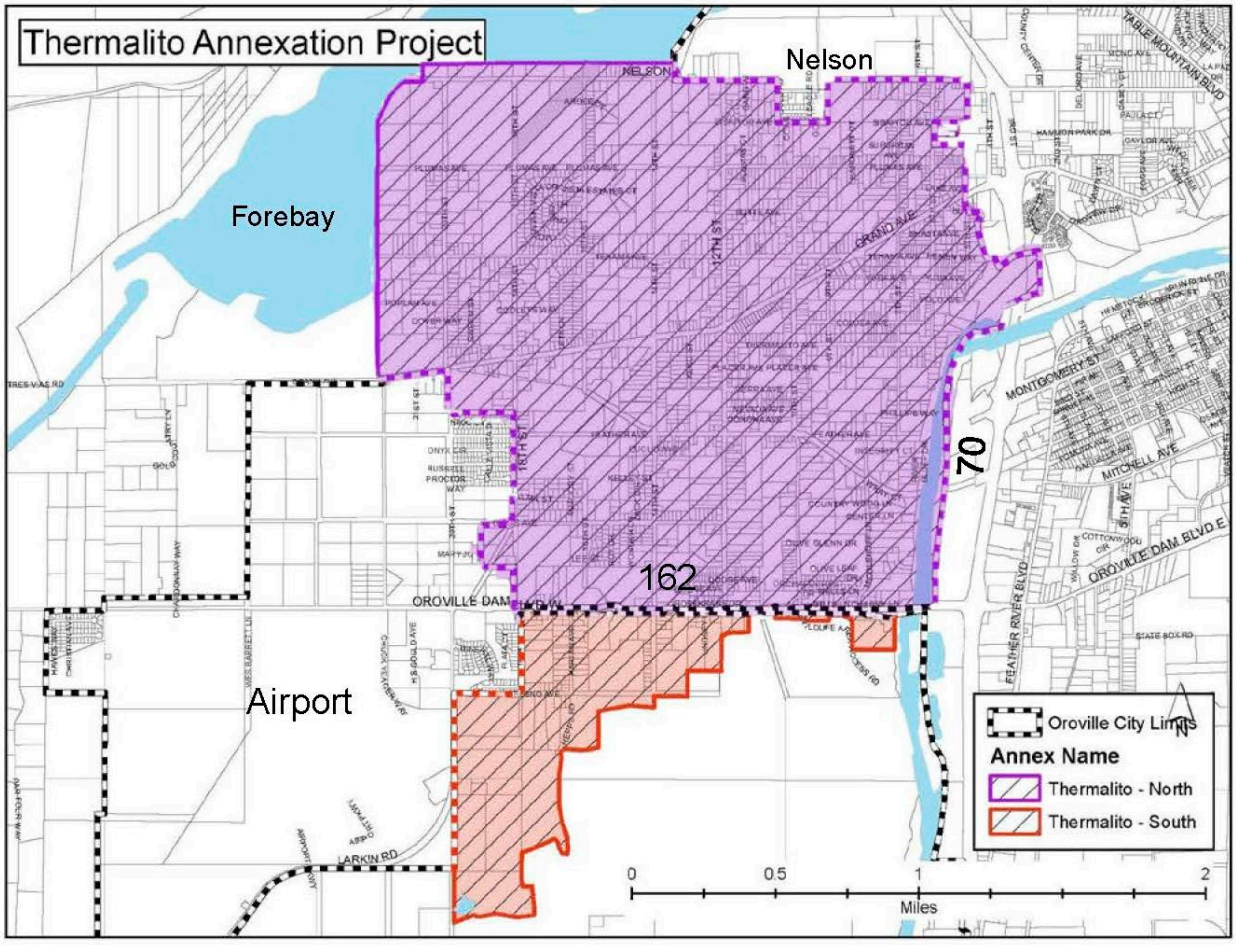
- Vista Del Oro is a project by Crowne Communities to construct 71 market-rate residential units located at Larkin & SR162 West in Thermalito. The City Council recently approved this project, and active construction is anticipated soon.

- Linkside Place II is a project by Generation Communities developers to construct 56 market-rate residential units at SR162 West & Christian Ave in Thermalito. The City Council approved the TSM, and the Final Subdivision Map is under review.

Additionally, local developers have several partially un-finished subdivisions (Orchard Crest, etc.) (Butte County OEM, 2019). TWSD has also issued several will-serve letters for future water and sewer service.

Figure 7-4 below shows the proposed Thermalito annexation area. It is anticipated that TWSD will continue to provide services to these areas into the future, including post-annexation. Please note that new state laws (including SB9) allow accessory dwelling units and junior accessory dwelling units to be built on a single lot, and this may also encourage infill housing within the City limits.

Figure 7-4: Proposed Thermalito Annexation Area



7.4.6 Local Hazard Mitigation Plan

The Butte County General Plan's Safety Element (which includes the Local Hazard Mitigation Plan [LHMP]) was adopted by the County Board of Supervisors on November 5, 2019 (Butte OEM, 2019). Butte County, along with five incorporated communities and ten special districts, prepared the 2019 LHMP to reduce vulnerability to future hazard events. The Thermalito Water and Sewer District is the subject of a dedicated appendix (Appendix G) in the LHMP, and it lists the following potential local hazards:

- Climate Change;
- Dam Failure;
- Drought and Water Shortage;
- Earthquake and Liquefaction;
- Flood: 100-/500-year;
- Floods: Localized Stormwater;
- Stream Bank Erosion; and
- Wildfire.

It is important to note that the TWSD has both formal and informal emergency response plans and practices. During past emergencies, the District has assisted neighboring districts and other government agencies through mutual aid and other informal practices, as described in the following pages.

Climate Change

Climate change is projected to impact the Northern Central Valley (including Butte County) via the following: temperature increases, reduced precipitation, flooding, reduced agricultural productivity, reduced water supply, wildfire, public health, heat, groundwater depletion, and stream-flow degradation (Butte Co. OEM, LHMP, 2019). TWSD does have physical assets that are potentially at risk due to the impacts of climate change, such as those assets listed in Table 7-20. The assets most likely at risk include groundwater wells and the Concow Reservoir, which is sensitive to stream-flow degradation (Butte Co. OEM, LHMP, 2019).

Dam Failure

During periods of prolonged rainfall and flooding, dam failures can sometimes occur. The primary risk associated with dam failure is high-velocity flooding of properties located downstream of the dam. TWSD owns and maintains the Concow dam and reservoir. Since property and at least one person downstream would be at risk should the dam overtop or fail, this is classified as a high-hazard dam. Impacts to the TWSD from dam failure include damage to property and critical facilities, as well as potential loss of life. Other impacts include the costs to TWSD to rebuild the Concow dam if it fails. In the event of a catastrophe, TWSD could lose its ability to store/convey surface water per its DWR contract. Ongoing regularly scheduled preventative maintenance and upgrades are necessary to maintain integrity and protection for the Concow Dam (Butte Co. OEM, LHMP, 2019).

Drought

A lack of rain and snow over an extended period (usually a season or more) can result in drought conditions creating water shortages for some human activities and the environment. A drought's impacts result from the interplay between the natural event (less precipitation than expected) and the demand people place on the water supply. The vulnerability of the TWSD to drought is District-wide, and impacts may include a reduction in water supply and an increase in dry fuels. Drought-sensitive activities include wildfire protection, municipal usage, commerce, tourism, and recreation. Drought conditions can also cause soil to compact and not absorb water well, potentially making an area more susceptible to flooding. During extended droughts, over-drafting of aquifers can cause groundwater levels to drop, which may adversely affect the Districts wells. Additionally, an extended drought could have implications for the District's drinking water treatment plant. TWSD's drought contingency plans include voluntary conservation measures. To further cope with drought, the District could consider additional water storage capabilities and upgrading wells to reach lower groundwater depths (Butte Co. OEM, LHMP, 2019).

Earthquake and Liquefaction

The Cleveland Hills fault is the only known active fault in Butte County, and this fault is the August 1975 Oroville earthquake site. TWSD and the surrounding area are located at a relatively low to moderate risk of earthquake occurrence. Earthquakes can potentially cause the failure of water and sewer pipeline failures or structural damage to the drinking water treatment plant. Communities within the District also have a low risk of liquefaction from earthquake shaking (Butte Co. OEM, LHMP, 2019).

Flooding (Large Scale Flooding, Localized Stormwater, Levee Failure, and Storms)

In the winter and spring, heavy rain with strong winds, lightning, or hail sometimes occurs. The heavy precipitation can result in large-scale flooding, localized stormwater, or levee failure. The General Plan Safety Element noted that the Oroville area has historically been subject to flooding from various rivers and streams, including the Feather River and its tributaries. Flooding was much more prevalent before the construction of the Oroville Dam. Various storm drainage and flood control measures keep storm floodwaters within defined areas. Several neighborhoods within TWSD have a 1 percent and 0.2 percent annual probability of flooding. Although TWSD has identified no past occurrences of large-scale flooding, localized stormwater events caused sewer maintenance-holes to become inundated with water and caused inflow/infiltration issues within the sewer system. TWSD's assets at risk to large and small-scale flood events include the water treatment plant, wells, distribution lines, sewer collection lines, the sewer lift station, maintenance-holes, and District offices (Butte Co. OEM, LHMP, 2019).

Streambank Erosion

Stream bank erosion occurs on rivers, streams, and other moving waterways, including leveed areas in Butte County. The Oroville Dam and Thermalito Afterbay effectively trap sediment loads. Therefore, the Feather River (the portion located below the dam) has reduced suspended sediment, and this causes the River to become more erosive, transporting mining debris and older

alluvium downstream. Erosion is a slow process, taking place over periods of years. However, more significant erosion occurs during periods of high stream flow and during storm and wind events when wave action contributes to the extent and speed of streambank erosion. Roads and levees within the TWSD boundary area are subject to erosion. Concow Reservoir is especially susceptible to erosion. The District coordinates with Butte County to maintain their drainage ways to reduce streambank erosion as much as possible (Butte Co. OEM, LHMP, 2019).

Wildfire Risk

Wildfires can have devastating effects on watersheds through loss of vegetation and soil erosion, which may impact the County and TWSD by changing runoff patterns, increasing sedimentation, reducing natural and reservoir water storage capacity, and degrading water quality. Fires may result in casualties and can destroy buildings and infrastructure. The whole of the District lies either in a Moderate to High Fire Hazard Severity Zone as defined by Cal-Fire. TWSD especially noted two past wildfire events, including:

- A wildfire in the Concow watershed occurred during the summer of 1998, which resulted in the closure of Concow Road. The wildfire burned vegetation, and as a result, the Concow Reservoir received an excessive amount of sedimentation.
- The Camp Fire started in Pulga and destroyed the Town of Paradise and a considerable portion of Concow during November of 2018. The loss of vegetation impacted the Concow Reservoir, and later rain events triggered massive amounts of sediment and debris were carried into the lake.

The area around the District is not immune to numerous types of grass and brush fires, and any one of them could accelerate into an urban interface wildfire. Wildfires can cause short-term and long-term disruption to the County and District through loss of vegetation and soil erosion, which can change runoff patterns, increase sedimentation, reduce natural and reservoir water storage capacity, and degrade water quality. As development continues throughout the Planning Area, especially in these interface areas, the risk and vulnerability to wildfires will likely increase. In addition to wildfire risk, PG&E shutdowns can occur during red flag days, which affects the District. TWSD has generators and auto-transfer equipment that are utilized in the event of PG&E shutdowns (Butte Co. OEM, LHMP, 2019).

7.4.7 Determinations for Growth and Population

Based on the information in Section 7.4 above, the following written determinations make statements involving each service factor that the Commission must consider as part of a municipal service review. The determinations listed below in Table 7-7 are based upon the data presented and are recommended to the Commission for consideration. The Commission's final MSR determinations are part of a Resolution that the Commission formally adopted during a public meeting.

Table 7-7: MSR DETERMINATION: GROWTH AND POPULATION PROJECTIONS FOR THE AFFECTED AREA		
Number	**Indicator**	**Determination**
TWSD-Pop1	Existing Boundary.	TWSD's 14,873-acre boundary area is located in the unincorporated County of Butte and includes most of the community of Thermalito. A portion of the City of Oroville's boundary and sphere of influence west of the Feather River overlap with the TWSD boundary and SOI. Given this overlap between the City and TWSD boundaries, it is important to have consistency is service and facilities among these two service providers. Lake Concow is shown as being part of the District's boundary as the detached area north of the main boundary area in the County's GIS database. However, based on information from LAFCo's files, it is not clear when or how Lake Concow came to be considered part of the District's boundary. LAFCo's previous MSRs in 2006 and 2007 did not show Lake Concow within the TWSD boundary in either text or maps. Additional research on this item is recommended.
TWSD-Pop2	Existing Sphere of Influence.	LAFCO initially established the District's SOI in 1985. The District's SOI encompasses 44,101 acres and includes 4,383 parcels. District staff indicates that the Sphere of Influence boundary is adequate for protected future needs due to its large size.
TWSD-Pop3	Extra-territorial Services.	The TWSD does not provide extra-territorial services outside of its District boundary.
TWSD-Pop4	Projected population in years 2020 to 2045.	By the year 2045, it is estimated that TWSD's existing boundary will encompass a population ranging from 9,605 to 14,911 persons. This represents an additional 507 to 2,845 persons expected to reside within TWSD boundaries.
TWSD-Pop5	Do the District boundaries contain sufficient land area to accommodate projected growth?	Currently, the District's boundary area supports an average of 0.81 persons per acre, which is considered to be low population density. The City of Oroville General Plan suggests that growth may occur in the southern portions of the TWSD boundary, and there are opportunities for infill development. Additionally, the City of Oroville has plans to annex the Thermalito area. These data indicate that the TWSD boundaries contain sufficient land area to accommodate projected population growth.

Table 7-7: MSR DETERMINATION: GROWTH AND POPULATION PROJECTIONS FOR THE AFFECTED AREA		
Number	**Indicator**	**Determination**
TWSD-Pop6	Effect that the District's service provision will have on open space and agricultural lands.	Farmland of statewide importance and grazing land exists within the TWSD boundaries. However, TWSD does not provide raw water for irrigation purposes. Farmland within the boundaries and SOI are rainfall and/or groundwater-dependent and may utilize individual septic systems to dispose of wastewater. The services provided by TWSD have minimal effects on agricultural land and open space.

7.5 Disadvantaged Unincorporated Communities

7.5.1 DUC Discussion

A Disadvantaged Unincorporated Community (DUC) is an unincorporated area of a County in which the annual median household income (MHI) is less than 80 percent of the statewide MHI. The statewide annual median household income (MHI) in California for 2019 was $75,235 (U.S. Census, 2021). The year 2019 is the baseline year because it is the most recent year for which numerical and spatial (GIS) data is consistently available. Eighty percent of the statewide MHI (2019) equals $60,188.00, the threshold used to determine which geographic areas qualify as disadvantaged communities. This analysis uses Census Tracts to determine DUCs because this level of analysis provides the most uniform income data available statewide. Data for this report was collected from the 2019 American Community Survey 5-Year Estimates at the census tract level. A census tract is a geographic area defined by the United States Census Bureau. The geographic size of census tracts varies widely depending on the population density; a census tract typically has around 4,000 residents but can range from 1,200 to 8,000. There are five census tracts within the TWSD boundary and sphere of influence, as shown in Figure 7-5. Four of these Census Tracts have MHIs below the $60,188 threshold and therefore are classified as disadvantaged unincorporated communities as listed in Table 7-8 (next page).

Table 7-8: Median Household Income by Census Tract			
Census Tract	**Population (2019)**	**Square Miles**	**Median Household Income**
25	5,353	54.9	$37,054
29	3,310	2.4	$48,897
36	4,202	127.7	$65,625
37	4,889	48.4	$32,401
24	4,725	196.0	$40,071
Source: US Census, 2019 American Community Survey 5-Year Estimates and *https://tigerweb.geo.census.gov/tigerweb/*			

Figure 7-5: Disadvantaged Unincorporated Areas

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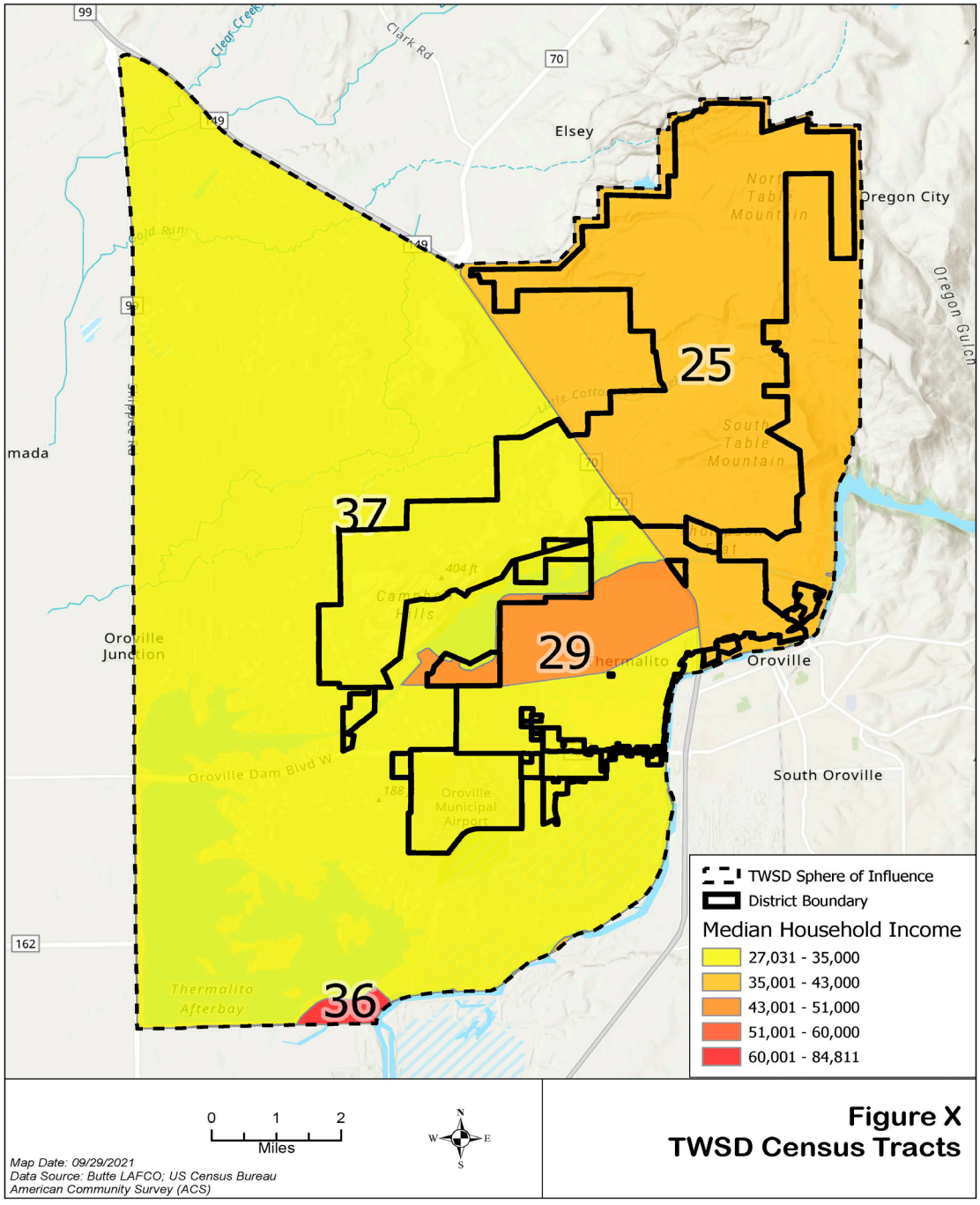


Census tract 24 is listed in Table 7-8 above because Lake Concow is within this census tract and is also part of the TWSD boundary area. Lake Concow is geographically disjointed from the primary portion of the District boundary and is therefore not shown on the map, Figure 7-5.

Census tract 37 was identified in the Butte County General Plan Environmental Justice Trends document as a particular concern because "the Thermalito DAC has high unemployment rates and high rates of households living below the federal poverty line compared to the rest of California. Households in this area have low incomes but also a lower housing cost burden. The Thermalito DAC has a slightly higher proportion of residents that are people of color compared to the rest of the County but lower than throughout the state; average life expectancy is shorter than the rest of the County and state. The DAC's pollution burden is highest in the categories of pesticide use and proximity to impaired water bodies. This DAC scores above the 75th percentile for the following factors: pesticide use; heart attack-induced emergency room visits; low birth weight infants; population without a high school degree; households below the federal poverty line; and relative unemployment" (Butte County, 2021a).

Local median household incomes within the District's boundary are low, as listed in Table 7-8. Therefore, the ability of low-income residents to pay their utility bills (including water bills) is a concern. The State of California, Office of Environmental Health Hazard Assessment, has assessed various parameters for community water systems throughout the state and posted the information to the online database called the "Human Right to Water Data Tool." The database gives TWSD a *Water Affordability Composite Score of* "3" (Poor), meaning that given the annual median household income of the water system residents, their average water bill may be high relative to their ability to pay (OEHHA, 2021). However, the Finance Section (Section 7-8) shows that TWSD's rates are reasonable and reflect the actual cost of providing public services. It is noted that TWSD's water rates are the second lowest in the County. Additionally, TWSD has taken steps to reduce costs and increase efficiency, as shown in Section 7.9. Recommended actions that LAFCO and TWSD can take to improve water affordability are provided in Sections 7.8 and 7.9.

Golden Feather Mobile Home Park

The Golden Feather Mobile Home Park has an on-site wastewater system that has received multiple violations from state regulatory authorities. State agencies approached TWSD and inquired about connecting the mobile home park to the TWSD wastewater collection system. TWSD is working with Jacob's Engineering Consultants to consider the feasibility and to develop a plan. TWSD had submitted a Grant Funding Application for connecting the GFMHP to its collection system. The Golden Feather Mobile Home Park is located at 703 Oro Dam Blvd W, Oroville, CA 95965, and this is an unincorporated disadvantaged area.

DUC Summary

In summary, the four disadvantaged census tracts are provided public services by numerous local and state agencies. Within the TWSD boundary, water service is provided to the DUCs by the District. Outside the TWSD boundary, individual privately-owned wells provide groundwater as needed. Cal Water may also provide water to areas within the City of Oroville. Wastewater

collection services are also available from the TWSD to areas within its boundary. The Sewerage Commission – Oroville Area (SC-OR) provides wastewater treatment to TWSD customers. Outlying areas rely on individual septic systems for wastewater disposal. Fire protection services are provided by the City of Oroville only to those parcels located within the City. For other parcels within the TWSD boundary and SOI, fire protection service is provided by two agencies:

- The remaining portions of the TWSD boundary and SOI to the north, west, and east (to some extent) are provided fire protection by the Butte County Fire Department (BCFD). Butte County Fire Department provides services to approximately 1,550 square miles of Butte County from 42 fire stations. BCFD directly serves approximately 102,000 unincorporated residents of Butte County, 2,700 in the City of Biggs, and 5,000 in the City of Gridley. Through automatic and mutual aid agreements, BCFD also provides resources to the cities of Oroville, Chico, and the Town of Paradise. In addition, the Butte County Fire Department (BCFD) contracts for staff with the California Department of Forestry and Fire Protection (CAL FIRE). Under this contract, the County pays CAL FIRE salaries and benefits and other related costs to staff County-owned fire stations and apparatus.
- CAL FIRE contracts with BCFD to provide services such as fire control; emergency medical service, technical rescue response; hazardous materials response; flood control assistance; fire prevention and public safety education; fire law enforcement/arson investigation; and vegetation management. CAL Fire is the lead fire protection agency for wildland fires in the SOI within State Responsibility Areas (SRAs).

