LAKE
LOCAL AGENCY FORMATION COMMISSION (LAFCo)

MUNICIPAL SERVICE REVIEW (MSR)
AND
SPHERE OF INFLUENCE (SOI)

DRAFT
CLEARLAKE WATER PROVIDERS

1. *The Konocti County Water District*
2. *The Highlands Mutual Water Company*
3. *The Golden State Water Company*
4. *The Lower Lake County Waterworks District #1*

September 2021

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1 INTRODUCTION

1.1 Local Agency Formation Commission (LAFCo) History

This report is prepared pursuant to State legislation enacted in 2000 that requires Lake LAFCo to complete a comprehensive review of municipal service delivery and update the spheres of influence (SOIs) of all agencies under LAFCo's jurisdiction. This chapter provides an overview of LAFCo's history, powers and responsibilities. It discusses the origins and legal requirements for preparation of a Service Review commonly referred to as a Municipal Service Review (MSR). Finally, the chapter reviews the process for MSR review, MSR approval and SOI updates.

After World War II, California experienced dramatic growth in population and economic development. With this boom came a demand for housing, jobs and public services. To accommodate this demand, many new local government agencies were formed, often with little forethought as to the ultimate governance structures within a given region. A lack of coordination and adequate planning led to a multitude of overlapping, inefficient jurisdictional and service area boundaries, many of which resulted in the premature conversion of California's agricultural and open-space lands and duplication of services.

Recognizing this problem, in 1959, Governor Edmund G. Brown, Sr. appointed the Commission on Metropolitan Area Problems. The Commission's charge was to study and make recommendations on the "misuse of land resources" and the growing complexity of local governmental jurisdictions. The Commission's recommendations on local governmental reorganization were introduced in the Legislature in 1963; resulting in the creation of a Local Agency Formation Commission, or "LAFCo," operating in every county.

LAFCo was formed as a countywide agency to discourage urban sprawl and to encourage the orderly formation and development of local government agencies within its jurisdiction. LAFCo is responsible for coordinating logical and timely changes in local governmental boundaries; including annexations and detachments of territory, incorporations of cities, formations of special districts, and consolidations, mergers and dissolutions of districts, as well as reviewing ways to reorganize, simplify, and streamline governmental structure.

The Commission's efforts are focused on ensuring services are provided efficiently and economically while agricultural and open-space lands are protected or conserved to the extent possible. To better inform itself and the in compliance with the State Law; LAFCo conducts MSR's to evaluate the provision of municipal services for service providers within its jurisdiction.

LAFCo regulates, through approval, denial, conditions and modification, boundary changes proposed by public agencies or individual voters and landowners. It also regulates the extension of public services by cities and special districts outside their boundaries. LAFCo is empowered to initiate updates to the SOIs and proposals involving the dissolution, consolidation or formation of special districts, establishment of subsidiary districts, and any reorganization including such actions. Where LAFCo is not given specific authority, LAFCo actions must originate as petitions from affected voters or landowners, or by resolutions by affected cities or special districts.

A Plan for Services is required in Government Code Section 56653. A Plan for Services must include the following information: An enumeration and description of services to be provided, the level and range of those services, an indication of how those services are to be extended into the territory, an indication of any improvements or upgrading of structures, Information on how the services are to be financed.

1.2 Preparation of the MSR

Research for this Municipal Service Review (MSR) was conducted during the fall of 2019. This MSR is intended to support preparation and update of Spheres of Influence, in accordance with the provisions of the Cortese-Knox-Hertzberg Act. The objectives of this Municipal Service Review (MSR) are as follows:

- ✓ To develop recommendations that will promote more efficient and higher quality service options and patterns
- ✓ To identify areas for service improvement
- ✓ To assess the adequacy of service provision as it relates to determination of appropriate sphere boundaries

While LAFCo prepared the MSR document, given budgetary constraints, LAFCo did not engage the services of experts in engineering, hydrology, geology, water quality, fire protection, accounting or other specialists in related fields, but relied upon published reports and available information. Insofar there is conflicting or inconclusive information LAFCo staff may recommend the district retain a licensed professional or expert in a particular field for an opinion.