All TWSD boundary and SOI areas receive essential services of water, wastewater, and structural fire protection (or acceptable private alternatives). Therefore, no DUCs within the existing TWSD boundary or SOI lack essential public services. No public health or safety issues have been identified, except for the Golden Feather Mobile Home Park.

7.5.2 Determinations for Disadvantaged Unincorporated Communities

Based on the information included in Sections 7.5 above, the following written determinations make statements involving each service factor that the Commission must consider as part of a municipal service review. The determinations listed below in Table 7-9 are based upon the data presented and are recommended to the Commission for consideration. The Commission's final MSR determinations are part of a Resolution that the Commission formally adopted during a public meeting.

Table 7-9: MSR DETERMINATION: LOCATION AND CHARACTERISTICS OF ANY DISADVANTAGED UNINCORPORATED COMMUNITIES WITHIN OR CONTIGUOUS TO THE SPHERE OF INFLUENCE		
Number	**Indicator**	**Determination**
-DUC-1	The median household income is identified. The DUC threshold MHI (80 percent of the statewide MHI) is clearly stated. The MHI in the Agency's boundary is described.	Four of the five census tracts encompassing the TWSD boundary and SOI have a MHI of less than the $60,188.00 threshold for 2019 and are classified as DUCs.
-DUC-2	Potential DUCs are considered. The provision of adequate water, wastewater, and structural fire protection services to DUCs is considered.	Due to the identified DUCs receiving essential services of water, wastewater, and structural fire protection, there are not any communities within the existing TWSD boundary or SOI that lack public services (or a private alternative). No health or safety issues have been identified other than the Golden Feather mobile Home Park. However, water affordability remains an issue for local residents, and recommendations have been provided in the finance section.

7.6 Public Services

7.6.1 Service Overview

This Chapter evaluates the efficiencies of services provided by the Thermalito Water and Sewer District. TWSD provides the following services:

- Water Supply, Conservation, and Treatment
- Wastewater Collection and Transmission
- Solar-electric power to offset its internal costs

The TWSD currently services 3,116 water customers, and the number of sewer connections is 2,365 (TWSD, 2021b). Of the 3,116 water customers, approximately 156 are commercial accounts, and the remainder are residential. Approximately 23 domestic sewer collection system customers are commercial or industrial users (TWSD, 2021b). A single large industrial use can generate as much wastewater as many acres of residential use, and the impact on the sewer conveyance infrastructure can be significant (TWSD SSMP, 2020b). It should be noted that the spatial distribution of wastewater infrastructure is much smaller compared to the drinking water

system, and sewer pipes cross only 25 percent of the boundary area. This results in fewer sewer customers (compared to water customers), as shown in Table 7-10 below. The two services that TWSD does not currently provide, storm drainage and recreation, are briefly described in Sections 7.6.4 and 7.6.6.

Table 7-10: Number of Customers for Key Municipal Services

Service	Number of Customers in 2021
Water	3,136
Sewer	2,365
Solar Electric Power	2

7.6.2 Water Service

7.6.2.1 Water Resource Planning

Protecting water quality and maintaining an adequate water supply are critical for the future of the Thermalito community. Given this importance, the TWSD and other regional and statewide agencies prepare a range of water resource management plans described in the following paragraphs.

Urban Water Management Plan. California's urban water suppliers prepare urban Water Management Plans (UWMPs) to support their long-term resource planning and ensure that adequate water supplies are available to meet existing and future water demands. The Urban Water Management Planning Act (CWC §10610 – 10656 supplemented by CWC §10608 et seq) specifies the requirements for UWMPs. The TWSD's 2020 UWMP is dated March 2023 and was submitted to the CA Department of Water Resources at: *https://wuedata.water.ca.gov/uwmp_plans.asp?cmd=2020* . This TWSD 2020 UWMP describes TWSD's existing water facilities, system water use, baselines, water system supplies, contingency plan, and water demand management measures and was utilized as a data source for this MSR.

Integrated Regional Water Management Plans: TWSD does not participate in an Integrated Regional Water Management Plan (IRWMP) process (TWSD, 2021b). There are several IRWMPs in Butte County, and other water districts have found participation to be useful. Participation in an IRWMP process demonstrates collaboration with stakeholders on watershed protection and specific projects that may be eligible for grants.

Sustainable Groundwater Management Act

TWSD complies with the California Sustainable Groundwater Management Act (SGMA) by collaborating with its partners to prepare a management plan for the aquifer. Specifically, the District is part of a joint powers authority (JPA) for the Wyandotte Creek Groundwater Sustainability Agency (WCGSA), as detailed on their website at: *www.wyandottecreekgsa.com* . A member of the District's Board concurrently sits on the Board for the WCGSA. The GSA is meeting all of the current milestones, and a Draft Groundwater Sustainability Plan is available for

public review per the SGMA regulations (TWSD, 2021b). Regular reports about the Wyandotte Creek GSA are provided to the TWSD Board of Directors at their monthly meetings.

Permits: Adopted Decisions and Orders from the State Water Board

The State Water Resources Board has issued several orders related to Thermalito Water and Sewer District Water Treatment Plant (Water System No. CA0410008) as listed below:

- Order No. R5-2020-0065, Rescission of Waste Discharge Requirements/Monitoring & Reporting Program, Adopted on 10 December 2020
- Order No. R5-2008-0172, Change of Name and/or Ownership of Facilities, Adopted on 24 October 2008
- Order No. R5-2008-0065, Waste Discharge Requirements/Monitoring & Reporting Program, Adopted on 25 April 2008

Data Source: *https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/*

TWSD operates its water system with permits from the State of California Regional Water Quality Control Board (SRWQCB) and the State Water Resources Control Board – Division of Drinking Water (DDW).

7.6.2.2 Existing Water Supply and Treatment,

The District is located within a hydrologic basin called the Sacramento River Sub Basin. Specifically, the southeastern portion of the District is located within the Feather River watershed. The northwestern portion of the District is located in the Sacramento River watershed, as described in Appendix I. The TWSD provides potable water to users within its boundary limits, as shown in Figure 7-1. TWSD has two sources of water: groundwater and surface water (TWSD, 2021b). The District currently provides water services to approximately 3,136 municipal customers. Approximately 95% of their water and sewer customers are residential. Total annual water consumption is currently at 6.9 million gallons per day (MGD) (TWSD, 2021b).

Surface Water

The District's surface water supply is provided primarily from the Concow Reservoir (Wilenore Reservoir). Concow Reservoir is located east of the Town of Paradise and west of Highway 70. The reservoir is fed by Cirby Creek and Concow Creeks, natural drainages. The natural pattern of seasonal precipitation in the watershed determines the water flow into the Concow Reservoir. Elevations range from 2,000 feet at the base of Concow Dam to 3,600 feet at the uppermost elevation in the watershed. The watershed size for the Concow Reservoir is approximately 9,587 acres (TWSD, 2015). The District's primary water supply is routed from the Concow Reservoir through DWR's State Water Project facilities, including Lake Oroville, Oroville Dam, and the Thermalito Complex, which includes the Thermalito Diversion Pool and Thermalito Power Canal. TWSD pumps its supply from the Thermalito Power Canal to its municipal water treatment plant (WTP) (TWSD, UWMP, 2015). TWSD's surface water rights allow for 8,200 acre-feet (AF) storage annually, as described in Table 7-14. Historically, the District has utilized less than its maximum water right.

Concow Reservoir has the physical capacity to hold 8,200 AF, and this directly corresponds to the water rights allocated to TWSD (TWSD, 2021b). Even in the driest years, the local precipitation within the watershed has always replenished the Concow Reservoir to spill. As a result, the water supply (and associated these water rights) have been very stable (Butte LAFCO MSR, 2006). This supply is over three times the current annual demand. TWSD's water sources (groundwater and surface water) have not yet been adversely affected by drought or usage.

The District has good quality raw water supplies (Butte LAFCO, MSR, 2006). However, winter storms and wildfire events can both serve to increase turbidity in the District's surface water supply. Therefore, it is essential for TWSD to have both: (1) an adequate drinking water treatment plant; and (2) access to an alternative source of water (i.e., groundwater) to ensure good water quality (Butte LAFCO, MSR, 2006).

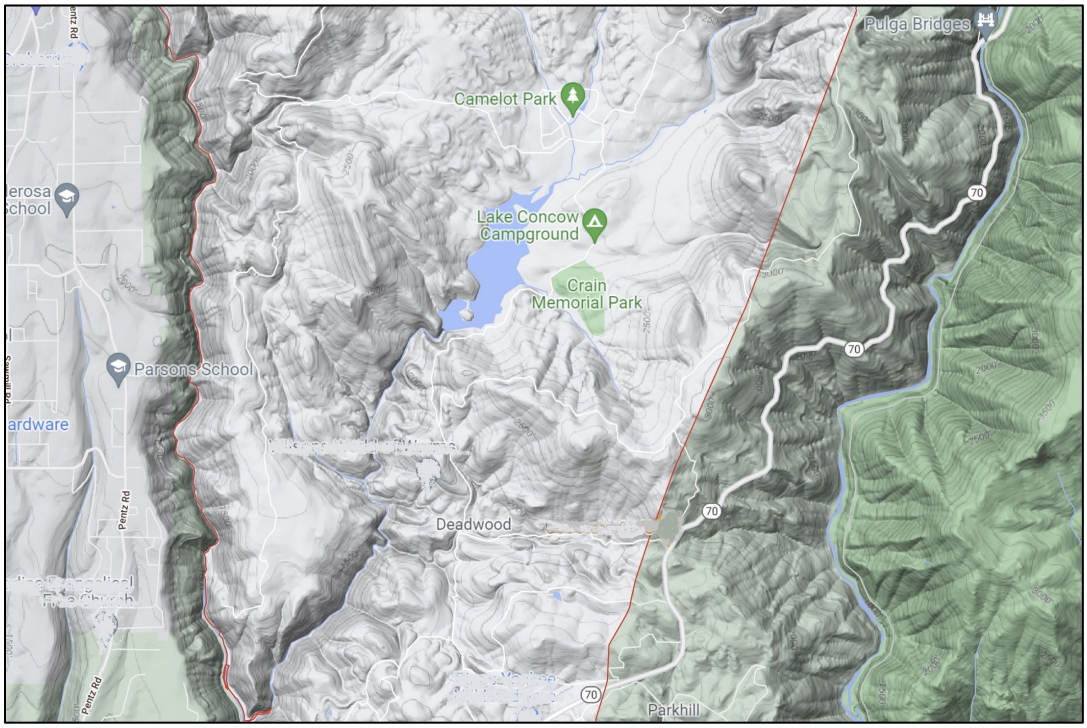


Figure 7-6: Map of Concow Reservoir, Courtesy of Google Maps.

Groundwater

Groundwater is an essential part of TWSD's water supply, and TWSD owns and maintains four active wells located within its boundary area (personal communication, C. Heindell, 2022). The backup supply for TWSD is provided by groundwater accessed through four wells, which are capable of drawing up to 3 MGD when needed. These wells have an average depth of 200 feet (Butte LAFCO, MSR, 2006). One groundwater well is used to irrigate and provide domestic water to a local golf course (personal communication, Boucher and Heindell, 2021). The groundwater

wells withdraw water from the East Butte Groundwater Subbasin of the Sacramento Valley Groundwater Basin (TWSD, 2015).

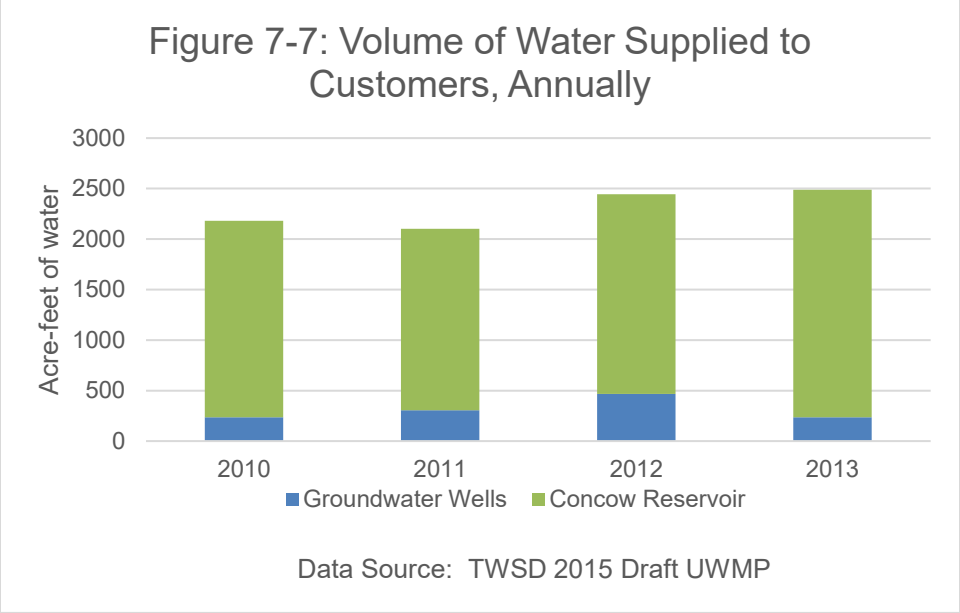
If the four wells are operated at their maximum, the total annual output would be 3,258.5 acre-feet per year (AFY). However, much less groundwater is actually utilized, with usage averaging 300 AFY. This is approximately 14.5% of the total water supplied to consumers. The ratio of groundwater to surface water utilized can vary from year-to-year. However, for both surface water and groundwater, there is generally a surplus available (TWSD, 2015).

Water Treatment Service

TWSD treats raw water to create a safe potable water supply for the local community. TWSD's raw water sources are high quality, in general. However, treatment is necessary to meet public health requirements. The tradeoffs associated with water treatment are that treatment improves water quality and protects public health; however, disinfection by-products are created. Water quality is described in detail in Section 7.6.2.6. The water treatment plant currently has the physical capacity to treat 4 million gallons per day. The water treatment plant is utilized to treat the surface water supply only. The District's groundwater supply does not undergo treatment. It is disinfected at the source and delivered to the distribution system (personal communication, C. Heindell, 2022). The wells could potentially produce up to 2.9 MGD. Combining the treated surface water and the groundwater yields a total of 6.9 MGD of municipal water supply for TWSD customers (TWSD, 2021b). TWSD is working on a proposed future capacity upgrade of the treatment plant to bring it to 8.0 MGD (TWSD, 2021b). The site contains sufficient land to accommodate the expansion of the treatment plant. The water treatment plant is a significant part of TWSD's infrastructure and is described in more detail in Section 7.7.

7.6.2.3 Water Demand

This section studies the demand for potable water, including the existing and potential future demand. All TWSD customers have metered water service (TWSD, 2015). TWSD's Urban Water Management Plan, 2020, provided the data analyzed in this section. As shown in Figure 7-7 below, during the years 2010 to 2013, TWSD delivered an annual average of 2,304 acre-feet (751 MG) to its customers. To identify trends and account for natural variability in precipitation in the watershed, it is important to look at a longer time span than that provided in Figure 7-7 below. TWSD staff indicates that over the last 10 years, from 2012-2021, District customers' annual range of water use was 1,680.30- to 2,318.94 acre-feet (TWSD, 2021b).



Daily per capita water use is 209 gallons (gcpd) (TWSD, 2015). This means that an average resident of TWSD utilizes 209 gallons per day for washing, drinking, and landscaping. Implementing water conservation measures could potentially reduce average water demand down to 167 gcpd (TWSD, 2015). However, water demand can vary seasonally due to increased outdoor landscaping water needs and other reasons, as shown in Table 7-11 below.

Table 7-11: Seasonal Water Demand TWSD		
	Peak Demand	**Average Demand**
Winter	1.65 MGD	1.09 MGD
Summer	7.13 MGD	3.61 MGD
Data Source: (TWSD, 2021b)		

Water system losses are a component of water demand. Water losses are typically attributed to leakage, evaporation, or other factors. Although TWSD's Draft 2015 Urban Water Management Plan estimated water losses at approximately 13 percent (TWSD, 2015), District staff indicates that the current average water loss for 2021-2015 is 4.2 percent. In the past, old galvanized service lines and inaccurate meter readings were identified as contributing to water loss. In 1996, the District started a meter replacement program. Replacement of the meters and other physical improvements have reduced water loss. TWSD continues to make physical infrastructure improvements on an ongoing basis, and this will result in reduced water loss and associated reduced water demand over the long run.

TWSD does not provide raw water to any agricultural customers. The District strictly serves domestic water service only (personal communication, Boucher and Heindell, 2021). TWSD's drinking water system does not have exit flows (TWSD, 2021b). In addition to providing treated domestic water, TWSD also supplies water to local fire hydrants and ensures adequate water

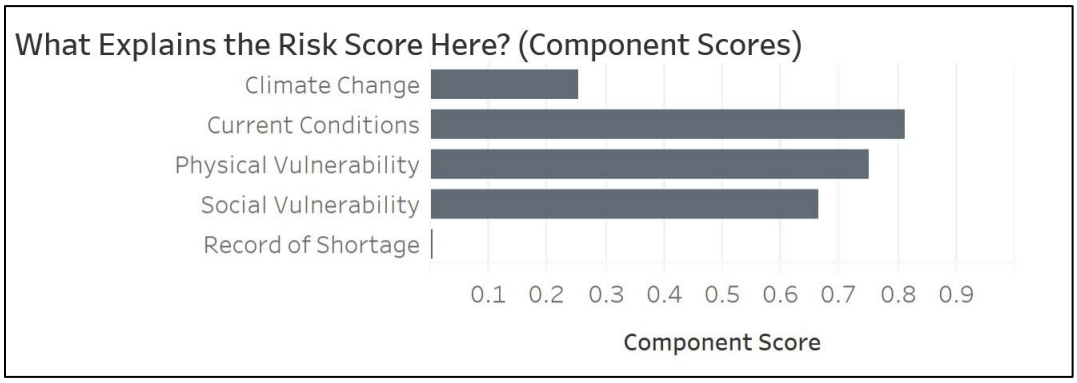
pressure to support fire flows. TWSD does not own any hydrants. The local fire districts own the hydrants and are responsible for them. TWSD only supplies water to the hydrants (personal communication, Boucher and Heindell, 2021).

7.6.2.4 Drought Risk and Water Conservation

Drought Risk:

The California interactive website for Drought and Water Shortage Risk of Self-Supplied Communities database developed by the California Dept. of Water Resources (DWR) was queried for the Thermalito area (US Census ID Block Group 060070037002), which contains 339 households, according to the US Census estimates (ACS 2012-2016). This includes 21 Tribal Homes, and 22% of the local population relies upon private domestic wells. The Thermalito community has an overall Risk Score of 70 (on a scale of 0-100, with zero being no risk and 100 indicating very serious risk) (DWR, 2021a). The Risk Score of 70 is based on several components, as depicted in Figure 7-8 below.

Figure 7-8: DWR Drought Risk Component Score for Thermalito Community



Data Source: DWR, 2021a

Indicators used to estimate drought and water shortage risk were grouped in the categories in the bar chart shown in Figure 7-8 above. The bars are longer for those components that contribute more to the risk score. Bars are shorter (or closer to zero) for those than contribute less to the risk score. Those bars that are absent (i.e., for "Record of Shortage") indicate they do not drive risk for this area (based on available data) or no data was available. For more details on the methods and data sources, see the report here: *https://water.ca.gov/Programs/Water-Use-And-Efficiency/2018-Water-Conservation-Legislation/County-Drought-Planning*. In conclusion, although TWSD has a stable water supply and historically has had a low drought risk, changing conditions mean that TWSD will need to continue to actively monitor precipitation in the watershed and implement drought conservation programs as needed.

When estimating future water demand, many California water districts run modeling scenarios to account for climatically shifting runoff availability. TWSD has not run such scenarios in the past (TWSD, 2021b).

Water conservation is accomplished through State laws and local actions. State laws, such as the 2015 new product standards adopted by the CA Energy Commission, promote water conservation by ensuring that household appliances and plumbing fixtures (i.e., toilets, showerheads, faucets, clothes washers, dishwashers, etc.) are water efficient. Due to recent droughts, homeowners throughout the state have been actively conserving water by taking shorter showers and reducing the amount of water dedicated to outdoor landscaping. The actions of individual homeowners have a cumulative result in reducing water demand. TWSD's infrastructure improvements, such as pipeline replacement, also conserve water. In addition, the UWMP Plan includes a Water Shortage Contingency Plan, which includes a four-stage response program to deal with water shortages over an extended period of time (TWSD, UWMP, 2015). The TWSD will continue implementing programs to monitor water savings and implement sound water conservation practices.

Water Recycling

Recycling grey water by utilizing water for outdoor landscaping and golf courses or parks can reduce water demand (especially peak summer demand). There are two ways for local communities to implement water recycling: 1) individual homeowners can connect their washing machine or shower drain to their individual grey water system and utilize the grey water in their garden; and 2) a water or wastewater district can operate a local recycled water system from their wastewater treatment plant site. Since TWSD does not directly operate the sewage treatment plant, it does not currently implement a water recycling program. However, TWSD is an active member of SC-OR and has influence over the programs and procedures at the wastewater treatment plant. Additionally, TWSD staff and Board members are very knowledgeable about the local terrain within District boundaries and have ideas about specific locations where recycled water could be useful. In the future, when a water recycling program could be useful in reducing peak summer water demand, TWSD will be in a good position to coordinate with SC-OR to assist in implementing such a program.

Future Water Demand

LAFCO is interested in studying projected future water demand to understand whether there is sufficient supply to serve future needs. Several factors contribute to future water demand, including population growth, types of agricultural crops grown and associated demand, evapotranspiration rates, and several other factors. Housing growth and other development types will influence future water demand, and therefore, the District keeps track of "Will Serve Letters" or promises made to supply water. TWSD has issued will-serve letters to the following residential developments:

- Riverbend Apartments (City of Oroville, - 72-unit apartment complex),
- Olive Ranch Apartments (City of Oroville, -81 unit apartment complex),
- Village at Ruddy Creek (Butte County, -97 unit subdivision),
- Oroville Heights (Butte County, -72 unit apartment complex),
- Linkside Phase II (Butte County, -56 unit subdivision.)

Each of the Will Serve Letters expires 1 year from issuance (TWSD, 2021b).

TWSD's 2015 UWMP developed models that estimate future water demand for "normal" water years, where an average amount of precipitation falls, and "dry" years, which represent drought conditions. Table 7-12 below shows demand for potable in five-year increments out to 2035 for a "normal" water year.