Therefore, this MSR reflects LAFCo's recommendations, based on available information during the research period and provided by District staff to assist in its determinations related to promoting more efficient and higher quality service patterns; identifying areas for service improvement; and assessing the adequacy of service provision by the Konocti County Water District and other water providers in the Clearlake area. Additional information on local government funding issues in found in Appendix A at the end of this report.

1.3 Role and Responsibility of LAFCo

Local Agency Formation Commissions (LAFCos) in California are independent agencies created by the California Legislature in 1963 for the purpose of encouraging the orderly formation of local government agencies and conserving and preserving natural resources. The Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000 (Government Code §56000 et seq.) is the statutory authority for the preparation of an MSR, and periodic updates of the Sphere of Influence (SOI) of each local agency.

LAFCos are responsible for coordinating logical and timely changes in local governmental boundaries, conducting special studies that review ways to reorganize, simplify, and streamline governmental structure, preparing a review of services called a MSR, and preparing a SOI thereby determining the future "probable" boundary for each city and special district within each county.

The Commission's efforts are directed toward seeing that services are provided efficiently and economically while agricultural and open-space lands are protected. Often citizens are confused as to what LAFCo's role is. LAFCos do not have enforcement authority nor do they have the authority to initiate a city or district annexation or detachment proceeding. LAFCos may initiate consolidation or dissolution proceedings; however, these proceedings are subject to the voter approval or denial.

The Legislature has given LAFCos the authority to modify any proposal before it to ensure the protection of agricultural and open space resources, discourage urban sprawl and promote orderly boundaries and the provision of adequate services.

The Governor's Office of Planning and Research (OPR) has issued Guidelines for the preparation of a MSR. This MSR adheres to the procedures set forth in OPR's MSR Guidelines.

A SOI is a plan for the probable physical boundaries and service area of a local agency, as determined by the affected Local Agency Formation Commission (Government Code §56076). Government Code §56425(f) requires that each SOI be updated not less than every five years, and §56430 provides that a MSR shall be conducted in advance of the SOI update.

1.4 Municipal Services Review Requirements

Effective January 1, 2001 and subsequently amended, LAFCo is required to conduct a review of municipal services provided in the county by region, sub-region or other designated geographic area, as appropriate, for the service or services to be reviewed, and prepare a written statement of determination with respect to each of the following six topics (Government Code §56430):

1. Growth and population projections for the affected area

2. The location and characteristics of any disadvantaged unincorporated communities (DUC) within or contiguous to the sphere of influence

3. Present and planned capacity of public facilities and adequacy of public services, including infrastructure needs or deficiencies

4. Financial ability of agencies to provide services

5. Status of, and opportunities for shared facilities

6. Accountability for community service needs, including governmental structure and operational efficiencies

1.5 Municipal Services Review Process

For local agencies, the MSR process involves the following steps:

- Outreach: LAFCo outreach and explanation of the project
- Data Discovery: provide documents and respond to LAFCo questions
- Map Review: review and comment on LAFCo draft map of the agency's boundary and sphere of influence
- Profile Review: internal review and comment on LAFCo draft profile of the agency
- Public Review Draft MSR: review and comment on LAFCo draft MSR
- LAFCo Hearing: attend and provide public comments on MSR

MSRs are exempt from California Environmental Quality Act (CEQA) pursuant to §15262 (feasibility or planning studies) or §15306 (information collection) of the CEQA Guidelines. LAFCo's actions to adopt MSR determinations are not considered "projects" subject to CEQA. The MSR process does not require LAFCo to initiate changes of organization based on service review findings, only that LAFCo identify potential government structure options.

However, LAFCo, other local agencies, and the public may subsequently use the determinations to analyze prospective changes of organization or reorganization or to establish or amend SOIs. Within its legal authorization, LAFCo may act with respect to a recommended change of organization or reorganization on its own initiative (e.g., certain types of consolidations), or in response to a proposal (i.e., initiated by resolution or petition by landowners or registered voters).