Table 7-12: Demand Comparison – Normal Year

	2025	2030	2035	2040	2045 *(Opt)*
Supply totals (autofill from Table 6-9)	2,636	2,791	2,946	3,101	3,256
Demand totals (autofill from Table 4-3)	2,468	2,649	2,833	3,020	3,212
Difference	168	142	113	81	44
NOTES: Units in AF.					

Data Source for Table 7-12 above: TWSD, UWMP 2020

Table 7-13 below shows demand for potable in five-year increments out to 2035 for a "single-dry" water year.

Table 7-13: Demand Comparison – Single Dry Year

	2025	2030	2035	2040	2045 (Opt)
Supply totals*	8,400	8,400	8,400	8,400	8,400
Demand totals*	2,243	2411	2592	2786	2995
Difference	6,157	5,989	5,808	5,614	5,405
***Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.					
NOTES: based on the driest year of 2013 from historical period of record from 2001-2020.					

Data Source for Table 7-13 above: TWSD, UWMP 2020

In the event of a multiple-year drought, the 2020 UWMP estimates that demand could increase up to 3,227 acre-feet per year (TWSD, 2023). This represents the worst-case scenario.

In 2021, TWSD staff offered the following summary: the anticipated growth rate for water service would add approximately 50 connections per year (1.7 percent) (TWSD, 2021b). The existing water facilities can accommodate growth for the next 5-10 years (TWSD, 2021b).

> The 2020 UWMP provides a concise summary of existing and projected demand as follows:

> Water demand within the District was 2,033 AF on average between 2016 and 2020. Taking into account historical water use, expected population increase and other growth, climactic variability, and other assumptions, water demand within the District is projected to be 2,468 AFY in 2025 and increase to 3,212 AFY by 2045. In dry year periods such as an extended 5 year drought, water demands are expected to be up to 2,092 AFY by 2025 (TWSD, 2023).

Water use tends to increase during the summer and TWSD's peak summer demand is approximately 7.13 MGD. Please note that peak water demand occurs on a short-term, temporary basis, usually during the summer. Therefore, peak water demand is measured as a daily demand, i.e. million gallons per day (MGD). Other volumes of water, such as the annual demand are measured over a longer timeframe and are averaged, statistically.

The 2020 UWMP considers the existing design capacity of the water treatment plant; historical trends of past production; projected future population; and overall water supply of 8,200 AF plus groundwater. The UWMP concludes that TWSD has sufficient water supply to meet projected future water demand through the planning period to 2035 (TWSD, 2023).

Water Rights

In California, there are several different types of water rights, consistent with the basic principles of California Water Law. Appendix F provides a basic primer on California Water Law and the relationship between certain water rights and procedures for making water transfers. A water district, such as TWSD, must have a valid water right to divert, use and/or transfer water. TWSD has water rights to 8,200 acre-ft of water annually, which is stored in the Concow Reservoir (TWSD, 2021b). In 1985, the State Water Resources Control Board (SWRCB) approved water rights order No. WR85-06 to verify that TWSD was entitled to utilize the entire 8,200 AF of water stored in Concow Reservoir (SWRCB, 1985). Since the physical capacity of the Concow Reservoir is 8,200 AF, this is the amount of water storage allocated to TWSD under their water right.

Table 7-14: TWSD Surface Water Rights

Application ID	Filing Date	Diversion Rate (ft3/sec)	Storage (acre-feet)	County
A001739	March 25, 1920	0	8,200	Butte

Data Source: Butte LAFCO MSR, 2006 and TWSD, 2021b

The SWRCB issued license application No. A001739 designated a "place of use" which is the state's geographic description of the location and area where the water could actually be utilized. The place of use seems to be the 14,000-acre "service area" of TWSD. The place of use includes Concow and the surrounding area. Under the license terms, TWSD is able to count the surrounding recreation areas (for example, fishing areas at Concow). However, TWSD's LAFCO-approved boundary area is currently at 14,873 acres. It appears that 873 acres are not covered in the permitted "place of use". It is recommended that both LAFCO and TWSD compare the geographic extent of its "place-of-use" in its water right and compare that to the District boundary.

Purchase agreements: TWSD does not currently purchase any water from any other organization (TWSD, 2021b). This means that TWSD is not a federal water contractor (i.e., it does not purchase water from the U.S. Bureau of Reclamation). TWSD is not a State Water Project Contractor. Although TWSD's water supply is routed through Lake Oroville, this route is a historic legacy resulting from the removal of the lower Miocene Canal and TWSD's outlet due to the construction of the Oroville Dam. The Miocene Canal is not operational in this local area. TWSD does occasionally sell water to other California water agencies. For example, TWSD sold water to Santa Clara Valley Water District in 2021. In July 2021, the State Water Resources Control Board, Division of Water Rights, approved an order of temporary changes to water right License 845 (Application 1739) For The Thermalito Water And Sewer District. TWSD filed a petition for temporary change involving the transfer of up to 3,500 acre-feet of water to Santa Clara Valley Water District. This allowed water that was stored in Concow Reservoir to be delivered to this bay area water district during the recent drought. (Order is available on this website: *https://www.waterboards.ca.gov/waterrights/*). TWSD also conducted a one-time water transfer of 1,793 AF to the Westlands Irrigation District in 2013 (TWSD, 2015). These types of one-time water sales generally do not affect TWSD's underlying water right.

7.6.2.5: SOI – Water

TWSD's existing SOI has a large geographic size at 44,101 acres. TWSD currently does not provide extra-territorial services and does not provide water or wastewater service to its SOI. If areas within the existing SOI were to be annexed into the boundary, it would potentially increase water demand. Therefore, any additional annexations should be evaluated within the context of the following:

- City and County General Plans;
- California Environmental Quality Act (CEQA);
- New State laws, such as SB 9, promote the construction of accessory dwelling units and infill; and
- Fiscal integrity and fee payments (for example, under SB-9, some fees are not required).

Any new annexations should be determined on a case-by-case basis with a review of anticipated water demand, conservation measures, and updated inventories of supplies. All new development in the TWSD should provide for its appropriate shares of pipes, pipelines, and reservoirs.

7.6.2.6 Drinking Water Quality

This section focuses on one aspect of water quality: the quality of drinking water. The quality of water discharged into natural streams, rivers, and lakes is described in relation to the SC-OR wastewater treatment plant in Chapter5?. When drinking a glass of water, it is important for customers to understand whether this water is safe for consumption and free from pollution to protect their health and safety and promote overall wellness. TWSD's water quality monitoring program includes taking samples of raw and treated water throughout the year from many locations in the District's boundary area. TWSD's annual Consumer Confidence Report (CCR) demonstrates a consistent delivery of high-quality drinking water. Four online databases were queried to further consider TWSD water quality in additional detail, including the California

Drinking Water Watch; the Environmental Working Group; the California Integrated Water Quality System Project; and the Human Right to Water Tool.

California Drinking Water Watch

TWSD's water system was queried on the CA Drinking Water Watch (Safe Drinking Water) online database. Over the past twenty years, TWSD has received only five water quality violations for the Thermalito Water Treatment Plant (Water System No. CA0410008). The most recent violation occurred in June 2020, when lab results showed Total Haloacetic Acids exceeded the water quality rule for Stage 2 Disinfectants and Disinfection Byproducts (California Drinking Water Watch, 2021). Details are listed in Table 7-15 below.

Environmental Working Group

The Environmental Working Group (EWG) is a non-profit organization that provides water quality information to inform the public about public health matters. The EWG is not a regulatory agency, and they do not set regulatory limits. However, they do publish health guidelines that are readily available to the public. A query of EWG's online database shows that 18 total contaminants are found in the TWSD water system, and these query results are shown in Appendix P.

Table 7-15: Water Quality Violations Listed in Database for TWSD

Violation Category Code	Violation Type Description	Rule Name	Contaminant Name	Compliance Status Description	Compliance Period Begin Date	Compliance Period End Date
MCL	Maximum Contaminant Level Violation, Average	Stage 2 Disinfectants and Disinfection Byproducts Rule	Total Haloacetic Acids (HAA5)	Returned to Compliance	01-Apr-20	30-Jun-20
MCL	Maximum Contaminant Level Violation, Monthly (TCR)	Total Coliform Rule	Coliform (TCR)	Returned to Compliance	01-May-05	31-May-05
MR	Monitoring and Reporting (DBP)	Stage 1 Disinfectants and Disinfection Byproducts Rule	Total Haloacetic Acids (HAA5)	Returned to Compliance	01-Apr-06	30-Jun-06
MR	Monitoring and Reporting (DBP)	Stage 1 Disinfectants and Disinfection Byproducts Rule	TTHM	Returned to Compliance	01-Apr-06	30-Jun-06
MR	Initial Tap Sampling for Pb and Cu	Lead and Copper Rule	Lead and Copper Rule	Returned to Compliance	30-Jun-93	01-Mar-00

Data Source: California Drinking Water Watch, 2021

California Integrated Water Quality System (CIWQS): Water Treatment Plant for Thermalito Water and Sewer District

The Regulated Facility Report is part of the CIWQS database, and it is available online at: *http://www.waterboards.ca.gov/ciwqs/*. This database query showed no active violations at the TWSD Water Treatment Plant, as listed in the data download in Table 7-16 below (CIWQS, 2021).

Table 7-16: Water Quality Data Download from CIWQS

Agency	Project Type	Regulatory Status	Order No.	WDID	Effective Date	Review Date	Design Flow	TTWQ	# Enforcement Actions within 5 years	# Violations within 5 years
Thermalito Water & Sewer District	Water Treatment Plant	Active	R5-2018-0085	5A04NC0 0032	12/10/2020	12/7/2023	0.157	3	0	0

Data Source for Table 7-16: CIWQS, 2022

Human Right to Water Data Tool

The State of California Office of Environmental Health Hazard Assessment has assessed various water quality parameters for community water systems throughout the state and posted the information to the online database called the "Human Right to Water Data Tool." The database analysis utilizes a scoring system to assess and rate various water quality parameters. The scores have a possible range: 0 – 4, with zero being the best and four (4) being the worst. This database was queried, and the results for the TWSD Water Treatment Plant (PWSID: CA0410008) are described below.

- *Water Quality Composite Score*: 0.00 (Excellent)
- *High Potential Exposure Score:* 0 (Excellent - This system had 0 contaminants with high potential exposure)
- *Duration of High Potential Exposure Score:* 0 (Excellent - This system had 0 years of high potential exposure)
- *Data Availability Score:* 0 (Excellent - This system had 14 contaminants with required data in the study period)
- *Compliance with Primary Drinking Water Standards Score:* 0 (Excellent - This system had: 0 contaminants with at least 1 MCL violation in the study period)
- *Maximum Duration of Non-Compliance Score:* 0 (Excellent - This system had: 0 years of non-compliance)
- *Water Accessibility Composite Score*: 0.00 (Excellent – This system is generally not vulnerable a water system is to a supply outage or shortage)

Water Affordability is discussed in the Finance Section 7.8.

Quality of Groundwater

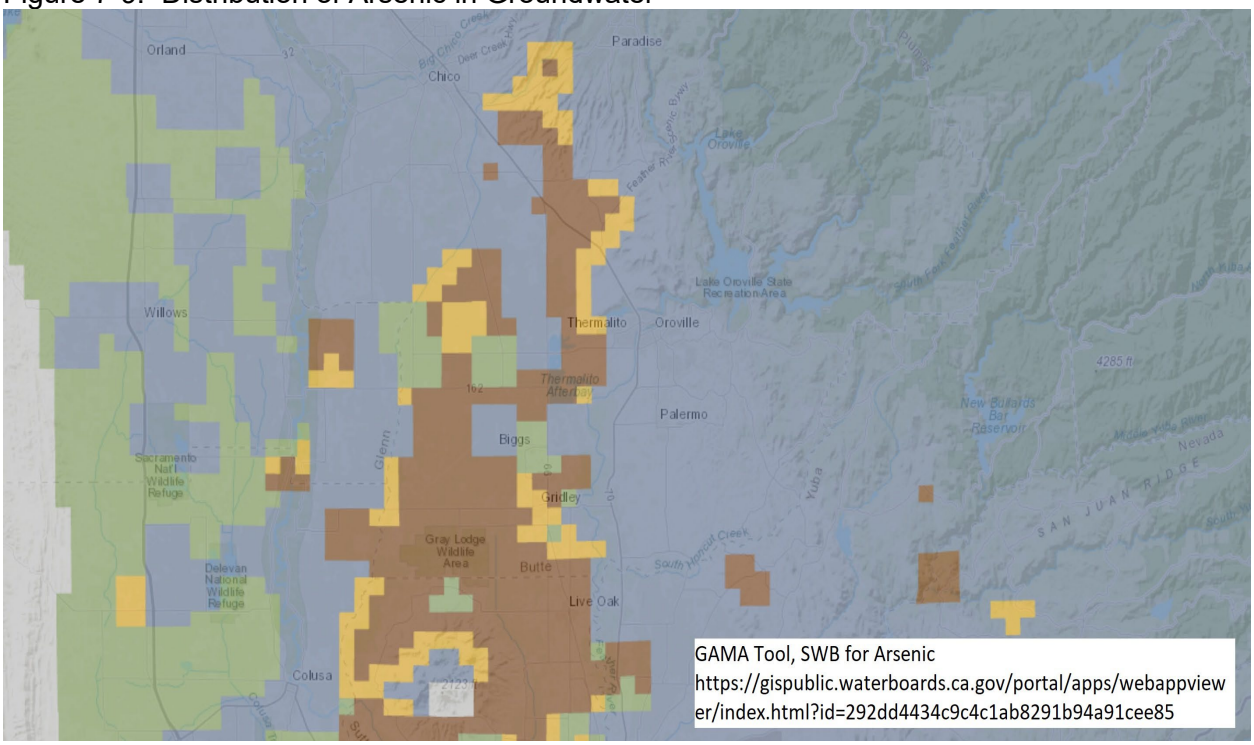
Groundwater Ambient Monitoring and Assessment Program

The State Water Board's Groundwater Ambient Monitoring and Assessment Program (GAMA) and the U.S. Geological Survey (USGS) have created tools to help users understand groundwater quality in California. The Domestic Wells Water Quality Tool created as a part of the "Needs

Assessment" was queried (CA SWB, 2021c). Of the five public districts studied in this MSR, only the Thermalito Water and Sewer District utilizes groundwater as a drinking water source. (Privately owned Cal Water Co. also utilizes groundwater as detailed in Appendix Q.) The USGS notes that "arsenic occurs naturally as a trace component in many rocks and sediments. Whether the arsenic is released from these geologic sources into groundwater depends on the chemical form of the arsenic, the geochemical conditions in the aquifer, and the biogeochemical processes that occur. Arsenic can also be released into groundwater as a result of human activities, such as mining, and from its various uses in industry, in animal feed, as a wood preservative, and as a pesticide. Arsenic poses a problem in drinking-water supplies because it is toxic at low levels and is a known carcinogen. In 2001, the USEPA lowered the MCL for arsenic in public-water supplies to 10 micrograms per liter (µg/L) from 50 µg/L" (USGS, 2021).

The GAMA tool reports that Arsenic has been detected in the groundwater located west of Thermalito, as shown in Figure 7-9 below. Reported values of arsenic are 1.384172 units (Section Detection) for the dark brown areas and 0.8056882 units (Section Detection) for the yellow areas (SWB, 2021).

Figure 7-9: Distribution of Arsenic in Groundwater



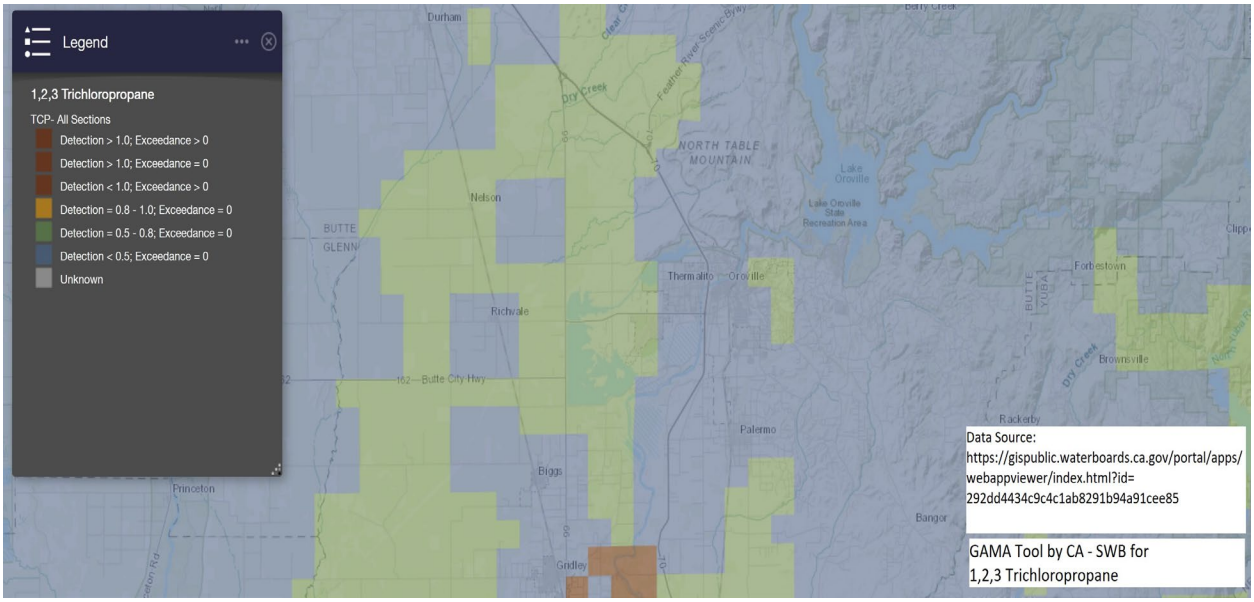
Data Source for Figure 7-9 above: CA SWB GAMA Needs Analysis 2021.

1,2,3 Trichloropropane (TCP) is exclusively a man-made chlorinated hydrocarbon, typically found at industrial or hazardous waste sites. TCP is often present at sites contaminated by other chlorinated solvents. TCP has been used as an industrial solvent and as a cleaning and degreasing agent; it has been found as an impurity resulting from the production of soil fumigants.

TCP is used as a chemical intermediate in the production of other chemicals, such as liquid polymers. EPA has classified TCP as likely to be carcinogenic to humans. In animal studies, short-term exposure may cause eye and throat irritation; long-term exposure has led to liver and kidney damage and reduced body weight. Remediation technologies available to treat TCP contamination in groundwater and soil include granular activated carbon, dechlorination by hydrogen release compound, reductive dechlorination by zero-valent zinc, and others (EPA, 2017)

Figure 7-10 (next page) shows the spatial distribution of TCP in the local groundwater. The area located west of Thermilto has a TCP Section Detection of 0.5959582 units. The area located southeast of Oroville has a TCP Section Detection 0.5212298 units and covers a spatial area of one square mile (SWB, 2021).

Figure 7-10: Spatial Distribution of TCP in the Local Groundwater



Per- and Polyfluoroalkyl Substances

Long-lasting chemicals called per- and polyfluoroalkyl substances (PFAS) are commonly known as “forever chemicals” because they are persistent and can cause public health and environmental harm long after release. PFAS are increasingly turning up in public drinking water systems and private wells. PFAS are used in a range of commercial and industrial applications, including firefighting foams, greaseproof food wrapping, non-stick cookware, and stain- and water-repellent carpets, textiles, and outdoor gear. However, human exposure to these substances is linked to serious adverse human health impacts, including liver damage, high cholesterol, obesity, diabetes, cancer, thyroid disease, asthma, immune system dysfunction, reduced fertility, low birth weight, and effects on children’s cognitive and neurobehavioral development (UC Berkeley Law, 2020). Although PFAS are not currently regulated, the US Environmental Protection Agency recently announced investigations into their toxicity. There is a

probability of federal regulations being released within the next few years. The EPA has identified eight industrial facilities that have the potential of using and releasing PFAS in the Oroville area. This is a concern for the TWSD because it partially relies on groundwater for its water supply. The eight industrial facilities include two plastics and resin manufacturers, one electronics manufacturer, one printer, one fire training facility, one metal coating business, one radar site, and one packaging facility (PEER, 2021). However, TWSD has participated in the SWRCB's PFAs testing and is below the reporting limit for all groundwater wells (personal communication, C. Heindell, 2022).

When protecting water quality, one of the most critical actions a water district can implement is to protect the health of its watershed. To this end, TWSD prepared a Drinking Water Source Assessment on February 19, 2003, submitted to the CA Department of Health Services. This Source Assessment listed several vulnerability findings, including airport, concentrated aquatic animal production, historic gas stations, septic systems, wastewater treatment plant, wastewater collection pipes that are located near wells, crops, and golf courses (TWSD, Consumer Confidence Report, 2021g).

The water quality of the TWSD supply is good, as detailed in the preceding paragraphs. In summary, the factors influencing the District's ability to supply and/or deliver water to the customer include groundwater levels, drought conditions, and Lake Oroville Operations (TWSD, 2021b).

7.6.3 Wastewater Collection and Treatment

7.6.3.1 Existing Wastewater Collection Services

The Thermalito Water and Sewer District (TWSD) provides wastewater collection services to local properties, including residential, commercial, industrial, irrigation, and institutional customers (TWSD, SSMP, 2020b). The District's sewer collection service only extends to about 3,680 acres, covering 25 percent of the 14,873-acre boundary area. Much of the un-served area lies north and west of the current sewerage system infrastructure (TWSD, 2020b).

TWSD's wastewater collection system includes: approximately 34 miles of gravity sewer lines; 570 sewer maintenance holes; 4,300 lineal feet of force mains; and 532 maintenance-holes, lampholes, and clean-outs (TWSD, 2020b). In addition, the Linkside Sewage Lift Station serves the Linkside subdivision located on Oro Dam Boulevard (TWSD, 2020b). The sewer system conveys wastewater to a treatment plant owned and operated by the Sewerage Commission - Oroville Region (SC-OR). SC-OR was created in 1973 under a joint powers agreement (JPA) between the City, Thermalito Water and Sewer District (TWSD), and the Lake Oroville Area Public Utility District (LOAPUD). The individual agencies maintain and operate their own wastewater collection systems that discharge into the SC-OR wastewater treatment plant. This Chapter focuses only on the wastewater collection and conveyance provided by the TWSD within its boundary area. The wastewater infrastructure needs and deficiencies are evaluated in terms of supply, capacity, condition of facilities, and service quality in relation to operational, capital improvement, and finance plans.

The TWSD currently provides wastewater collection services to 2,365 sewer connections (TWSD, 2021b). A total of 23 commercial or industrial customers utilize the sewer collection system (TWSD, 2021b). One TWSD connection may serve many individual customers. There is significant annual variability in the number of new connections added to TWSD's wastewater system. The TWSD does not provide wastewater collection services to customers outside its jurisdictional boundaries. There may be parcels within the TWSD boundary and within the SOI that rely on individual septic systems. The Butte County Environmental Health Division regulates these septic systems. Additional data about septic systems were not readily available.