Once LAFCo has adopted the MSR determinations, it must update the SOI for each jurisdiction. The LAFCo Commission determines and adopts the spheres of influence for each agency. A CEQA determination is made by LAFCo on a case-by-case basis for each sphere of influence action and each change of organization, once the proposed project characteristics are sufficiently identified to assess environmental impacts.

1.6 Sphere Of Influence Update Process

The Commission is charged with developing and updating the Sphere of Influence (SOI) for each city and special district within the county.[1]

An SOI is a LAFCo-approved plan that designates an agency's probable future boundary and service area. Spheres are planning tools used to provide guidance for individual boundary change proposals and are intended to encourage efficient provision of organized community services and prevent duplication of service delivery. Territory cannot be annexed by LAFCo to a city or district unless it is within that agency's sphere.

[1] The initial statutory mandate, in 1971, imposed for no deadline for completing sphere designations. When most LAFCos failed to act, 1984 legislation required all LAFCos to establish spheres of influence by 1985.

The purposes of the SOI include the following:

- ✓ to ensure the efficient provision of services
- ✓ to discourage urban sprawl and premature conversion of agricultural and open space lands
- ✓ to prevent overlapping jurisdictions and duplication of services

LAFCo may not directly regulate land use, dictate internal operations or administration of any local agency, or set rates. LAFCo is empowered to enact policies that indirectly affect land use decisions. On a regional level, LAFCo promotes logical and orderly development of communities as it considers and decides individual proposals. LAFCo has a role in reconciling differences between agency plans so that the most efficient urban service arrangements are created for the benefit of current and future area residents and property owners.

The Cortese-Knox-Hertzberg (CKH) Act requires LAFCos to develop and determine the SOI of each local governmental agency within its jurisdiction and to review and update the SOI every five years, as necessary. LAFCos are empowered to adopt, update and amend a SOI. They may do so with or without an application. Any interested person may submit an application proposing an SOI amendment.

While SOIs are required to be updated every five years, as necessary, this does not necessarily define the planning horizon of the SOI. The term or horizon of the SOI is determined by each LAFCo.

LAFCo may recommend government reorganizations to particular agencies in the county, using the SOIs as the basis for those recommendations. In determining the SOI, LAFCo is required to complete an MSR and adopt the six determinations previously discussed. In addition, in adopting or amending an SOI, LAFCo must make the following five determinations as required in Government Code section 56425(c):

1. Present and planned land uses in the area, including agricultural and open-space lands

2. Present and probable need for public facilities and services in the area

3. Present capacity of public facilities and adequacy of public service that the agency provides or is authorized to provide

4. Existence of any social or economic communities of interest in the area if the Commission determines these are relevant to the agency

5. For an update of an SOI of a city or special district that provides public facilities or services related to sewers, municipal and industrial water, or structural fire protection, the present and probable need for those public facilities and services of any disadvantaged unincorporated communities within the existing sphere of influence. [2]

[2] California Government Code Section 56425 (e)(5)

The CKH Act stipulates several procedural requirements in updating SOIs. It requires cities to file written statements on the class of services to be provided and LAFCo must clearly establish the location, nature and extent of services provided by special districts.

By statute, LAFCo must notify affected agencies 21 days before holding the public hearing to consider the SOI and may not update the SOI until after that hearing. The LAFCo Executive Officer must issue a report including recommendations on the SOI amendments and updates under consideration at least five days before the public hearing.

1.7 Possible Approaches to the Sphere of Influence

LAFCo may recommend government reorganizations to particular agencies in the county, using the SOIs as the basis for those recommendations. Based on review of the guidelines of Lake LAFCo as well as other LAFCos in the State, various conceptual approaches have been identified from which to choose in designating an SOI. These seven approaches are explained below:

1) Coterminous Sphere:
A Coterminous Sphere means that the Sphere of Influence for a city or special district that is the same as its existing boundaries of the city or district.

2) Annexable Sphere:
A sphere larger than the agency's boundaries identifies areas the agency is expected to annex. The annexable area is outside the district boundaries and inside the sphere of influence.

3) Detachable Sphere:
A sphere that is smaller than the agency's boundaries identifies areas the agency is expected to detach. The detachable area is the area within the agency bounds but not within its sphere of influence.

4) Zero Sphere:
A zero sphere indicates the affected agency's public service functions should be reassigned to another agency and the agency should be dissolved or combined with one or more other agencies.

5) Consolidated Sphere:
A consolidated sphere includes two or more local agencies and indicates the agencies should be consolidated into one agency.

6) Limited Service Sphere:
A limited service sphere is the territory included within the SOI of a multi-service provider agency that is also within the boundary of a limited purpose district which provides the same service (e.g., fire protection), but not all needed services. Territory designated as a limited service SOI may be considered for annexation to the limited purpose agency without detachment from the multi-service provider.

This type of SOI is generally adopted when the following conditions exist:

a) The limited service provider is providing adequate, cost effective and efficient services

b) The multi-service agency is the most logical provider of the other services

c) There is no feasible or logical SOI alternative

d) Inclusion of the territory is in the best interests of local government organization and structure in the area

Government Code §56001 specifically recognizes that in rural areas it may be appropriate to establish limited purpose agencies to serve an area rather than a single service provider, if multiple limited purpose agencies are better able to provide efficient services to an area rather than one service district.

Moreover, Government Code Section §56425(i), governing sphere determinations, also authorizes a sphere for less than all of the services provided by a district by requiring a district affected by a sphere action to "establish the nature, location, and extent of any functions of classes of services provided by existing districts" recognizing that more than one district may serve an area and that a given district may provide less than its full range of services in an area.

1.8 Description of Public Participation Process

The LAFCo proceedings are subject to the provisions of California's open meeting law, the Ralph M. Brown Act (Government Code Sections 54950 et seq.). The Brown Act requires advance posting of meeting agendas and contains various other provisions designed to ensure that the public has adequate access to information regarding the proceedings of public boards and commissions. Lake LAFCo complies with the requirements of the Brown Act.

The State MSR Guidelines provide that all LAFCos should encourage and provide multiple public participation opportunities in the MSR process.

2 CLEARLAKE DOMESTIC WATER SERVICE AREA

2.1 Water Service Providers

The following domestic water service providers are located within the City of Clearlake Incorporated Area:

2.1.1 The Konocti County Water District

The Konocti County Water District (KCWD), which is a public agency, was formed in 1961 and serves 1,795 active potable water connections today in the City of Clearlake in Lake County most of which are single-family residential connections. The total service area of 1,100 acres (10,000 parcels) is contained entirely within the limits of the incorporated City, the District is bounded by State Highway 53 to the west.

2.1.2 The Highlands Mutual Water Company

This private utility serves a population of 6,072 people with water via a total of 2,568 service connections to residential and non-residential customers. Raw water is drawn from Clear Lake and pumped by one of two vertical turbine pumps. Water flows through ozone contact chambers and water turbidity clarifiers. Water is then delivered to a duel media filter system. Water is then disinfected and delivered to a storage facility consisting of six storage tanks having a total storage capacity of 4,900,000 gallons[3]. Recent improvements to the water system is a water main replacement project on Emory Avenue in Clearlake, were completed in June 2020.