In addition to the office staff, the Wastewater Division is staffed by a field foreman and six (6) field operators. The field operators conduct maintenance, inspection, and construction/repair operations. Additionally, staff responds to all sewage spills seven days a week, 24 hours a day. The District's Engineer (Christopher Heindell) serves as the legally responsible official for the implementation of the District's Sewer System Management Plan (SSMP) (TWSD, 2020b). All the wastewater staff undergoe regular safety training, including customer service, asbestos concrete handling, equipment safety, confined space, trench safety, sanitary sewer overflow prevention and response, and other associated training (TWSD, 2020b).

There are several measures of integrity for a wastewater collection system, including peaking factors, efforts to address infiltration and inflow (I/I), and inspection practices. The TWSD undertakes testing and other measures to ensure the system's integrity. Integrity checks are as follows: peaking factors during wet weather events, monitoring pumping stations during rain events, and inspection of maintenance-holes during rain events (TWSD, 2021b).

Water conservation programs such as low-flow toilet rebates, leak detection pills, etc., can reduce water use and the amount of wastewater generated. To further improve safety and service, the TWSD encourages compliance with the California Plumbing Code requirements for wastewater Backflow Prevention Devices[3].

Water Recycling: TWSD does not operate a wastewater treatment plant and therefore does not have direct access to treated wastewater that could be utilized as part of a water recycling program. However, TWSD is a member of the SC-OR JPA and could potentially participate in water recycling in the future. The TWSD boundary area contains numerous land-uses that could benefit from non-potable water, including street tree landscaping.

Sewer EPA Categorical Users: The Federal Environmental Protection Agency (EPA) categorical users are significant industrial users regulated under a local pretreatment ordinance. Since the TWSD does not operate the wastewater treatment plant, it does not have direct involvement with this regulation. SC-OR is the lead agency for industrial pretreatment. However, there are no EPA

[3] Please note that backflow devices can also be required for regular water pipes. All new developments are required to install backflow protection on domestic and fire protection services. The only exception being manufactures homes which do not have fire sprinklers.

categorical users within the District boundaries (TWSD, 2021b). Additional details about EPA Categorical Users are provided in Chapter 5.

Treatment and Disposal: SC-OR is responsible for wastewater treatment and disposal, as described in Chapter 5. TWSD is a member of the SC-OR JPA.

7.6.3.2 Planning and Permits for Wastewater Service

This wastewater service provider complies with the RWQCB requirements to complete a SSMP pertaining to its sewer systems, including a Sewer Overflow Emergency Response Plan Element for Sanitary Sewer Overflow (SSO) reporting (State Water Resources Control Board, 2006). The District approved a SSMP in December 2020 that guides the proper management, operation, and maintenance of all parts of the TWSD sanitary sewer system under its control, consistent with the requirements of the State Water Resources Control Board's (SWRCB's) Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (TWSD, 2020b). The SSMP aims to reduce and prevent SSOs and mitigate SSOs if they occur. The SSMP is updated every five years. The 2020 SSMP is available to the public in the District office. District staff indicates that the new SSMP will soon be posted to the District's website.

Permits: TWSD's wastewater collection and conveyance system operate under permits from the State Water Resources Control Board (SWRCB), including Order No. 2006-0003-DWQ (Statewide General Waste Discharge Requirements for Sanitary Sewer Systems), which was adopted by the SWRCB on May 2, 2006, and revised in 2008.

7.6.3.3 Wastewater- Water Quality Database Reports

Overview

This section provides the results of database searches on water quality for the TWSD. Compliance of wastewater agencies with water quality regulations promulgated by the State Water Resources Control Board (State Water Board) and the Central Valley Regional Water Quality Control Board (Regional Water Board) is important to LAFCO. This type of information is essential since, during a drought, a community can't rely upon 'dilution' as a solution to pollution. When local water supplies are scarce, keeping the water supply at a high level of water quality is desirable.

California Integrated Water Quality System Project

The California Integrated Water Quality System (CIWQS) is a relational database used by the State and Regional Water Boards to track permit violations and enforcement activities. TWSD has permits from the Central Valley Water Quality Control Board and is classified as a "Permittee." Permittees are allowed to self-report their permit violations to the CIWQS. A seven-year term from January 1, 2015 to December 31, 2021, was queried in the CIWQS database. CIWQS database query was run on Feb 22, 2022 for TWSD. The database shows that the facility's Waste Discharger Identification (WDID) is 5A04CR00230. The database lists TWSD's 401 certification issued on 01/02/2014. No violations or unusual events (other than one SSO reported in the next

section) were found. The California Water Board has a Waste Discharge Requirements (WDR) Program such that waste discharges that can be exempted from the California Code of Regulations requirements are issued waste discharge requirements, and are regulated by the WDR Program. Typical discharge types include domestic or municipal wastewater, food processing-related wastewater, and industrial wastewater. Thermalito Water & Sewer District has one WDR No. R5-2018-0085 issued in December 2020. Query results showed no violations for TWSD. In summary, a query of the general CIQWS database did not reveal any red flags associated with TWSD's wastewater system.

Table 7-17: CIWQS Database Query Results

California Home

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
STATE WATER RESOURCES CONTROL BOARD

California Integrated Water Quality System Project (CIWQS)

Party ID	Reg Measure ID	Facility ID	Facility Name
45730	301570	631332	Thermalito Water & Sewer District CS
45730	348575	721645	Thermalito WTP
45730	393986	800934	Thermalito Water & Sewer District East Trunk Interceptor Project
45730	440821	721645	Thermalito WTP

The current report was generated with data as of: 02/22/2022
Regional Boards are in the process of entering backlogged data.
As a result, data may be incomplete.

Regulatory Measures (non-enforcement)

Reg. Measure ID	Regulatory Measure Type	Region	WDID	Status	Program	Order No.	RM Effective Date	RM Termination Date	Relationship	Relationship Start Date	Relationship End Date	Amended?
440821	Enrollee - WDR	5R	5A04NC00032	Active	WDRNONMUNIPRCS	R5-2018-0085	12/10/2020	None	Discharger	10/12/2020	None	N
393986	401 Certification	5R	5A04CR00230	Historical	CERFILLEXC	None	01/02/2014	01/02/2018	Discharger	11/21/2013	None	N
348575	WDR	5R	5A04NC00032	Historical	WDRNONMUNIPRCS	R5-2008-0065	04/25/2008	12/10/2020	Discharger	07/07/2008	None	Y
301570	Enrollee - WDR	5R	5SSO10857	Active	SSOMUNISML	2006-0003-DWQ	08/21/2006	None	Discharger	04/20/2006	None	N

Total Regulatory Measures: 4

Violations within the past year

Violation ID	Occurrence Date	Violation Type	Violation Description(+)	Violation Status	Priority	Source	Facility Name	Violated Reg. Meas. ID	Violated Reg. Meas. Order No.	Linked to Enf.

Report defaults to display violations within the last year. Click here to see last five years of violations. Refer to the Interactive Violation Report for more data.

Total Violations: 0

*Click the "(+/-) Violation Description" link to expand and contract the violation description.

Enforcement Actions

Enforcement ID	Enforcement Type	Enf. Order No.	Title	Program	Effective Date	Status
353175	Staff Enforcement Letter	None	SEL 9/11/2008 for Thermalito Irrigation District	WDR	09/11/2008	Historical

Total Enforcement Actions: 1

Data Source: State Water Resources Control Board Party At a Glance database at: https://ciwqs.waterboards.ca.gov/ciwqs

Sanitary Sewer Overflow Database

The State Water Board maintains a Sanitary Sewer Overflows (SSO) database from public/permitted systems and private lateral sewage discharges. This database is a specific module in the CIWQS. The State Water Board formalized the Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, Water Quality Order No. 2006-0003 (SSS WDRs), on May 2, 2006. All public agencies that own or operate a sanitary sewer system comprised of more than one mile of sewer pipes that convey wastewater to a publicly owned treatment facility must be covered under the SSS Waste Discharge Requirements. The SSS Waste Discharge Requirements requires enrollees, among other things, to maintain compliance with the Monitoring and Reporting Program, and reporting requirements and penalties for Sanitary Sewer Overflows (SSOs) have become more significant over the past few years. As a result, each district is now required to analyze its system for SSO potential and have an action plan to eliminate the SSO potential (TWSD, 2020b).

A seven-year period from January 1, 2015 to December 31, 2021, was queried in the CIWQS-SSO database. The SSO database query was run on Feb 22, 2022 for TWSD. The results of the SSO database query regarding TWSD are listed below in Table 7-18. There was only one Sanitary Sewer Overflow event in the TWSD boundary area during this seven-year timeframe. One spill occurred in December 2020, and it was assigned event ID 871321. The spill location was near Oro Dam Boulevard. in association with a maintenance hole located on Rosekrans Drive. The spill volume was 10 gallons and was discharged to unpaved land. The spill did not reach a storm drain or a water body. The spill type was Category 3, meaning that “All other discharges of untreated or partially treated wastewater resulting from an enrollee’s sanitary sewer system failure or flow condition” (less than 1,000 gallons and did not reach a water body). The spill was caused by debris associated with construction.

7.6.3.2 Wastewater Collection and Conveyance Service to the SOI

TWSD does not provide wastewater service to its SOI. The provision of wastewater services to the SOI is provided through private septic systems under the regulation of the Butte County Environmental Health Department.

Sewer Service Upon Annexation: As the area grows and develops, property owners may request annexation to TWSD and/or the City of Oroville (COOR). If parcels within its SOI were annexed into the TWSD boundaries, there would be a corresponding increase in demand for services.

Table 7-18: Sanitary Sewer Overflows in TWSD

Region	Responsible Agency	Collection System	Total Number of SSO locations	Total Vol of SSOs(gal)	Total Vol Recover (gal)	Total Vol Reach Surface Water	Percent Recover	Percent Reach Surface Water	Miles Pressure Sewer	Miles Gravity Sewer	Miles of Laterals	Number of Pump Stations	WDID	Collection System Performance Report
5R	Thermalito Water & Sewer District	Thermalito Water & Sewer District CS	1	10	10	0	100	0	0.8	34.7	0	1	5SSO10857	Operational Performance

Data Source: *https://www.waterboards.ca.gov/water_issues/programs/ciwqs/publicreports.html*

That increase in demand should be quantified, and the TWSD system should be assessed for capacity prior to annexation. COOR generally does not require properties to connect to the sewer system just because they have been annexed to the City, provided they receive sewerage service from an existing provider. For example, the City is considering an annexation in the Thermalito area. The Thermalito Water and Sewer District already serves the area, and that will not change upon annexation.

7.6.4 Storm Water Drainage / Flood Protection

7.6.4.1 Existing Storm Water Drainage / Flood Protection

Storm water in the Thermalito area is managed by Butte County Public Works (TWSD, 2021b). A portion of the Thermalito area is located in Flood Zone AE, as determined by the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (Map 06007C0788E, last updated January 6, 2011). Butte County has prepared a Master Drainage Plan for the entire Thermalito drainage area, last updated in November 2009. Stormwater in the Thermalito area is often directed through surface systems and pipes to Ruddy Creek[4]. Butte County may see increased flood risk as atmospheric rivers and other weather phenomena manifest (Wing, et al., 2022). Storms and floods have the potential to damage TWSD infrastructure and to generate conditions associated with infiltration into the wastewater pipes. Stormwater was identified as a potential future hazard to TWSD infrastructure in the Butte County Local Hazard Management Plan as described in Section 7.4.6 of this Chapter.

When new development occurs in the area, the City of Oroville requires development to comply with Post Construction Standards consistent with the Federal Clean Water Act. Within the City, stormwater is often stored and infiltrated on-site. Oroville's geology is conducive to this practice. The practice reduces infrastructure costs and increases aquifer recharging (COOR, 2021d). In the future, if drought becomes more prolonged, capturing water from floods and miscellaneous storms may become more critical in the community's water management strategy. Since TWSD relies partially on groundwater to provide water services, re-charging the groundwater table will continue to be a resource management concern.

7.6.5 Solar-electric Power

In 2006, LAFCO's MSR recommended that the Thermalito Water and Sewer District consider implementing a solar program to reduce electricity costs (Butte LAFCO, 2006). TWSD installed its solar array in 2012 and currently produces electricity for internal use only. The solar system is a 481-kW ground-mount solar array. The solar panels produce enough electricity to offset the

[4] In the past, County Service Area (CSA) NO. 26 – Thermalito Drainage provided stormwater drainage services to this area. CSA 26 was managed by Butte County Public Works per per California Water Codes, Division 11, Part 1, Section 20500-29978. CSA 26 was closed and is no longer active.

District's electricity bill, resulting in millions of dollars in savings each year. For example, the TWSD treatment plant utilized 674,406 kwh of electricity in 2020. This was offset by the solar power production, which contributed 765,350kwh of energy, bringing the net energy use to **-** 0.944kwh in 2020. The solar system has a 25-year lifespan. The solar panels are mounted in an area that covers two acres. The system operates efficiently. Solar generation greatly offsets the cost of producing treated water at the treatment plant (TWSD, 2021b).

7.6.6 Recreation

TWSD owns and maintains two fishing locations on the bank of Lake Concow (personal communication, C. Heindell, 2022). Lake Concow is the surface water reservoir for TWSD. The Lake supports several aquatic species, such as resident rainbow trout (Oncorhynchus mykiss), benthic macroinvertebrates, and foothill yellow-legged frogs. There is a privately owned campground located in proximity to Lake Concow; however, this campground is not affiliated with TWSD. Please note that the campground is currently closed due to damage from the 2018 Camp Fire. Members of the general public have occasionally expressed interest in utilizing the Lake and surrounding area for passive recreation, such as walking or fishing. TWSD is listening to these public comments. However, recreation services are not an active power for TWSD. To provide recreation services in the future, TWSD would need to request permission from LAFCo to activate this latent power.

Alternatively, TWSD could consider pursuing a formal agreement with Paradise Park and Recreation District to collaborate on providing recreation services. TWSD currently has good communication with the Paradise Recreation and Park District and together they are exploring potential recreational options at Lake Concow. The two Districts are currently soliciting public comment about potential future programs, facilities and the recreational use of Lake Concow to meet the needs of future generations. Their on-line survey is available at: *http://www.paradiseprpd.com/concow-planning*.

7.7 Infrastructure and Public Facilities

7.7.1 Introduction to Facilities and Infrastructure

This section describes existing infrastructure facilities and the associated infrastructure needs, especially as they relate to current and future users. Infrastructure needs and deficiencies are evaluated in terms of supply, capacity, condition of facilities, and service quality with correlations to operational, capital improvement, and finance plans. TWSD has four primary types of facilities: 1) administrative; 2) water; 3) wastewater; and 4) solar. Infrastructure development and maintenance is an integral part of the service that the TWSD provides. The TWSD has a Capital Improvement Plan as part of its annual budget, as described in the Finance Section 7.8 in this chapter. TWSD's infrastructure falls into the four above listed categories and is summarized in Tables 7-19 and 7-20 below

Table 7-19: TWSD Facilities for Key Services	
Department/Division/ Service	**Infrastructure/Facilities**
Administrative	The administrative office and other facilities are located at 410 Grand Avenue, Oroville, CA 95965
Water	TWSD owns and actively maintains several facilities related to its drinking water department, including a water treatment plant (WTP), four groundwater wells, water storage tanks, a maintenance yard, and Concow Reservoir. Additionally, there are approximately 59.2 miles of water distribution pipelines. See Table 7-21 for additional details.
Sewer	TWSD's wastewater collection system includes: approximately 34 miles of gravity sewer lines; 570 sewer maintenance holes; 4,300 lineal feet of force mains; and 532 maintenance-holes, lampholes, clean-outs, and pump stations.
Solar Electric Power	The solar system is a 481-kW ground-mount solar array. The solar panels are mounted in an area that covers two acres. The solar system has a 25-year lifespan.
Recreation	TWSD owns and maintains two fishing locations on the bank of Lake Concow. Concow Reservoir is a site with the potential for additional passive recreation activities (such as hiking and photography) in the future. However, LAFCO permission to activate the power to provide recreation services may be needed. TWID should explore a cooperative relationship with PRPD to manage recreation resources at Concow Reservoir.
Hydro-electric	TWSD does not currently generate hydroelectric energy. However, the potential exists for future micro-hydro development.

All of the infrastructure listed in Tables 7-19 and 7-20 above are owned and maintained by TWSD unless otherwise noted. TWSD conducts routine maintenance on these facilities.

7.7.2 *Administrative Facilities*

TWSD's existing administrative and other facilities are located at 410 Grand Avenue, Oroville, CA 95965. The administrative offices provide office space and conference rooms for all TWSD staff, including finance, customer service, and management. The Board's meeting room is also at this location.

Table 7-20: Critical Infrastructure – TWSD

Name of Asset	Facility Type	Replacement Value	Which Hazards Pose Risk
Concow Reservoir & Dam	97' High arch cement dam	$30,000,000	Body contact with the Lake is unsafe
Water Treatment plant	Micro Membrane system	$7,320,000	Some chemicals are stored at plant high voltage
Office and maintenance yard	Office and equipment storage & repair	$1,100,000	High voltage, petroleum, heavy equipment
Four deep water wells	Three wells are centrifugal 1submersable	$3,000,000	High voltage, 12.5% Bleach
Clearwell Storage	Water Storage tank	$770,000	Fall Hazard
2.5 MG Storage	Water Storage Reservoir	$1,500,000	Fall Hazard
59 Mile Distribution Pipe system	2" to 30" pipe for water Delivery	$38,940,000	None
34.7 Miles of sewer Collector system	6" to 18" pipe for sewer collection	$27,482,400	None
Sewer Lift Station	Pump station	$110,000	High Voltage
Water Treatment Plant	Pressure Vessel Treatment plant	$1,000,000	Some chemicals are stored at plant and high voltage
Total		**$111,222,400**	

Data Source for Table 7-20: Butte County OEM and TWSD, LHMP, 2019.

7.7.3 Water Facilities

TWSD owns and actively maintains several facilities related to its drinking water department, including a water treatment plant (WTP), four groundwater wells, water storage tanks, a maintenance yard, and Concow Reservoir. Additionally, there are approximately 59.2 miles of water distribution pipelines. These facilities are described in more detail in the following paragraphs.

Table 7-21: Property owned and Maintained by TWSD			
Address	**Assessor's Parcel Number**	**Size (acres)**	**Use and Notes**
410 Grand Avenue	031-215-002	1.48	**District Office** with an adjacent maintenance yard. Located within COOR boundary. Tax Rate Area: 104010
535 Table Mountain Boulevard	031-040-038	3.99	**Water Treatment Plant**. Located within COOR boundary. Tax Rate Area: 004087.
No address assigned	031-030-035	7.45	Located adjacent to 031-040-038 and within COOR boundary. Tax Rate Area: 004092
Throughout District	Not available	Not available	**Four groundwater well sites**
Concow Lake	058-330-018 058-170-077 058-230-017	60.83 104.68 225	**Concow Reservoir** and the 275 dry land acres surrounding the Reservoir. Located in unincorporated Butte County.
Corner of 5th and Grand (no address available)	031-215-005	0.33	**"The Grange" Parcel.** Future TWSD facility expansion area. Located within COOR boundaries. Tax Rate Area: 004010.
Data source: TWSD, 2021b, and Butte County GIS Interactive Tool at: *http://gis.buttecounty.net/Public/Index.html?viewer=GISSearch*			

As listed in Table 7-21 above, the TWSD recently purchased "The Grange" parcel located adjacent to TWSD's main building, on the corner of 5th and Grand. This parcel contains some historic sewer facilities that the City of Oroville will soon remove as a "clean-up". The parcel represents an opportunity for future expansion if needed (Personal communication, Boucher and Heindell, 2021).

7.7.3.1-Concow Reservoir Facility

The Concow Reservoir (also known as the Wilenore Reservoir) has a capacity of 7,225 acre-feet. The Reservoir was created by constructing the Wilenore Dam, which holds the water from the tributary. The District began constructing the Concow Dam in November of 1923 and completed the project in December 1924 (TWSD, 2015). Raw water from Concow Reservoir is delivered to the TWSD drinking water treatment plant by a 48-inch diameter main to the State Powers Canal. (Butte LAFCO, MSR, 2006).

Under the original appropriative water rights licenses issued in 1928 and 1929, TID/TWSD held title to 45% of the water, and the remaining 55% was held by TMID (Table Mountain Irrigation District). Construction of the Oroville Dam and appurtenant facilities of the State Water Project in

the 1960s wiped out TWSD's original water distribution point. This necessitated an alternative means of conveying the District's Concow water to its downstream customers. In 1965 the California Department of Water Resources (DWR) agreed to release TWSD's share of Concow water into the West Branch of the Feather River, either by way of Concow Creek or through the PG&E Lime Saddle power plant. TID/TWSD's agreement with the Department of Water Resources was amended in 1971 to allow delivery of Concow water via Concow Creek to Lake Oroville. DWR gives credit for water delivered and provides an equivalent amount of Lake Oroville water to the District delivered through the Thermalito Power Canal. (Butte Co. OEM, 2019). The District has a water right of 8,200 acre-feet from the Concow watershed, and at no time shall the reservoir capacity drop below 1,000 acre-feet to accommodate the fish population. When full, the Concow Reservoir has a capacity of 7,225 acre-feet (Butte Co. OEM, 2019).

DWR's Division of Safety of Dams regulates dams to prevent failure, safeguard life, and protect property consistent with the California Water Code. The Division reports the following data regarding TWSD's Concow Dam. Concow Dam was built in 1925, with Dam Number 67-0 and National ID Number CA00277. The dam's height is 94 feet, and its crest length is 335 feet. The dam is certified. The downstream hazard is rated as high. The condition assessment is rated as satisfactory. The Division of Safety of Dams conducts periodic inspections of Concow Dam.

A privately owned and operated campground is located near Concow Reservoir. This campground has its own well for water supply (personal communication, Boucher and Heindell, 2021).

Future improvements at the Concow Reservoir could potentially assist to offset costs associated with water delivery, such as the potential for micro-hydro to be installed at the spillway and/or along the distribution route. This potential electricity generated by future micro-hydro could be used to offset existing costs (personal communication, Boucher and Heindell, 2021).

7.7.3.2-Water Treatment Plant

This Water Treatment Plant (WTP) is located on 3.8 acres on the north side of the Thermalito Power Canal, approximately a quarter-mile east of State Route Highway 70, at 535 Table Mountain Boulevard, Oroville, Butte County. Water flows from Concow Reservoir to the Oroville Dam diversion and then to the Forebay. TWSD pulls water out from this flow process and directs it to their WTP. The WTP was originally permitted by the SWRCB on 03-22-1979. Currently, the WTP operates under a permit from the RWQCB called Order Number R5-2018-0085-0040. The WTP identification number is WDID 5A04NC00032. The WTP Design Flow is 4.0 Million Gallons Per Day (MGD) (personal communication, C. Heindell, 2022). TWSD treats its water supply to make it safe for drinking at the Water Treatment Plant. The treatment system uses a Micro Membrane Filtration which was introduced to the treatment process in April 2008. This Filtration

System allows the District to filter surface water without adding chemical additives. The raw water is pumped against a membrane with a pore size (membrane openings) small enough to screen particles smaller than bacteria and viruses. The small sizes of the pores achieve removal and inactivation of micro particles such as bacteria and viruses. California health regulations require that a residual disinfectant be injected into the filtered water and allowed enough contact time to provide adequate residual disinfection throughout the distribution system. To meet the disinfectant requirement, sodium hypochlorite (chlorination) is injected into the finished water stream. The sodium hypochlorite is created onsite and is chemically equivalent to 0.8% bleach (TWSD, Consumer Confidence Report, 2021). The plant's current drinking water treatment system meets all State regulatory requirements regarding water quality as described in Section 7.6.2.6 of this Chapter.

In the past, the lower capacity of the drinking water treatment plant was a bottleneck that could have prevented increasing the number of customers (Butte LAFCO, MSR, 2006). Since then, in April 2008, the District constructed a membrane filtration system to meet state health standards and began to phase out the old pressure vessel system. This newish membrane filtration system allows the District to maintain service during periods of maximum demand and to accommodate the level of future population growth. Today, the water treatment plant is staffed seven days per week. The current capacity of the water treatment plant is 4.0 million gallons per day maximum (personal communication, C. Heindell, 2022).

The WTP operates under a permit from the RWQCB. One of the permits is related to backwash, a common operation at such facilities, and this permit is called Waiver R5-2018-0085, which is set to expire on 7 December 2023 (CIQWS, 2022). The permit requires that the backwash water be stored on-site in three ponds. As part of the permit requirements, TWSD is required to conduct monitoring, and the monitoring data is submitted to the Central Valley Water Board Quarterly and Annually (CIQWS, 2022).

Figure 7-11: Water Treatment Plant - Existing Site

The water treatment plant has a vacant area to allow expansion. The interior footprint is large enough to allow additional treatment capacity (i.e., equipment added to the existing facility) for treatment of up to 12.0 million gallons per day max (personal communication, Boucher and Heindell, 2021). The municipal water treatment plant capacity upgrade is currently in process. The new total capacity will be 8 MGD (personal communication, C. Heindell, 2022). This upgrade could help TWSD reach its goal of being less reliant on groundwater.

Water Treatment Plant Inefficiency

The TWSD Water Treatment Plant (WTP) operates independently and efficiently. However, TWSD's WTP is one of three water treatment plants that currently serve the Oroville region (four plants if Bangor WTP is included). Each of the three water treatment plants (TWSD, SFWPA, and Cal Water) require individualized treatment, operations, maintenance, capital improvements, and regulatory oversight. Given that Oroville (and its environs) is a small to medium city, in relation to population size, having three water treatment plants is not the most efficient approach. If an opportunity to reduce the number of treatment plants were to arise in the future, the improved efficiency could be beneficial to the community. The inefficiency is a concern to LAFCO because the low median income of local residents creates a water affordability issue, as described earlier in this chapter. It is recognized that there are historical reasons for the situation with three separate drinking water treatment plants. LAFCO's 2018 Oroville Region Water Service Study recommended that the three entities openly and honestly consider the potential for water treatment consolidation in the future. Although there may be challenges due to the very different ownership models of the entities, the Authors of this MSR concur with this recommendation of LAFCO's 2018 Oroville Region Water Service Study.

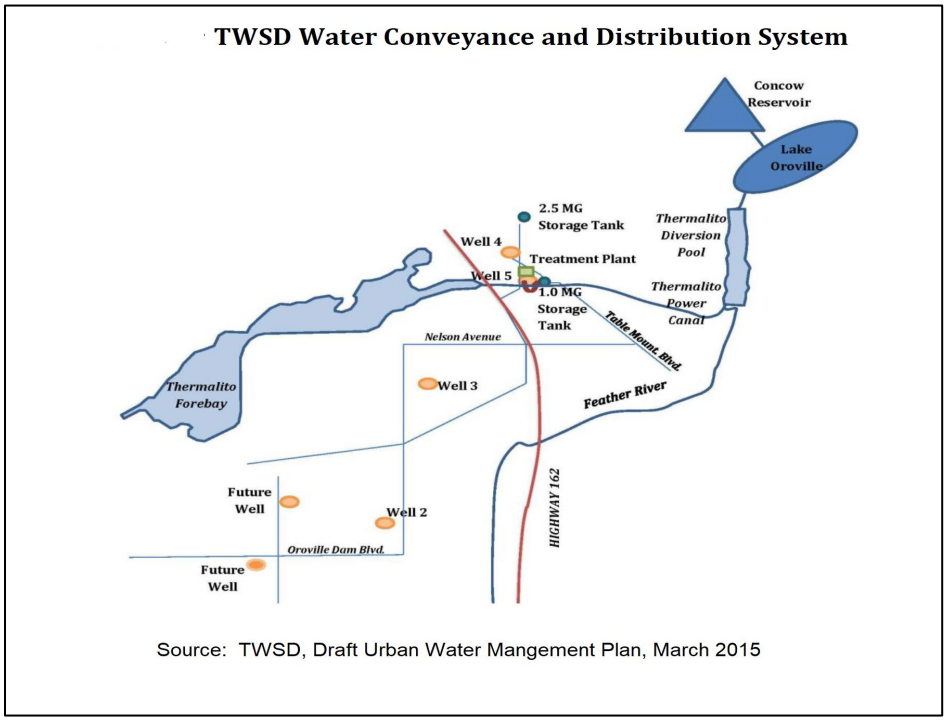
Water Distribution System Infrastructure

TWSD has extensive infrastructure designed to deliver potable water to its customers. After treatment, water is stored in several tanks. The District has 3.5 MG (million gallons) of treated storage capacity to provide pressure to the system and prevent water shortages during periods of high demand. One reservoir is a 2.5 MG distribution reservoir on the lower flanks of Table Mountain. There is also a 1 MG Clearwell within the system. The water tanks are new, with the 1 MG Clearwell tank installed in April 2019 and the 2.5MG Tank installed in March 2020 (personal communication, C. Heindell, 2022).

The new $2.5 million water tank allowed the water system to gain an additional 5 units of pressure per square inch (psi) throughout (Personal communication, Boucher and Heindell, 2021). The new tanks are sited on a concrete base foundation, several inches thick. Hexagon glass tile in the tank's roof is engineered in panels. When one panel needs repair or replacement, it can be pulled out separately and replaced. The circular dome style is designed to be cost-efficient (personal communication, Boucher and Heindell, 2021). This storage, in addition to the four wells, provides a significant level of backup that can support the maximum demand in the District for a short period. From the treated water storage tanks, water is distributed to customers via gravity feed (no pump stations are needed for domestic water).

The District owns a vactor, dump truck, water truck, two backhoes, a trailer air compressor, dump trailer, an F-450 utility truck, five work trucks, and a jeep (TWSD, 2021b). In addition, TWSD has an interconnection with the California Water Service of Oroville. The potable water interconnection is for emergency uses only (TWSD, Consumer Confidence Report, 2021g).

Figure 7- 20: TWSD Water Conveyance and Distribution System



Source: TWSD, Draft Urban Water Mangement Plan, March 2015

7.7.3.3-Groundwater Well Facilities

In addition to the District's surface water, TWSD has four active groundwater wells located throughout the District boundary. TWSD's groundwater supplies were originally developed from six wells. However, wells No. 1 and No. 6 were abandoned, and a new well site was grant deeded for the future replacement of Well No. 1. Although these wells had been used to supply a majority of domestic water demands in the past, they are presently utilized as a supplemental source; surface water from the Concow system provides the primary supplies. Groundwater is added to the system to reduce the effects of disinfectant byproducts that pass through the treatment plant's membrane filtration system. Therefore, Wells No. 4 and No. 5 are used during the year to dilute the concentration of the production seasons (Butte Co. OEM, 2019). A 33-foot deep well and associated water pumps are located at the Water Treatment Plant.

LAFCO's 2006 MSR recommended the addition of more wells or more storage to provide a satisfactory backup in the event that surface water becomes temporarily unavailable or unusable (Butte LAFCO, MSR, 2006). Since then, the TWSD has added more water storage capacity but has reduced the number of active wells from five down to four.

7.7.3.4: Water Supply and Treatment Facilities to the SOI

The SOI is currently unincorporated and located within the jurisdiction of the County of Butte. Parcels in the SOI do not receive municipal (treated) water; therefore, TWSD does not own or maintain any infrastructure in the SOI. Please see Section 7.6.3.2 above for details regarding potential actions subsequent to a proposed annexation to the District boundary.

7.7.3 Wastewater Collection Facilities

7.7.3.1 Collection System Infrastructure

The wastewater collection system infrastructure was originally installed in 1975. The asbestos cement pipes were installed originally, and they have a life expectancy of up to 100 years. Newer sewer pipes consist of PVC. The District's sanitary sewer collection system is predominately a gravity-flow system, although the system includes 0.8 miles of force main and one pump station (TWSD, 2020b). A significant portion of the wastewater collection system infrastructure has been replaced or upgraded. Today, TWSD's collection system consists of 34.7 miles of gravity sewer line with approximately 570 maintenance holes. Additionally, the system has 20.4 miles of lateral lines (CIQWS, 2022). The pipelines are constructed of several types of materials, depending on age, including vitrified clay pipe (VCP), polyvinyl chloride (PVC), asbestos concrete (AC), and cast iron (TWSD, SSMP, 202b). There have not been significant collection system expansions beyond the original system installation. However, some small expansions have been constructed associated with developments. TWSD does not have current plans to expand infrastructure other than developer-driven main line extensions on a case-by-case basis (TWSD, 2020b).

Routine maintenance is conducted on wastewater infrastructure. For example, cameras are used to observe sewer pipes and determine whether any roots infiltrate into joints. Root intrusion can be treated with the use pipe patching or slip-lining. The District's wastewater collection system is about 45+ years old and is generally in good condition. There have been some isolated problems with root infiltration, but they have not had a significant impact on the system's capacity and are resolved on an ongoing basis through regular maintenance (Butte LAFCO, MSR, 2006).

The Linkside Sewer Lift Station is an important facility, and it is located on Oro Dam Boulevard to serve the Linkside Subdivision. The Linkside Lift Station has automatically controlled alternating pumps, and it is inspected weekly as part of the sewer pump station preventative maintenance program. The Linkside Lift Station is currently being upgraded to send operational data to the TWSD treatment plant to facilitate off-site monitoring by the District Treatment Plant Operators (TWSD, 2020b).

The East Trunk Line transports wastewater in the Thermalito area and to the SC-OR lift station. In 2014, TWSD began the East Trunk Line Replacement Project (CWSRF Project No. C-06-7646-110) with $2.6 million in funding from the State Water Board. TWSD cooperatively shares capacity of the East Trunk Line and the airport area collection trunk line with the City of Oroville, and these trunk lines are referred to as Joint Use Facilities. Under its agreement with the City, TWSD provides pipeline conveyance capacity for the City collection system that covers most of the area northwesterly of the Feather River and easterly of the Highway 70 freeway and the Oroville Airport Industrial area. Design flows for Joint Use Facilities include capacity for the City of Oroville of 0.74 million gallons per day (mgd) in the East Trunk, and 0.2 mgd in the Airport Collection, also identified below as the Oro Dam Boulevard Interceptor. An updated agreement for the TWSD East Trunk anticipates future flows of 1.10 mgd for the City and 0.76 mgd for the District, for a combined flow of 1.86 mgd (TWSD, 2020b). TWSD owns and maintains the wastewater Joint Use Facilities (Personal communication, Boucher and Heindell, 2021).

TWSD wastewater conveyance infrastructure transports wastewater to the SC-OR pump station located at Ruddy Creek, where it connects to its main trunk line. TWSD has lateral sewer lines that project off the SC-OR Trunk line. The main interceptor is located near the South Feather River Lift Station (personal communication, Boucher and Heindell, 2021).

TWSD owns and maintains a range of equipment dedicated to maintaining the wastewater collection system, including the following:

- Permanent emergency electrical generator with an auto transfer switch for Linkside Lift Station
- (2) Pickup trucks
- (1) One-ton utility truck
- (1) 350 kW portable electrical generator
- (1) 3-inch portable pump
- (2) Submersible/portable pump (4-inch 6-inch available as needed)
- (1) Air Compressor
- (2) Backhoes
- (1) Dump truck
- (1) Vactor Jet Rodder truck
- (1) Ques Inc CCTV van
- (1) Portable lateral camera
- (1) Portable lateral power snake
- *Data source: TWSD, SSMP, 2020b*

TWSD's vehicles (listed above) currently utilize fossil fuels. The California Air Resources Board (CARB) approved a new rule on Aug 25, 2022 which requires new car sales in California to be zero-emission vehicles (ZEVs) by 2035. While it is not yet clear whether new electric vehicle laws will apply to the type of trucks utilized by TWSD, it is likely that sometime in the future, TWSD may be asked to consider purchasing or retrofitting vehicles reliant upon an alternative energy sources such as electricity,biogas, hydrogen, or other source. The price per gallon of gasoline has risen in 2022; therefore, alternative fuel/energy for vehicles can sometimes be cheaper.

Wastewater Treatment Plant

The Sewerage Commission-Oroville Region (SC-OR) provides wastewater treatment and disposal for the TWSD through its operation of the wastewater treatment plant located on South 5th Avenue, south of downtown Oroville. All of the wastewater collected by TWSD is discharged to the SC-OR West Interceptor, located on Oro-Dam Boulevard. The West Interceptor conveys wastewater to SC-OR's Main Interceptor at South 5th Avenue and Cal Oak Road, from which it is then conveyed to the SC-OR's wastewater treatment plant for treatment and disposal. The SC-OR West Interceptor currently exceeds its hydraulic capacity during peak wet weather flows, which could result in a Sanitary Sewer Overflow (SSO) (TWSD, 2020b). Nevertheless, TWSD believes that the SC-OR treatment plant currently has the capacity to handle the expected growth for this area for the time frame considered in this document (TWSD, 2020b).

Due to the recent Camp Fire affecting the nearby Town of Paradise, the population in the Oroville area has fluctuated, and future residential, commercial, and institutional development have been approved by both the City and County as described in Section 7.4.5, above. Future expansion of the wastewater treatment plant is possible to keep up with demand. The wastewater treatment plant is expected to grow to approximately 6.45 MGD through build-out per the Sewer Master Plan Update in 2013 by Carollo (COOR SSMP, 2019). Please see chapter 5 for additional details on SC-OR.

Wastewater Infrastructure Maintenance and Capital Improvement Plan

TWSD replaces and repairs infrastructure on a regular basis. In addition, the TWSD has implemented collection system best management practices (BMPs) and conducted preventative maintenance and scheduled replacement of aging infrastructure. TWSD's SSMP contains a Rehabilitation and Replacement Plan, which describes TWSD's goal is to conduct visual and video inspections to assess each sewer mainline. The video inspection is conducted via the District's CCTV van. Information from the video inspection is used to prioritize repairs, replacement, or rehabilitation (TWSD, 2020b). Pipelines are replaced on a schedule, and every year some of the older pipelines are replaced. The old clay sewer pipes are prioritized for replacement (personal communication, Boucher and Heindell, 2021).

The District also has a Fats, Oils & Grease (FOG) protocol which aims to decrease backups. Routine cleaning of all the District's sewer lines takes approximately 5 years to complete. The progress of the sewer main flushing is tracked through mapping and work orders. (TWSD, 2020b).

The Capital Improvement Program for the wastewater system is identified in the SSMP. Several Capital Improvement projects are listed in the SSMP and Table 7-22 below. These projects are sometimes long-term endeavors that can begin before and continue beyond the budget cycle (TWSD, 2020b).

Table 7-22: Wastewater System Capital Improvement Plan					
Project No.	**Project Title**	**2018/19**	**2019/20**	**2020/21**	**Total Cost**
S-1	Ruddy Creek (Phase 1)	280,000			$280,000
S-2	Toleman Ravine Crossing (Realignment and installation of lift station)			$70,000	$70,000
S-3	Linkside Liftstation Telemetry		$5,500		$5,500
S-5	Ruddy Creek (Phase 2)			$300,000	$300,000
Data Source: TWSD, SSMP, 2020b					

The rehabilitation, infrastructure improvements, and capacity upgrades require careful planning. The Capital Improvement Plan costs listed in Table 7-22 above are used to develop sewer rates and plan for the issuance of bonds, if necessary, to finance the projected capital improvements. Since the Sewer Fund is an enterprise fund, sewer fees are established to meet projected needs as detailed in the Finance Section 7.8.

As listed in Table 7-22 above, the Ruddy Creek Trunk Line replacement is an ongoing sewer project. The District has completed the sewer replacement on Hardnett Court, which corrected several slope issues. The District has replaced approximately 2,000 lineal feet of clay pipe and will continue until the entire trunk line has been replaced. The remaining infrastructure improvements will likely be due to age and/or conditions of pipe found during maintenance activities (TWSD, 2020b).

7.7.3.2 Existing Capacity of Wastewater Infrastructure

TWSD's boundary area is 14,873 acres; however, the District's sewer collection service only extends to about 3,680 acres. Much of the un-served area lies north and west of the current sewerage system (TWSD, 2020b). Another method the District uses to assess its service capacity is to convert its individual customer account number (currently 2,330 accounts) to a calculated equivalent dwelling unit (EDU), and this equates to approximately 2,911 EDUs (TWSD, 2020b).

TWSD's Average Daily Dry Weather (ADDW) wastewater flow is estimated to be approximately 0.397 MGD, as reported by SC-OR in 2018. The maximum daily wet weather flow (MDWWF) was approximately 3.67 MGD in 2019, as shown in Table 7-23 below.

Table 7-23: Historical Flows for TWSD Collection System

Table 8-1: Historical Flows for TWSD Collection System

Sanitary Sewer Master Plan

Year	Average Annual Flow (MGD)		Seasonal Average (MGD)		Maximum Month (MG)		Maximum Day (MGD)	
	AAF	% Change	ADWF	AWWF	MMDWF	MMWWF	MDDWF	MDWWF
2014	0.344	-18.87%	0.35	0.38	11.89	19.63	1.00	2.70
2015	0.366	6.40%	0.36	0.39	11.76	13.95	0.93	1.94
2016	0.429	17.21%	0.33	0.54	10.72	22.63	1.00	2.76
2017	0.314	-26.81%	0.23	0.40	8.34	19.99	1.08	2.76
2018	0.406	29.30%	0.39	0.42	12.41	15.82	1.29	2.70
2019	0.428	5.42%	0.38	0.49	11.96	22.42	1.22	3.67

Notes:

AADF- Average Annual Daily Flow (annual flow expressed in daily units)

ADWF - Average Dry Weather Flow (average flow that occurs on a daily basis during the dry weather season (May-August)

AWWF - Average Wet Weather Flow (average flow that occurs on a daily basis during the wet weather season (November-March)

MMDWF - Maximum Monthly Dry Weather Flow (maximum flow during a dry weather month)

MMWWF - Maximum Monthly Wet Weather Flow (maximum flow during a wet weather month)

MDDWF - Maximum Daily Dry Weather Flow (maximum flow during a dry weather day)

MDWWF - Maximum Daily Wet Weather Flow (maximum flow during a wet weather day)

PDWF - Peak Hour Dry Weather Flow (maximum hourly flow during dry weather)

PWWF - Peak Hourly Wet Weather Flow (maximum hourly flow during wet weather)

In summary, TWSD's wastewater collection system currently has no significant capacity issues regarding service to existing customers (Butte LAFCO, MSR, 2006). In the past 5 years, there has been no events where peak flows exceeded the capacity of the TWSD's sewer collection system (personal communication, C. Heindell, 2022).

Estimated Future Demand – Wastewater Collection

Any new development occurring within the District will influence future demand for wastewater collection services. Because the District does not have the legal authority to make land-use decisions, supply and demand are anticipated through developments and annexations. Please note that several variables influence customer generation of wastewater flow. For example, prolonged drought and associated water conservation measures can reduce inflow to the TWSD collection system. Therefore, this capacity assessment provides broad generalizations based on historic trends and projected into the future.

TWSD's Average Daily Dry Weather (ADDW) wastewater flow is expected to grow to 0.67 MGD within the next 20 years based on the annual population growth rate of 2.6% (TWSD, 2021b). New residential and commercial developments are required to submit engineered plans and may be required by the District to provide detailed sewer capacity studies during the permitting process. These developments may be required to upgrade the existing collection system

downstream if additional capacity is required (Butte LAFCO, MSR, 2006). If extension or modification of the District's sanitary sewer facilities is required to provide service, the landowner is required to enter into a pre-annexation and development agreement with the District that outlines the terms and conditions of extensions and/or modifications to the sewer system (TWSD, 2020b). TWSD has adequate capacity within its system of sewer pipes, and it can sometimes be relatively easy to expand the quantity and/or size of sewer pipes. However, there are challenges associated with providing future sewer service to a growing community. Factors influencing TWSD's ability to collect wastewater and provide public service to customers include the viability of pumping stations along Oro Dam Boulevard and inflow/infiltration during winter months (TWSD, 2021b). Since TWSD's wastewater infrastructure covers only 25 percent of its boundary area, the geographic location of new development could be a barrier to receiving service if the location is outside of the existing service area. Extension of sewer pipes to new geographic locations may be expensive if it is necessary to cross natural barriers such as a river or other physical barriers such as a highway. Additionally, elevation changes might require new pumps. An example of a barrier to providing service to new geographic areas is the Feather River Bridge. If a river crossing is needed in the future, a "jack and bore" construction technique could be used. (personal communication, Boucher and Heindell, 2021).

The capacity to serve proposed new urban and suburban development is carefully planned by TWSD staff. The 2020 Sewer System Management Plan identifies capacity increases that would be required the meet expected future growth. TWSD has adopted connection fees to fund capacity increases.

Decisions about whether or not to issue "will serve letters" for wastewater service to new/proposed development is part of the planning process. Will-serve letters related to the sewer system have been issued for the following projects:

- Village at Ruddy Creek (Butte County, -97 unit subdivision).
- Oroville Heights (Butte County, -72 unit apartment complex).
- Linkside Phase II (Butte County, -56 unit subdivision).

Based on the above three projects, capacity has been committed for planned or proposed development at approximately 225 EDUs. Each of the Will Serve Letters expires 1 year from issuance (TWSD, 2021b). Will-serve letters are also important to SC-OR to assist them in accounting for capacity at the wastewater treatment plant and associated facilities. For example, SC-OR has pump stations that could present capacity bottlenecks (TWSD, 2021b). Part of the Will-Serve letters is a required Developer Agreement with SC-OR if the development is over 25 units. SC-OR also requires a Capacity Study, as described in Chapter 5. Although TWSD's wastewater system has some capacity to service future development, this capacity is not infinite. The need to provide additional capacity is assessed on a case-by-case basis.

7.7.3.3 Wastewater Facilities (SOI)

Parcels within the SOI are mostly unincorporated and are located within the jurisdiction of Butte County. These parcels do not currently receive municipal sewer service; therefore, TWSD does not have any wastewater infrastructure within its SOI.

New development occurring within the SOI should be evaluated in relation to potential impacts on the provision of sewer services. The cost of extending wastewater infrastructure is not determined in advance by TWSD. Rather, new development is responsible for the construction of all sanitary sewer lines serving each development, and costs are considered on a case-by-case basis depending on geographic location, topography, and barriers.

7.7.4 Solar-electric Facilities

Photovoltaic solar panels are located at the water treatment plant site, and the electricity generated is sent to PG&E for credits as described in Section 7.6.5.

7.7.5 Recreation Facilities

TWSD owns and maintains two fishing locations on the bank of Lake Concow. These locations include parking and paths to the water. The District does not provide any other formal recreation facilities. Concow Reservoir is primarily utilized for water supply purposes by TWSD. Near the Concow Reservoir, two other organizations provide recreation opportunities as listed below:

1. Paradise Recreation District has Crane Park. (It is possible that TWSD could collaborate with Paradise Recreation District regarding the future use of the Concow Reservoir) (personal communication, Boucher and Heindell, 2021).
2. Camping is available at the Lake Concow Campground, a privately managed facility open to the general public as described on their website: *https://lakeconcowcampground.net/*. Tent camping and self-contained RV's (dump station on-site) camping are allowed for a small fee. Prices for the use of the campground are: Day use $5.00 per car; RV dump station $5.00 each use; general overnight camping at $15.00 per night per car (2-week maximum stay).

7.7.5 Infrastructure Needs and Deficiencies

The American Society of Civil Engineers, Region 9 has several recommended remedies for California's aging drinking water infrastructure as outlined in Appendix K and as summarized below:

- Address Aging Infrastructure Needs.
- Continue To Make Conservation A California Way Of Life.
- Increase Regional Self Reliance And Integrated Water Management Across All Levels Of Government.
- Achieve The Co-Equal Goals For The Delta.
- Manage And Prepare For Dry Periods.

Infrastructure needs and deficiencies are common features of large facilities, such as a water/sewer district. TWSD prepares a capital improvement plan as part of its annual budget to

address its specific needs. Infrastructure needs or deficiencies (i.e., pipelines, hydrants, tanks, reservoirs, etc.) are described by TWSD staff as the need to upgrade capacity at the municipal drinking water treatment plant within the next 12 months. In the next five years, the District would like to continue implementing its pipeline replacement project as aging infrastructure reaches the end of its useful life (TWSD, 2021a).

Complaints: The number and handling of complaints is an indicator of both accountability and the potential need for improvement. TWSD customers may make complaints by sending written correspondence to the district office or online at: www.twsd.info (TWSD, 2021b). 25 complaints were received in 2019, and 24 were received in 2020. These complaints include the following: tase/odor, high or low pressure, color, etc. Each complaint is reported to the State Water Resources Control Board, along with a summary about how the item was fixed. The majority of the complaints are issues associated with the customer's plumbing and can be solved by flushing their service line (TWSD, 2021b).

Determinations for Infrastructure and Public Facilities

Based on the information included in Section 7.7 above, the following written determinations make statements involving each service factor which the Commission must consider as part of a municipal service review. The determinations listed below in Table 7-24 are based upon the data presented and are recommended to the Commission for consideration. The Commission's final MSR determinations are part of a Resolution that the Commission formally adopted during a public meeting.

Table 7-24: MSR DETERMINATION: PRESENT AND PLANNED CAPACITY OF PUBLIC FACILITIES AND ADEQUACY OF PUBLIC SERVICES INCLUDING INFRASTRUCTURE NEEDS OR DEFICIENCIES

Number	Indicator	Determination
TWSD-PUB-1	Has the Agency been diligent in developing plans to accommodate the infrastructure and service needs of current and future constituents? Regularly reviews and updates its service plans to help ensure that infrastructure needs and deficiencies are addressed in a timely manner.	TWSD has one plan relevant to delivering potable water, namely its Urban Water Management Plan of 2015. TWSD has one planning document supporting its delivery of wastewater conveyance services, namely its 2020 Sewer System Management Plan. It is recommended that TWSD post both plans on its website so they are readily accessible to constituents. TWSD has made a good start towards developing a formal capital improvement plan by listing wastewater improvement projects in its SSMP and by listing proposed capital expenses for one year in the annual

		(continued) budget. However, it is recommended that TWSD improve its capital planning by projecting multiple years of capital expenses consistent with projects that should be described for both wastewater (SSMP) and potable water (UWMP). It is recommended that TWSD improve its diligence in developing plans to accommodate the infrastructure and service needs of current and future constituents and to ensure that infrastructure needs and deficiencies are addressed in a timely manner.
TWSD--PUB2	Does the District provide sufficient services to meet current and future demands with: 1) water supply for potable water; 2) wastewater capacity; and 3) solar electricity?	TWSD provides sufficient services to meet current and future demands as follows: 1)Based on the water supply and water demand assessments described in TWSD's 2020 UWMP, the Concow Reservoir and the four active groundwater wells contain sufficient supply to adequately meet the current and foreseeable demand through 2045. 2)TWSD provides wastewater collection and conveyance, and its wastewater collection system includes approximately 34.7 miles of gravity sewer line with approximately 570 maintenance holes and one sewage lift station. 3)The sewer system conveys wastewater to a treatment plant owned and operated by the Sewerage Commission - Oroville Region. TWSD wastewater infrastructure currently covers 25 percent of its boundary area. Expansion into new geographic areas is possible if needed. However, new pumps or lift stations may be needed depending on the elevation of any future expansion area. 4)TWSD generates electricity using solar panels, which offsets the utility costs at the treatment plant.
TWSD-PUB-3	Is there duplicate infrastructure by other agencies nearby?	Two nearby agencies offer wastewater services similar to TWSD, including the City of Oroville and LOAPUD. Since TWSD provides sewer/water services to COOR lands, there is geographic overlap. Additionally, there is geographic overlap with the Cal Water service area for water services. Similarly, two nearby agencies offer drinking water services similar to TWSD, including SFWPA and the private California Water Company. Additionally, the North Yuba Water District provides raw water to agricultural customers in Yuba County. However, within the TWSD's boundary area, it is the only water service provider. If, in the future, an opportunity to reduce the number of drinking water treatment plants were to arise, it is possible that the improved efficiency could

		(continued) be beneficial to the community. LAFCO's 2018 Oroville Region Water Service Study recommended that the three entities openly and honestly consider the potential for treatment plant consolidation in the future. Additional recommendations about potential future governance structure options are provided in Appendix C.
TWSD-PUB-4	The District has preventative maintenance measures and has planned for the replacement of aging infrastructure.	TWSD actively implements preventative maintenance on its water and wastewater infrastructure; however, the MSR Authors did not find a summary describing the recent improvements. In addition, a multi-year plan for the replacement of aging infrastructure (i.e., a Capital Improvement Plan) for both water and wastewater could not be found by the MSR Authors. Therefore, there is insufficient information to address this determination. However, the SSMP lists capital projects for the wastewater system, and the District's annual budget lists capital expenses for the upcoming year. Additionally, TWSD staff have identified infrastructure needs and deficiencies as aging pipeline infrastructure.
TWSD-PUB-5	Evaluation of the agency's capacity to assist with and/or assume services provided by other agencies.	TWSD has demonstrated some capacity to assist with or assume services provided by other agencies. For example, TWSD has a good financial basis with revenues in line with expenses. TWSD has retained staff engineers and other professionals necessary to serve a leadership role, and these skilled staff persons have the ability to assist with or assume services provided by other agencies. Additionally, TWSD has close collaborative relationships with nearby independent government agencies, as demonstrated by its collaboration with the SC-OR and the Wyandotte GSA. TWSD successfully communicates with nearby local agencies such as the City of Oroville, Butte County, and SFWPA. TWSD's leadership capacity could be improved by developing a clear and multi-year capital improvement plan and by posting its UWMP and SSMP on the website in a timely manner. TWSD currently has good communication with the Paradise Recreation and Park District, and together they are exploring potential recreational options at Lake Concow. TWSD could consider pursuing a formal agreement with Paradise Park and Recreation District to collaborate on providing recreation services.

7.8 Financial Ability To Provide Services

7.8.1 Introduction to Financial Metrics

LAFCO is required by the CKH Act to make a determination regarding the financial ability of the Thermalito Water and Sewer District to provide public services. This Chapter provides an overview of financial health and context for LAFCO's financial determinations. The District's audited Comprehensive Annual Financial Reports (CAFRs) (which TWSD calls 'Annual Financial Reports') for the fiscal years 2018/2019, 2019/2020, and 2020/2021 are the primary source of information for this Chapter. Based on recent recommendations from the Little Hoover Commission, this determination on the financial ability to provide services is based upon several key financial performance indicators that LAFCOs throughout the State consider in MSRs.

In California, special districts are classified as enterprise or non-enterprise districts based on their source of revenue:

- Enterprise Districts: Finance of district operations is via fees for public service. Under this model, the customers that consume goods or services such as drinking water or raw water, sewage collection, or disposal, pay a fee. Rates are set by a governing board, and there is a nexus between the costs of providing services and the rates customers pay. Sometimes enterprise districts may also receive property taxes or other revenues which comprise a portion of their budget.
- Non-enterprise districts: Districts that receive property taxes are typically classified as non-enterprise districts. Services that indirectly benefit the entire community, such as flood or fire protection, community centers, and cemetery districts, are often funded through property taxes.

TWSD is an Enterprise District that charges fees for its two primary services: water supply, treatment, distribution, and sewage collection and transport services. TWSD does not collect property taxes. However, the District turns in delinquent accounts on a fiscal year basis to Butte County. The County pays the District and adds the amount to the property tax roll.

TWSD tracks finances related to water and sewer services under separate enterprise funds. The District's annual financial statements describe designated accounts that show the water and sewer utilities being accounted for separately. These details are provided in the supplementary tables in the annual financial report. In addition, other important financial tables, such as the Consolidated Statement of Net Position (located at the beginning of the annual financial report), reflect the District's combined water and sewer operations (TWSD, AFR, 2021d).

TWSD's budget for the fiscal year ending June 30, 2022 (FY21/22) reflects past performance, current requirements, and future opportunities and risks. Additionally, the District's budget for FY 21/22 shows separate budgeted amounts for the water and sewer operations (TWSD, 2021a, Budget). The budget for both the District's water and sewer utilities is balanced, meaning revenues and transfers from reserves are equal to the sum of expenses, debt service, capital projects, and transfers to reserves, as shown in Figure 7-12 (TWSD Budget, 2021a). The District

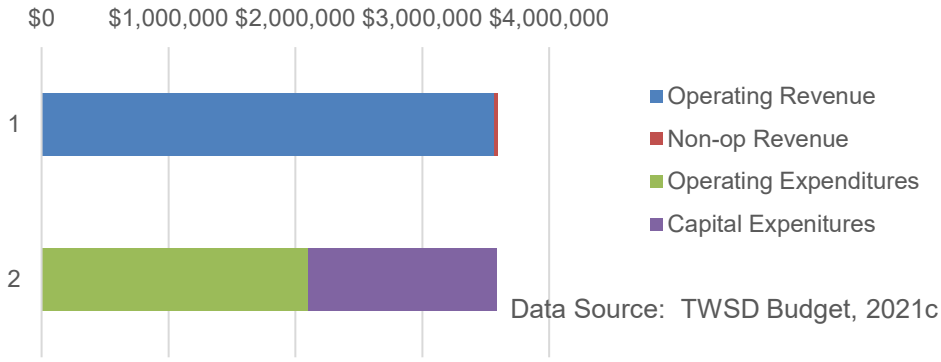
does not have "blended component units" consisting of organizations whose respective governing boards are comprised entirely of the members of the District's Board of Directors (TWSD, AFR, 2021d).

7.8.2 Financial Policies & Transparency

The District prepares and approves a budget with an annual timeframe, which includes a capital improvement budget. It is TWSD's practice to present a report regarding financial warrants (i.e., payment authorizations) to the Board of Directors during regular monthly meetings. The fiscal year begins on July 1 and ends on June 30. The current budget and the past five years of Annual Financial Reports are available to the public via the District's website.

Every year the District publishes an audited Annual Financial Report (AFR). The Government Code requires an annual independent audit of the District's financial records by a certified public accountant who serves as independent auditors. There are four types of audit opinions: unqualified, qualified, adverse, and disclaimer. An unqualified opinion is a clean opinion meaning the entity passed its audit. A qualified opinion means the entity passed the audit with notable exceptions. A disclaimer or adverse opinion essentially means the entity flunked its audit. The independent audit on FY20/21 (year ended June 30, 2021) was performed by Fechter & Company, Certified Public Accountants. The auditors expressed their opinion that the District's financial statements present fairly, in all material respects, the financial position of the District as of June 30, 2021, and the respective change in financial position and cash flows thereof for the year then ended in accordance with accounting principles generally accepted in the United States of America (TWSD, AFR, 2021d).

Figure 7-12: Comparison of Budgeted Revenues and Expenses for Water Services FY21/22



A District's financial policies function as business rules that ensure an agency's transactions are recorded consistently and correctly. It is important for a District's financial policies to be made available to the public. Although TWSD does not seem to have a comprehensive District Code that combines its policies, the District does have a webpage that provides the specific financial policies and procedures related to Board Member and Staff Compensation, Reimbursement, and Compensation Policy, Disclosure of Reimbursements, Financial Reserves Policy, Financial Transaction Report, and Conflict of Interest Policy. These policies are available to the public as a .pdf download from the

following webpage: *https://www.twsd.info/district-transparency*. Additionally, TWSD's Annual Financial Report lists several accounting policies and a summary of a few key accounting policies is listed in Table 7-25 below:

Table 7-25: TWSD Accounting Policies

Name of Policy	Brief Description of Policy
Budget Basis of Accounting	The budgets of the District are adopted on a basis consistent with generally accepted accounting principles.
Use of Estimates	The preparation of the basic financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosures of contingent assets and liabilities at the date of the financial statements and the reported changes in net position during the reporting period.
Accounts Receivable	Accounts receivable consist primarily of amounts due on water and sewer services. Delinquent accounts for water or sewer services are treated pursuant to Water Code.
Inventory of Materials and Supplies	Inventory of materials and supplies consists primarily of water meters, pipes, and pipe fittings for construction and repair to the District's water transmission and distribution system.
Prepaid Expenses	Certain payments to vendors reflect costs or deposits applicable to future accounting periods and are recorded as prepaid items in the basic financial statements.
Compensated Absences	The District maintains a Memorandum of Understanding (MOU) with its employees for unused vacation and sick leave.
Cash and Investments	The District has adopted a formal investment policy as required by Section 53600 et seq. of the California Government Code. The District's treasurer is responsible for selecting depositories and investing idle funds according to the adopted investment policy.

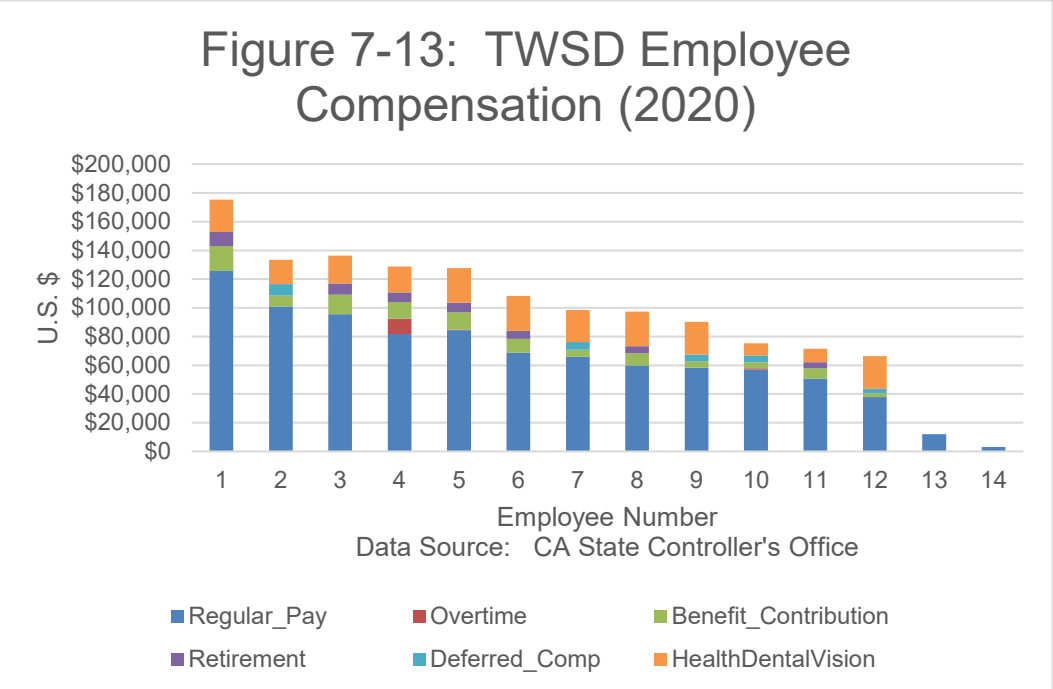
Data Source: TWSD, AFR, 2021d

Readers are invited to view the entire TWSD accounting policies list in the annual financial reports. Ideally, all independent districts would have an adopted purchasing policy that provides specific procedures for purchases and procurement practices. Unfortunately, TWSD does not appear to have a specific purchasing policy, and this is a situation that could be improved in the future. The District's financial statements are reported using the economic resources measurement focus and the accrual basis of accounting. Revenues are recognized when earned, and expenses are recorded when the liability is incurred, regardless of the timing of related cash flows (TWSD, AFR, 2021d).

Data Transparency

Financial data transparency promotes accountability and provides information to citizens about what their local government is doing. Transparency lets residents stay informed and learn about local government revenue, spending, and debt. District staff reports regularly to the Board of

Directors regarding financial warrants, and this information is available to the public via the meeting agenda packet. In addition, it is noted that budgets and financial statements for recent years are posted on the District's website (TWSD, RFI, 2021b). Transparency with salary data is also an important attribute for special districts in California. The Thermalito Water and Sewer District provides competitive compensation and a benefits package to full-time, regular employees, as shown in Figure 7-13 below. The Thermalito Water and Sewer District correctly forwards a report to the California State Controller for Government Compensation in California per Government Code Section 53891. Ideally, all independent districts in California would post their employee wage scale by bargaining unit on their website. However, this information is not currently (as of Jan 11, 2022) available on the TWSD website, and this item needs improvement.



7.8.3 Revenues, Expenditures, and Net Position

Revenues

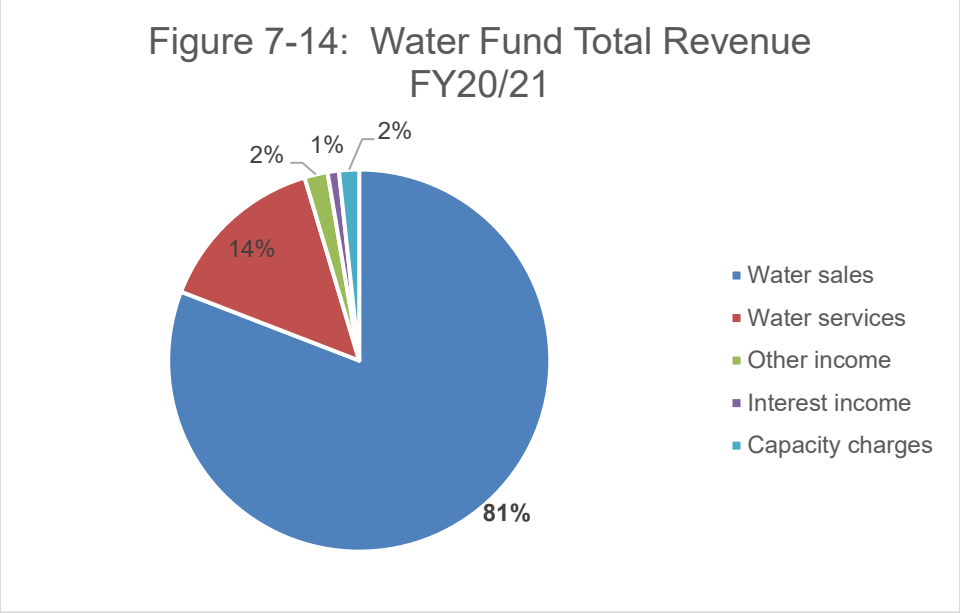
TWSD has two basic types of revenue:

- Operating revenues consist primarily of charges for services.
- Non-operating revenues and expenses are related to financing and investing-type activities.

The District has multiple sources of revenue, including sales to customers, service charges, and interest income. The discussion below considers revenue from the water fund and the sewer fund.

In FY20/21, TWSD's total revenue for the water fund was $2,810,144, as shown in Table 7-26, and the largest source of revenue was water sales to customers, as shown in Figure 7-14, below (TWSD, AFR, 2021d). Non-operating revenues, including investment income and capacity charges for the water fund were $74,572 in FY20/21 (TWSD, AFR, 2021d).

Table 7-26: Total Revenue TWSD FY20/21		
	Water	**Sewer**
Water sales	$2,272,563	0
Water services	$407,678	0
Other income	$55,331	0
Interest income	$26,831	$6,708
Capacity charges	$47,741	$49,988
Sewer use sales and services	0	$1,469,301
TOTAL REVENUES	**$2,810,144**	**$1,525,997**
Data Source: TWSD, AFR, 2021d		

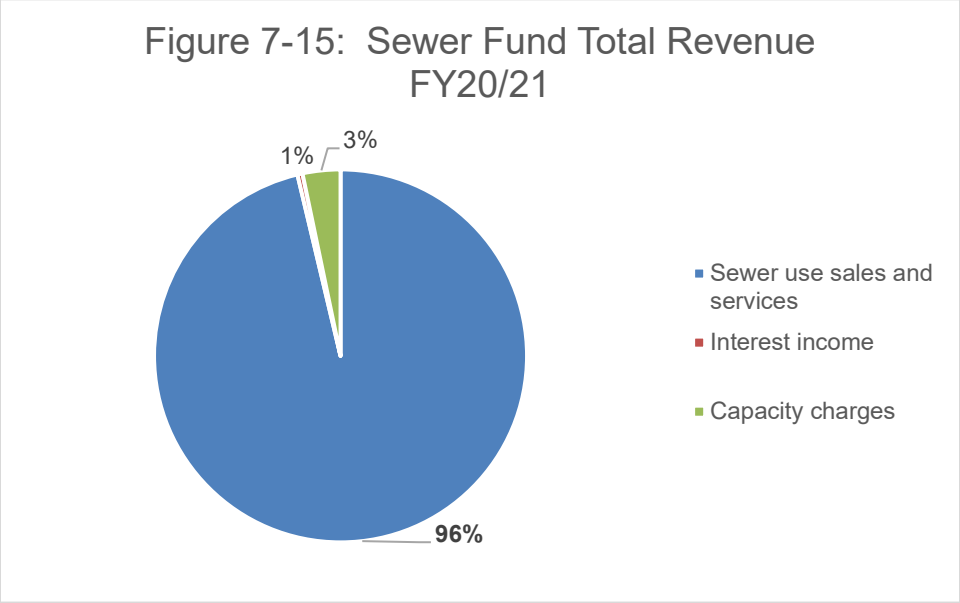


Data Source: (TWSD, AFR, 2021d)

The revenue that TWSD receives from water sales is dependent on natural water conditions, such as drought. As customers conserve water during a drought, the per-unit cost of water goes up. Many of the costs incurred by a water supplier are independent of the amount of water supplied. This is especially true in rural and semi-rural settings where development densities are lower, and the cost of maintaining each mile of the conveyance system is spread over fewer users. The infrastructure capacity of the entire system (pipe size, treatment size, storage, etc.) is a function

of water demand plus fire flow requirements. As the water volume decreases with conservation, the system's infrastructure capacity and related expense do not decrease equally (Butte LAFCO, 2018). Metered water sales for TWSD are based on the quantity charge (i.e., commodity component) and are less than 50% of total water sales income. They are also less impacted by declining per capita water usage and conservation (Butte LAFCO, 2018).

In FY20/21, TWSD's total revenue for the sewer fund was $1,525,997, as shown in Table 7-26. The largest source of revenue was sewer use sales to customers, as shown in Figure 7-15 below (TWSD, AFR, 2021d). Sewer use sales and service revenues increased 5.45% in FY20/21 compared to the previous year. This was primarily because of the pass-through sewer treatment charge from SCOR, which is incorporated into TWSD's billings. SC-OR is currently in Stage 3 of a five-year rate increase. SC-OR's rate increases each July, and TWSD passes it on to the customers. Non-operating revenues, including investment income and capacity charges for the sewer fund were $56,696 in FY20/21 (TWSD, AFR, 2021d).



Data Source: (TWSD, AFR, 2021d)

In summary, TWSD's total revenue (water and sewer combined) for FY20/21 was $4,204,873. TWSD's average revenue per acre amounted to $2,827 in FY20/21.

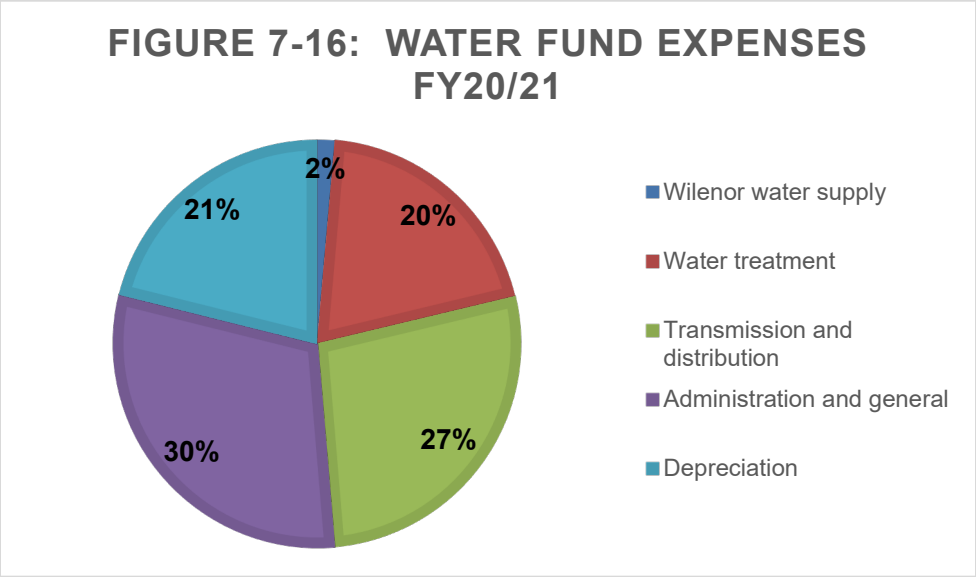
Expenses

In FY20/21, total expenses (including both operating and non-operating) were $2,168,079 for the water utility. The largest expense was Water Administration and General at $655,242, and the second-largest expense was Water Transmission and Distribution at $594,037, as detailed in Table 7-27 and Figure 7-16 below.

Table 7-27: Total Expenses TWSD FY20/21

	Water	Sewer
Wilenor water supply	$30,473	$0
Water treatment	$430,562	$0
Transmission and distribution	$594,037	$60,909
Administration and general	$655,242	$358,804
Depreciation	$457,765	$247,772
Sewerage collection	$0	$117,923
SC-OR charges	$0	$554,655
Interest expense	$0	$45,550

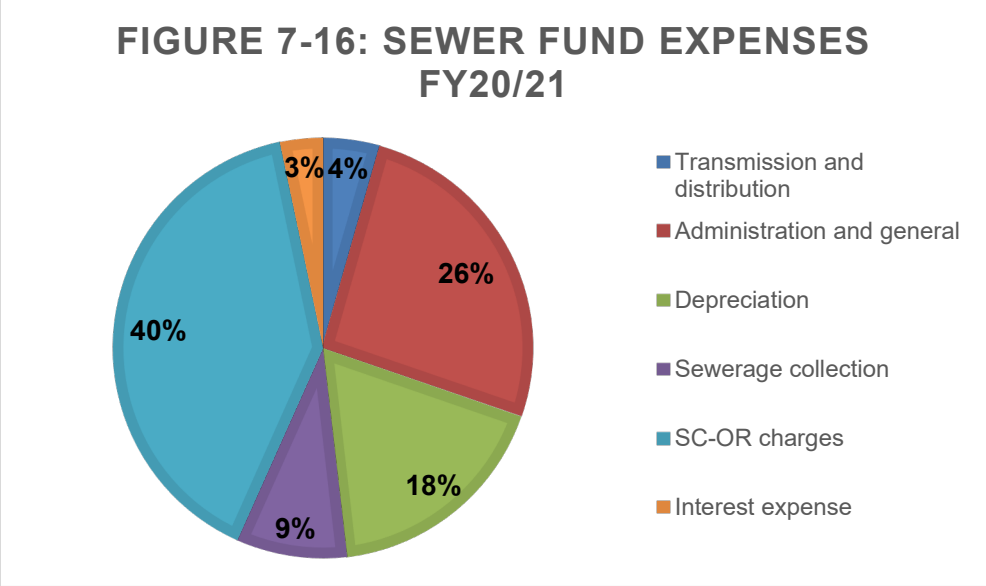
Data Source: TWSD Financial Statement



Source: TWSD AFR, 2021d

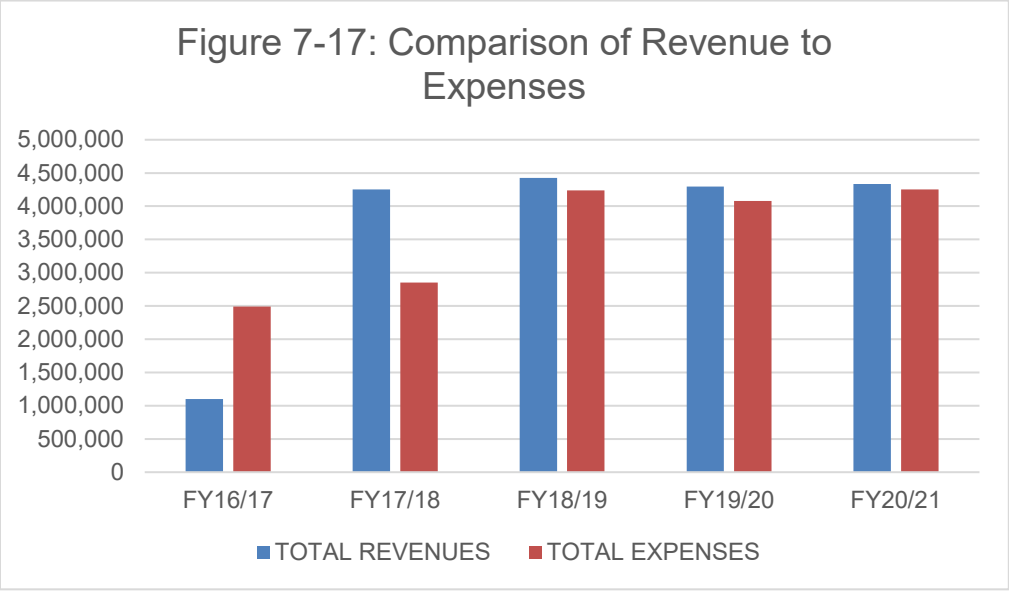
TWSD has low to moderate water expenses because it benefits from efficiencies resulting from the simultaneous operations of water and wastewater systems (Butte LAFCO, 2018). In addition, TWSD has a significant solar field to defray energy costs and has relatively low capital investment expense. These efficiencies are all reflected in their operational costs and ultimately, in their rates (Butte LAFCO, 2018). There are no indications of excessive costs or expenses that may be targeted for significant cost reduction (Butte LAFCO, 2018).

Expenses associated with the sewer fund are shown in Figure 7-16 below. In FY20/21, total expenses (including operating and non-operating) were $1,385,613 for the sewer fund. The largest expense was SC-OR Sewage Treatment Charges at $554,655, and the second-largest expense was Sewer Administration at $358,804, as detailed in Table 7-27 above and shown in Figure 7-16 below.



A comparison of annual total revenue to total expenses, as provided in Figure 7-17, shows that annual revenues exceeded expenses in four of the five years studied (i.e., FY17/18, 18/19. 19/20, and 20/21). Expenses associated with capital improvement projects contributed to the expenditure totals during these years. (Please see the section entitled "Capital Improvement Plan" section 7.8.4 in this Chapter for more information on capital improvements.) This indicates that having sufficient reserve funds is important to TWSD to help it fund capital improvement projects and to help it weather the economically lean years. Please also see the discussion of rates presented in Section 7.8.8 in this Chapter.

Figure 7-17: TWSD Total Revenues & Expenditures



Data Source for Figure 7-17: TWSD, AFR, 2021d and 2018

Net Position

The Government-Wide Net Position includes all of the District's assets and liabilities, with the difference between the two reported as Net Position. Net Position is displayed in three categories:

- Net investment in capital assets;
- Restricted; and
- Unrestricted.

As shown in Table 7-28 below, the total net position of the District's enterprise activities increased by $782,449 from the previous fiscal year (2020 to 2021). The current assets of the District's governmental activities, including restricted cash, increased by $1,142,633 from the previous year, and the capital assets (net of accumulated depreciation) decreased by $249,091. Long-term liabilities increased by $12,944 from the prior year. Unrestricted Net Position is the portion of net position that can be used to finance day-to-day operations without constraints established by debt covenants or other legal requirements. The Unrestricted Net Position on June 30, 2020, of $4,443,682 compared to the Unrestricted Net Position on June 30, 2021, of $5,250,728, increased by $807,046.

Table 7-28: Statement Net Position, Government-Wide

Thermalito Water and Sewer District
Statement of Net Position

	2021	2020	2019
Assets			
Current assets	$ 6,827,364	$ 5,787,550	$ 6,229,741
Restricted assets	1,134,535	1,031,716	1,048,955
Capital assets, net of accumulated depreciation	15,901,534	16,150,625	15,051,098
Total Assets	23,863,433	22,969,891	22,329,794
CalPERS pension contributions	316,829	317,268	347,528
Total Deferred Outflows of Resources	316,829	317,268	347,528
Liabilities			
Other current liabilities	348,869	226,381	471,759
Long-term liabilities	3,655,675	3,642,731	3,766,985
Total Liabilities	4,004,544	3,869,112	4,238,744
CalPERS actuarial amounts	52,874	77,652	96,009
Total Deferred Inflows of Resources	52,874	77,652	96,009
Net Position			
Invested in capital assets, net of related debt	13,737,581	13,864,997	12,507,629
Restricted	1,134,535	1,031,716	1,048,955
Unrestricted	5,250,728	4,443,682	4,785,985
Total Net Position	$ 20,122,844	$ 19,340,395	$ 18,342,569

Source: TWSD AFR, FY: 20/21

Tax Revenues/Service Ratio

LAFCO staff requested that this MSR analyze the Tax Revenues/Service Ratio. Tax revenue is not listed as a line item in the District's Annual Financial Report (TWSD, AFR, 2021d). Therefore, the Tax Revenues/Service Ratio is zero. TWSD does not collect any amount of property taxes.

7.8.4 Capital Improvement Plan

A Capital Improvement Plan (CIP) is a fiscal and planning tool that helps organizations make thoughtful budgeting decisions for large projects and purchases based on goals and objectives. Most capital improvement plans cover multiple-year time periods. Last year (FY20/21), the District completed two large capital improvement projects:

- Pump Rebuild – The existing booster pump was rebuilt, which delivers water from the 1.0 MG Clearwell to the 2.5 MG distribution tank.
- New Intake Pump – A new 150 hp intake pump was installed with a variable frequency drive and connected to the existing Supervisory Control and Data Acquisition (SCADA) system. This provides redundancy for the existing raw water pump and will be utilized for plant expansions in the future (TWSD, AFR, 2021d).

The TWSD Urban Water Management Plan also contains a five-year Capital Improvement Plan (TWSD, RFI, 2021b). TWSD staff reports that the District also has a Capital Improvement Summary as well as a Capacity Analysis - Expenditures Report (per J. Boucher May 2023). TWSD breaks down its projects in the annual budget such that projects are listed separately for water and sewer, as shown in Tables 7-29 and 7-30. This year, TWSD plans to expend $1,487,450 on water-related capital improvement projects and $303,250 on sewer-related capital improvement projects.

Table 7-29: TWSD Capital Improvement Projects for Water in FY21/22

Capital Expenditures	
Machinery & Equipment (10-1730-00)	
Genie Model SLC24	4,200
Generator	75,000
Kyocera P3145db Imaging System	3,250
Phone System	4,000
Server Upgrade	10,000
Vactor	236,000
Automotive Equipment (10-1760-00)	
F150 4X2 Truck	20,000
Building Improvements (10-1775-00)	
Vacant Lot Remodel	20,000
Pipeline Improvement (10-1777-00)	
Table Mtn. Pipeline Replacement Project (Bridge to Treatment Plant)	300,000
Riverbend Apartments Pipeline Replacement	100,000
Water Main Replacement-Tbl Mt. Blvd/County Center Drive	350,000
Source of Supply-Wilenor/Concow	
Streambed Alteration Project	10,000
Filter Plant 4MGD (10-1905-00)	
Provide and Install Booster MCC	270,000
Filter Backwash Tube Replacement	15,000
Grp A Improvements (Meters) (10-1930-00)	
Meter Change Out Program	70,000
Total Capital Expenditures:	**$ 1,487,450**

Data Source: TWSD, 2021a, Budget

Table 7-30: TWSD Capital Improvement Projects for Wastewater in FY21/22

Capital Expenditures	
Automotive/Sewer Equipment (20-1760-00)	
F150 4X2 Truck	20,000
Kyocera P3145db Imaging System	3,250
Phone System	4,000
Server Upgrade	10,000
Vactor	236,000
Nelson Avenue Sewer Realignment Planning and Design	30,000
Total Capital Expenditures:	**$ 303,250**

Data Source: TWSD, 2021a, Budget

TWSD staff noted several significant upcoming capital improvement projects, including the Treatment Plant Capacity Upgrade, Table Mountain Water Main Replacement, and Steel Main Replacement (personal communication, C. Heindell, 2022).

Since TWSD's boundary area encompasses 14,873 acres, its water and sewer infrastructure are complicated. To minimize future rate increases, the TWSD water and sewer departments/utilities aim to control the operating costs associated with infrastructure maintenance, repair, and replacement.

7.8.5 Reserves

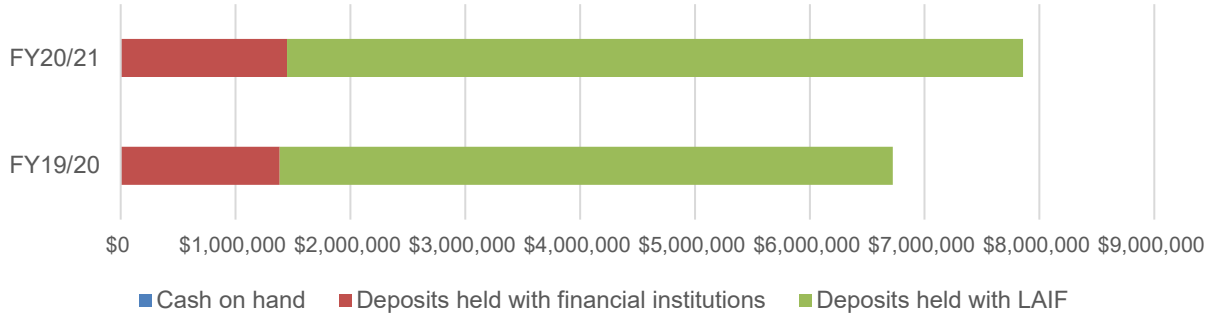
In California, many independent special districts have accumulated reserves. Although there are no rules guiding the size and use of reserve funds, general best management practices suggest that an agency should have a reserve fund that allows for operations of between six months to a year. Reserve funds provide the following benefits:

- allow for the continued operation of the agency even in downturns and unfavorable conditions;
- can contribute towards capital improvement projects which would reduce the potential need to accumulate a high debt load; and
- helps to ensure the continued solvency of the District.

The District's reserve policy is summarized in Table 7-25 as the "Cash and Investment" accounting policy listed in the AFR. The District also has policies that dictate minimum reserve fund allocations and Local Agency Investment Fund (LAIF) accounts. These funds are used to provide emergency funding as needed (TWSD, RFI, 2021b). The California Government Code allows the District to invest, provided the issuers' credit ratings are acceptable to the District and approved percentages and maturities are not exceeded. The District is generally authorized under state statute and local resolutions to invest in demand deposits with financial institutions, savings accounts, certificates of deposit, U.S. Treasury securities, federal agency securities, State of California notes or bonds, notes or bonds of agencies within the State of California, obligations guaranteed by the Small Business Administration, bankers' acceptances, commercial paper, and the Local Agency Investment Fund (LAIF) (TWSD, AFR, 2021d).

TWSD's water and sewer utilities have reserve funds. For FY 19/20, TWSD reported $6,772,651 in restricted and unrestricted reserves (including investments) in its AFR. This increased to $7,857,692 in FY20/21, shown in Figure 7-18 below. TWSD usually retains $600 "Cash on Hand". Since this amount is small, it does not show up visually in Figure 7-18, although it is accounted for in the totals provided previously. Reserve and investment policies are listed in the consolidated financial statements.

Figure 7-18 : Cash and Investments, TWSD



Data Source: TWSD, AFR, 2021d, Note 2: Cash and Cash Equivalents

Ideally, a District would have a multi-year forecast that projects reserve fund amounts into the future; however, TWSD's budget and annual financial report do not contain this information.

7.8.6 Outstanding Debts and Liabilities

For local government agencies, liabilities typically include current liabilities such as accounts payable, salaries payable, bond interest payable, and long-term liabilities such as serial bonds payable, installments payable, and contracts payable. Long-term debt is described in TWSD's AFR's Note 5 and is shown in this MSR as Table 7-31. Long-term liability is listed in three categories: 1) 2014 CA Water Board loan; 2) Accrued Compensation; and 3) Net Pension Liability. The sum total of these liabilities is $3,777,350 for the current fiscal year (FY20/21). In FY19/20, TWSD retired their loan from City National Bank, originally issued in 2012. The final payment was made in March 2020, and the balance is now zero. In FY20/21, TWSD has a long-term debt related to wastewater system loaned by CA State Water Resources Control Board in 2014. The remaining amount owed to the State is $2,163,953. This debt is used to finance the East Trunk Line Replacement Project. The current loan balance on June 30, 2021, is $2,163,953. Interest on the loan is 2.1% and payable in annual installments over twenty years. The annual principal payments range from $122,989 to $166,183 (TWSD, AFR, 2021d). The first payment was due on July 17, 2016. The City of Oroville has agreed to fund 75% of the reserve account requirement and pay 75% of all the debt service payments.

Table 7- 31: Long-Term Liabilities

Long-Term Liabilities

The District's long-term liabilities for the year ended June 30, 2021, was as follows:

	Balance July 1, 2020	Additions	Deletions	Balance June 30, 2021	Due Within One Year
Long-Term Debt:					
Sewer Services					
2014 CA Water Resources	$ 2,285,628	$ -	$ (121,675)	$ 2,163,953	$ 124,230
Total Long-Term Debt	$ 2,285,628	$ -	$ (121,675)	$ 2,163,953	$ 124,230
Accrued Compensation:					
Water	$ 290,287	$ 82,217	$ (58,425)	$ 314,079	
Sewer	72,572	20,554	(14,606)	78,520	
Total Accrued Compensation	$ 362,859	$ 102,771	$ (73,031)	$ 392,599	
Net Pension Liability:					
Water	$ 815,280	$ 96,992	$ -	912,272	
Sewer	178,964	7,887	-	186,851	
Total Net Pension Liability	$ 994,244	$ 104,879	$ -	$ 1,099,123	

The District's long-term liabilities for the year ended June 30, 2020, was as follows:

	Balance July 1, 2019	Additions	Deletions	Balance June 30, 2020	Due Within One Year
Long-Term Debt:					
Water Services					
2012 City National Bank Loan	$ 138,669	$ -	$ (138,669)	$ -	$ -
Subtotal	138,669	-	(138,669)	-	-
Sewer Services					
2014 CA Water Resources	2,404,800	-	(119,172)	2,285,628	121,675
Total Long-Term Debt	$ 2,543,469	$ -	$ (257,841)	$ 2,285,628	$ 121,675
Accrued Compensation:					
Water	$ 265,370	$ 72,970	$ (48,053)	$ 290,287	
Sewer	66,342	18,243	(12,013)	72,572	
Total Accrued Compensation	$ 331,712	$ 91,213	$ (60,066)	$ 362,859	
Net Pension Liability:					
Water	$ 731,279	$ 84,001	$ -	$ 815,280	
Sewer	160,525	18,439	-	178,964	
Total Net Pension Liability	$ 891,804	$ 102,440	$ -	$ 994,244	

7.8.7 Pension Payments

TWSD contributes the pension payments to the California Public Employees Retirement System (CalPERS), a multiple-employer public employee defined benefit pension plan on behalf of its full-time employees. CalPERS provides retirement, disability, and death benefits to plan members and beneficiaries. CalPERS acts as a common investment and administrative agent for participating public entities within the State, including TWSD. Copies of CalPERS' annual financial report may be obtained from its executive office at 400 Q Street, Sacramento, California 95811. The pension contribution requirements of plan members including TWSD) are established and may be amended by the TWSD Board of Directors. For purposes of measuring the net pension liability and deferred outflows/inflows of resources related to pensions and pension expense, information about the fiduciary net position of the California Public Employees' Retirement System (CalPERS) plans (Plans) and additions to/deductions from the Plans' fiduciary net position have been determined on the same basis as they are reported by CalPERS. For this purpose, benefit payments (including refunds of employee contributions) are recognized when due and payable in accordance with the benefit terms. Investments are reported at fair value. (TWSD, AFR, 2021d).

As listed in Table 7-31 above, TWSD lists its pension liability as part of its long-term liabilities in its financial statement. Table 7-31 above shows that the net pension liability for the water and sewer fund was approximately $1 million as of June 30, 2021. TWSD made contributions to the CALPERS fund in the amount of $316,829 for FY20/21. TWSD's Schedule of Proportionate Share of the Net Pension Liability for the past seven years is shown in Table 7-32 (next page).

Table 7-32: TWSD's Schedule of Proportionate Share of the Net Pension Liability

Measurement Date	June 30, 2014	June 30, 2015	June 30, 2016	June 30, 2017	June 30, 2018	June 30, 2019	June 30, 2020
Proportion of the net pension liability	0.04%	0.03%	0.03%	0.03%	0.02%	0.02%	0.03%
Proportionate share of the net pension liability	$953,065	$806,087	1,002,395	1,045,648	891,804	$994,244	$1,099,123
Covered-employee payroll	$619,918	$613,551	710,862	655,266	725,751	$811,075	$858,998
Proportionate share of the net pension liability as a percentage of covered-employee payroll	153.74%	131.38%	141.01%	159.58%	122.88%	122.58%	127.95%
Plan's fiduciary net position	$2,456,620	$2,617,555	2,884,890	3,315,658	3,540,434	$3,690,637	$3,943,173
Plan's fiduciary net position as a percentage of the total pension liability	72.05%	74.30%	74.21%	76.02%	79.88%	78.78%	78.20%

Data Source: TWSD, AFR, 2021d

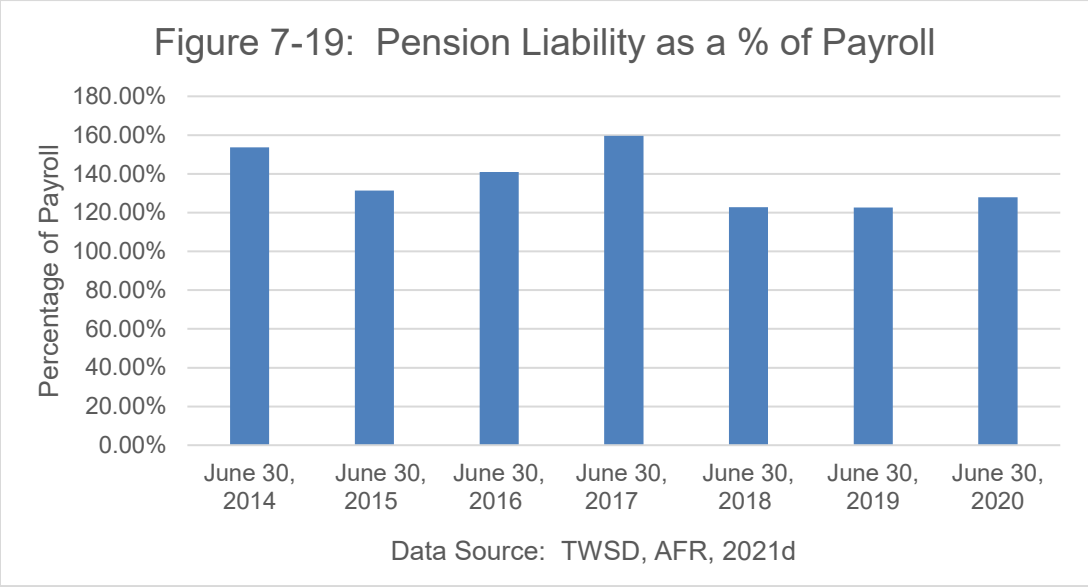


Figure 7-19 depicts the relationship between pension contributions as a percentage of covered-employee payroll. Due to updates to pension reporting requirements enacted in 2014, the Pension Payments indicator shows data for 2015 and beyond. GASB 68 revised and established new financial reporting for pensions effective for 2015. This percentage is calculated using the following formula: contributions in relation to the actuarially determined contribution divided by covered payroll. At 159.58% percent in FY 16/17, the high percentage reflected that a greater percentage of funds was dedicated to pension contributions in comparison to covered-employee payroll. As of June 30, 2020, TWSD had a pension-to-payroll ratio of 127.95%. Ideally, LAFCO will continue to monitor this metric to consider long-term fiscal trends as a longer time series of data becomes available.

CalPERS recognizes that the scale and multi-faceted nature of climate change presents a systemic risk to retirement portfolios across the board. The risks include:

- disruption to portfolio companies' supply chains and operations,
- heightened volatility to financial markets,
- reduced economic growth,
- fixed assets (e.g., real estate), and
- impacts on the financial success of existing business models and portfolio companies

CalPERS has implemented its Sustainable Investments Program in an attempt to mitigate these systemic risks (CalPERS, n.d.)

Other Post Retirement Benefits: The District maintains a Memorandum of Understanding (MOU) with its employees for unused vacation and sick leave. The two major items contained in the MOU are: (1) that, upon the termination of employment, each employee shall be paid an amount in a salary equal to their unused accumulated vacation pay; and (2) that, upon retirement, death, or disability, each employee shall be paid an amount equal to 50% of their accumulated unused sick pay with a maximum payout of 1,000 hours. The District did not have any other post-employment benefit obligations (OPEB) for the fiscal years ended June 30, 2021, and 2020 (TWSD, AFR, 2021d).

7.8.8 Rates

TWSD charges fees for water supply, water treatment, distribution service, capital improvement costs, and sewer service. Similar fees are charged for wastewater collection. TWSD has three policies regarding fees, as listed in Table 7- 33 below.

Table 7-33: TWSD Policies - Fees	
Policy Number	**Name of Policy**
Policy 1.210	Water-Sewer Connection Fees
Policy 1.220	Fireline Standby Fees
Policy 1.230	Administrative Fees
Data Source: https://www.twsd.info/twsd-policies-fees	

Since TWSD is an enterprise district, rates cover the costs of service provision with no exceptions. Expanding the water and sewer systems in response to growth in the community is paid by developer fees. Information regarding water and sewer rates is provided on the TWSD's website at: *https://www.twsd.info/twsd-policies-fees*. Thermalito Water and Sewer District (District) provides water and sewer to 3,136 water customers and 2,365 sewer customers.

TWSD must satisfy the requirements of Proposition 218 for rate increases, including nexus documentation. Therefore, TWSD cannot charge more for the water delivered than it costs to produce and supply. The sewer fund has similar rate constraints. The District Board adopted its water rate schedule via Resolution 04-10 on June 23, 2010. The sewer rates were amended twice, by Resolution 02-15 on June 16, 2015, and Resolution 02-16 on May 21, 2019.

Water Service Rates

Residential customers include single-family homes, individual condominium units, and townhouse units. The water and sewer rates apply to dwellings and commercial businesses. The domestic water rates for metered residences consist of two components: a base charge; and a commodity charge, as shown in Table 7-34 below.

Table 7-34: Metered Water Service	
Meter Size	**Minimum Charge**
¾"	$28.84
1"	$32.96
1½"	$41.20
2"	$51.50
3"	$116.39
4"	$151.39
6"	$267.80
Data Source: https://www.twsd.info/twsd-policies-fees	

The commodity fee component is billed at $0.74 per hundred cubic feet, such that one cubic foot equals 7.48 gallons. Multiple Units operating from a common meter are charged $22.66 additional per unit. Charges billed include the prior month's usage and are due and payable upon receipt.

LAFCO's 2018 Oroville Region Water Service Study by Northstar Consultants found that TWSD

delivers approximately 2,800 acre-feet of water annually (Butte LAFCO, 2018). TWSD appears to be well-managed and well-operated (Butte LAFCO, 2018). In 2018, the average annual cost per customer for water service was $798. (i.e., $66.50 per month) (Butte LAFCO, 2018). TWSD must comply with Prop 218 requirements to limit costs to the recovery of services (Butte LAFCO, 2018).

Water Affordability

The State of California Office of Environmental Health Hazard Assessment has assessed various parameters for community water systems throughout the state and posted the information to the online database called the "Human Right to Water Data Tool." The database analysis utilizes a scoring system to assess and rate water affordability. The scores range from 0 – 4, with zero being the best and four (4) being the worst. This database was queried, and the results for the TWSD (PWSID: CA0410008) are that the *Water Affordability Composite Score*: is "3", meaning "Poor" because the average water bill is high relative to the annual median household income of the water system (OEHHA, 2021).

The Water Affordability Composite score is concerning because it indicates that although the rates TWSD charges are reasonable, the median incomes of local residents are low. TWSD has already taken great strides to increase efficiency and reduce costs. Further efforts to increase efficiency risk an unintended tradeoff of reducing resiliency and quality of service and would need careful analysis. Nevertheless, the data still indicates that paying for local public services such as water, sewer, and other services may place a financial burden on local residents. TWSD is in a unique situation because other nearby water providers have a different financial context. For example, SFWPA utilizes funds from hydroelectric service to offset some of the costs associated with water services, as detailed in Chapter 6. The MSR Authors recommend that TWSD consider three options to improve the ability of local residents to better afford their water service:

1) Collaborate to improve local economic conditions, thereby improving median household income and the ability of residents to pay for water service. For example, two alternative actions are listed below.
    a. Since TWSD employs engineers and technicians, they are in a good position to advocate for STEM education.
    b. Contribute policy support for local efforts related to economic development.
2) Study the feasibility of future water treatment plant mergers with other nearby water service providers, such as SFWPA and Cal-Water Company, with the aim to reduce long-term costs.
3) Increase alternative revenues.
    a. Consider the feasibility of adding micro-hydro or other electricity generation facilities (i.e., follow the example of the SFWPA) and utilize these revenues to offset some portion of the cost of water service.
    b. Collaborate with SC-OR to create a water recycling program and/or utilization of bio-wastes to create a product such as fertilizer or renewable energy

Sewer Service Rates

Wastewater customers include single-family homes, multiple dwelling units, trailer parks, and commercial establishments. Rates for wastewater customers consist of two components: a base charge for collection by TWSD and a fee for treatment and disposal at the SC-OR wastewater treatment plant. Table 7-35 below shows the wastewater fees charged to customers.

Table 7-35: Monthly Sewer Rates (7/1/2021)	
Type of Fee	**Amount**
SC-OR Treatment	$17.85 per EDU
TWSD ETL Loan	$1.00 per EDU
TWSD Operation & Maintenance	$16.42 per EDU
Total Monthly Fee per EDU	**$35.27**
Data Source: https://www.twsd.info/twsd-	

Please note that an EDU is an acronym for Equivalent Dwelling Unit. The monthly wastewater charges apply to each EDU, whether empty or occupied.

Other Fees

In addition to monthly fees, connection charges, and other fees may apply. The connection charge is based upon an asset replacement which determines the amount of each user's share of the cost of replacing the District's capital facilities. The TWSD Board approved the sewer connection fee on September 16, 2014. The Fireline Standby Fees were approved in June 2014, and these fees cover the cost of "reserving" treatment plant capacity to meet fire flow demands.

The Administrative Fees cover charges for several types of public service, including a customer setup fee, closing account fee, late fees, meter removal fees, xerox copies, and backflow testing (among other fees). Overall, TWSD's budgeting approach has resulted in stable rates.

7.8.9 Risk Management

Managing risks is a method special districts commonly utilize to reduce unforeseen costs associated with risks. Insurance policies assist special districts in managing risks. TWSD obtains insurance through the Association of California Water Agencies/Joint Powers Insurance Authority (ACWA/JPIA). The coverage includes property, liability, workers' compensation, and errors and omissions insurance. (ACWA/JPIA**)** is a self-insurance pooled group specific to special districts in CA (*TWSD. RFI, 2021b*).

7.8.7 Determinations for Financial Ability to Provide Services

Based on the information in Section 7.8 above, the following written determinations make statements involving each service factor that the Commission must consider as part of a municipal service review. The determinations listed below in Table 7-36 are based upon the data presented and are recommended to the Commission for consideration. The Commission's final MSR

determinations are part of a Resolution that the Commission formally adopted during a public meeting as provided in Chapter 10.

Table 7- 36: MSR DETERMINATIONS: TWSD FINANCIAL ABILITY TO PROVIDE SERVICES

Number	Indicator	Determinations
TWSD-FIN-1	Summary financial information presented in a standard format and simple language.	The Consolidated Financial Statement and budgets are prepared annually and clearly and transparently present TWSD's financial information.
TWSD-FIN-2	District has a published policy for reserve funds, including the size and purpose of reserves and how they are invested.	TWSD reserve policy is called the "Cash and Investment Policy" and is described in their Annual Financial Report posted on the District website.
TWSD-FIN-3	Other financing policies are clearly articulated.	TWSD's Annual Financial Report contains a list of its accounting policies. Additionally, specific District finance policies are posted on the District website. However, TWSD does not seem to have an adopted purchasing policy, and this is an item that needs improvement.
TWSD-FIN-4	Compensation reports and financial transaction reports that are required to be submitted to the State Controller's Office are posted on the district website.	The employee wage scale by bargaining unit and the unrepresented employee wage scale are not available on the TWSD website, and this is an item that needs improvement. Required compensation reports are sent to the California State Controller for Government Compensation.
TWSD-FIN-5	Revenues exceed expenditures in 50% of studied fiscal years	Total revenue exceeded total expenditures in four of the five study years. For the TWSD water fund: About 95 percent of all revenues for this fund are derived from water sales and associated services. The reliance on the sale of water and service furthers the importance of ensuring sustainable and reliable sources to keep rates at a reasonable level for customers.
TWSD-FIN-6	Increases or decreases in net position	Changes to the Net Position are shown in Table 7-29 and have been relatively stable, with small increases each year.
TWSD-FIN-7	Tax Revenues/Service Ratio	Tax revenue is not listed as a line item in the District's Annual Financial Report. Therefore, the Tax Revenues/Service Ratio is zero. TWSD does not collect any amount of property taxes.
TWSD-FIN-8	Rates were adopted by the Board of Directors	The District Board adopted its water rate schedule during a public meeting via Resolution 04-10 on June 23, 2010. The sewer rates were

		amended twice, by Resolution 02-15 on June 16, 2015, and Resolution 02-16 on May 21, 2019.
TWSD-FIN-9	Rates are consistent with the requirements of the State Water Resources Control Board, and the process for adopting rates are consistent with Proposition 218	TWSD must satisfy the requirements of Proposition 218 for rate increases, including nexus documentation. Therefore, TWSD cannot charge more for the water delivered than it costs to produce and supply it. The sewer fund has similar rate constraints. The District Board adopted its water rate schedule via Resolution 04-10 on June 23, 2010. The sewer rates were amended twice, by Resolution 02-15 on June 16, 2015, and Resolution 02-16 on May 21, 2019.
TWSD-FIN-10	Rates are readily available to constituents	Rates for TWSD's water and wastewater service are displayed on the District's website at: <https://www.twsd.info/twsd-policies-fees>. The average TWSD water customer paid approximately $66.50 per month in 2018. An average TWSD wastewater customer in a single-family home will pay $35.27 per month.

7.9 Cost Avoidance & Facilities Sharing

This section highlights cost avoidance practices given necessary service requirements and expectations. Ideally, the proposed methods to reduce costs would not adversely affect service levels. In general, municipal water systems and wastewater systems have a fixed cost associated with infrastructure, operations, and maintenance and have a variable cost related to demand. Given these constraints, TWSD pursues an array of cost avoidance techniques that each contributes incrementally towards keeping costs at a reasonable level. Specifically, TWSD carefully utilizes its budgeting processes to serve as one means to avoid unnecessary costs. TWSD participates in two Joint Powers Authority (SC-OR and Wyandotte Creek Groundwater Sustainability Agency (WCGSA).

Facilities Sharing: TWSD actively shares facilities and equipment with neighboring service providers. For example, the WWTP is a shared facility among the members of SC-OR. The District's wastewater collection system has two interconnections with the City of Oroville. These interconnections allow the City of Oroville to transport a portion of its flows to the SC-OR treatment plant via the District's sewer mains. Currently, the City of Oroville is not paying for the capacity used in these pipelines (Butte LAFCO, MSR, 2006). TWSD has an emergency municipal water inter-tie with Cal-Water Company. Specific pieces of equipment related to the sewage system are occasionally shared by TWSD, the SC-OR, and LOAPUD. For example, the purchase of aluminum shoring is coordinated with neighboring agencies to reduce costs. Additionally, there is a discussion of partner projects with the South Feather Water and Power Agency (personal communication, Boucher and Heindell, 2021).

Mutual Aid: The District has mutual aid agreements with surrounding agencies to allow equipment and personnel sharing as needed (TWSD, 2021b).

Information Sharing: The District shares information with the City of Oroville, SC-OR, LOAPUD, and the County Public Works Department. For example, these entities are developing a common building standard for sewer facilities. Additionally, the District has proposed developing a common water building standard with the Paradise Irrigation District and the South Feather Water and Power Agency (Butte LAFCO, MSR, 2006). The District also coordinates with local planning and land development agencies by providing information on the adequacy of its water supply, distribution system, and water rates to meet the area's current and future growth needs. Specifically, TWSD cooperates with the following agencies:

- Butte Local Agency Formation Commission to assist in the development of Municipal Service Review (MSR) Studies;
- respective planning departments of the City of Oroville and the County of Butte in the preparation of CEQA documents and processing applications for subdivisions and commercial developments; and
- other municipal water purveyors and fire departments in Butte County and the City of Oroville to plan for the implementation of new fire safety regulations.

Cost Reduction: TWSD has implemented the following cost reduction actions:

- Invested in multiple solar arrays to offset the utility expense associated with pumping costs and treatment costs.
- Competitive bidding allows for contracts and capital improvement projects to be completed as cost-efficiently as possible.
- Upgrading its wells with telemetry and variable frequency drive to pump water as efficiently as possible (TWSD, 2021b).

Goals and Challenges: California's water and wastewater districts face future challenges and issues due to changing conditions. For example, during the past few years, multiple regulatory changes have affected the District's budgets. Another ongoing challenge is the drought. During the latest drought, conservation mandates from the State caused the District to curtail the watering of lawns and implement other conservation efforts. This reduced the District's water sales by approximately 25% for two years. The California Division of Safety of Dams has recently tightened the rules because of the after-effects of the spillway incident at Lake Oroville. As a result, the permitting costs to operate the Concow Reservoir went from $500 a year to over $10,000 in a single year. The Covid-19 global pandemic has presented unique challenges for the District during the years 2020 through 2022. For example, during the Covid crisis, the District incurred lost revenue due to the inability to shut off water. Numerous accounts stopped paying for water, and the District had no method to recoup the lost revenue due to non-payment (TWSD, RFI, 2021b).

Reorganization: It is sometimes beneficial for an agency to pursue structural and/or jurisdictional reorganizations to save money and avoid future overhead costs. TWSD staff has indicated that there are no functional or structural reorganizations that the District is evaluating to benefit

recipients of the District's services or improve the provision of wastewater collection services at this time (TWSD, 2021b).

Memberships & Resource Sharing

Membership in professional organizations is a way that special districts can leverage their expertise and the expertise of their colleagues in similar districts to efficiently provide mutual assistance, share information, support professional development, and other benefits. TWSD does maintain mutual aid, automatic aid agreements, and/or memberships in the following organizations:

- Association of California Water Agencies, Region 2.]
- Association of California Water Agencies/Joint Powers Insurance Authority
- Informal mutual aid assistance with Lake Oroville PUD, City of Oroville, South Feather Water and Power Agency

7.9.1 Joint Power Authorities

Effective January 1, 2017, Government Code §6503.6 and §6503.8 require LAFCo to be a repository for all Joint Powers Authority Agreements (JPA) within a county related to municipal service provisions. TWSD participates in two JPAs, as listed in the following paragraphs.

- TWSD is part of a JPA with the Wyandotte Creek Groundwater Sustainability Agency. One District board member sits on the Board of WCGSA (TWSD, 2021b). Members of this JPA work together to prepare and submit a Groundwater Sustainability Plan.
- Sewerage Commission – Oroville Region (SC-OR) is administered through a Joint Powers Agreement. Through this agreement, the City of Oroville, Lake Oroville Area Public Utilities District (LOAPUD), and TWSD work together to manage wastewater treatment and disposal. SC-OR's primary purpose is to provide sewage treatment and disposal services to the local government member entities. Each member sends two representatives (one voting, one non-voting) to SC-OR's Board of Directors, which constitutes the entire governing board. No participating member entity has access to SC-OR's resources or surpluses, nor is any participant liable for SC-OR's debts or deficits. Further, the TWSD does not have any equity interest in SC-OR. Each member entity is required to collect and remit SC-OR's sewer treatment and system regional facility charges.
- TWSD is a member of the Association of California Water Agencies/Joint Powers Insurance Authority (ACWA/JPIA**).** This JPIA provides insurance coverage for property, liability, workers' compensation, and errors and omissions insurance. ACWA/JPIA is a self-insurance pooled group specific to special districts in CA (*TWSD. RFI, 2021b*).

7.9.2 Determinations for Shared Facilities

Based on the information included in Section 7.9 above, the following written determinations make statements involving each service factor that the Commission must consider as part of a municipal service review. The determinations listed below in Table 7-37 are based upon the data presented

and are recommended to the Commission for consideration. The Commission's final MSR determinations are part of a Resolution that the Commission formally adopted during a public meeting.

Table 7-37: MSR DETERMINATION: STATUS OF, AND OPPORTUNITIES FOR, SHARED FACILITIES

Number	Indicator	Determination
TWSD-SHA-1	The Agency collaborates with multiple other agencies for the delivery of services within its boundary.	TWSD actively collaborates with multiple other agencies to deliver services within its boundary by implementing the following practices: facility sharing through SC-OR, mutual aid, information sharing, and cost reduction.
TWSD--SHA-2	Agreements for mutual aid or any other appropriate agreement (i.e., Tax Sharing Agreement) are periodically reviewed to ensure fiscal neutrality.	TWSD actively utilizes mutual aid to reduce long-term costs and to receive and provide assistance during emergencies. The District has mutual aid agreements with surrounding agencies to allow for sharing equipment and personnel as needed. It is recommended that TWSD periodically review agreements for mutual aid or any other appropriate agreement (i.e., Tax Sharing Agreement) to ensure fiscal neutrality. While the current organization of sewer services between three collection agencies and the wastewater treatment plant (SC-OR) effectively delivers sewer services to the Oroville region, this duplication of services should be evaluated to determine if a reorganization of service providers and/or boundaries would result in a more transparent and cost-effective provision of sewer services. At present, TWSD provides sewage collection services within COOR boundaries. It is

		(Continued) recommended that the District initiate dialogue with the COOR to consider opportunities for collection system consolidation west of the Feather River that would allow for greater efficiencies, cost savings and offer a more streamlined approach that would benefit not only current users, but new development interests as well.
TWSD--SHA-3	Other practices and opportunities that may help reduce or eliminate unnecessary costs are periodically examined by the District. Ideally, there is a balance between cost efficiency and risk reduction strategies.	In general, municipal water systems and wastewater systems have a fixed cost associated with infrastructure, operations, and maintenance and have a variable cost related to demand. Given these constraints, TWSD pursues an array of cost avoidance techniques that each contributes incrementally towards keeping costs at a reasonable level. Specifically, TWSD carefully utilizes its budgeting processes to serve as one means to avoid unnecessary costs. TWSD participates in two Joint Powers Authority (SC-OR and Wyandotte Creek Groundwater Sustainability Agency.

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