2.1.3 The Golden State Water Company

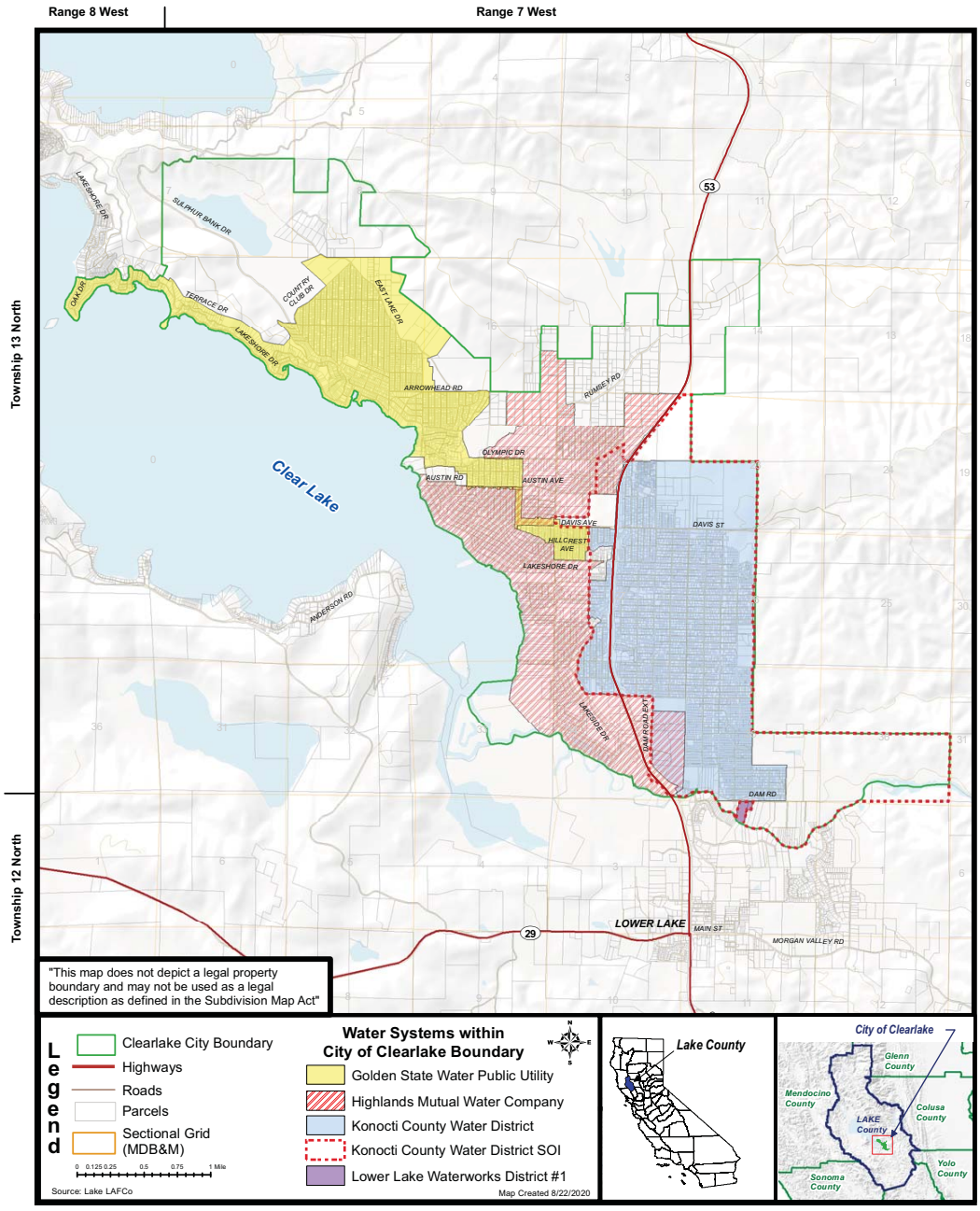
The Golden State Water Company is a public utility that serves the western portion of the City (between Sycamore Street to the east and the southeastern shore of Clear Lake to the west) as well as a non-contiguous, seven-block segment of the central portion of the City. Water from this particular utility is sourced from the surface water of Clear Lake, which is treated at Golden State Water Company's Sonoma Water Treatment Plant. An intake is located along the lake shore, and water is pumped up to the treatment plant located within City boundaries. Golden State Water Company services a population of 6,189 people (assuming 2.91 Persons per Household) and provides a total of 2,127 service connections to residential and nonresidential customers.

The Lower Lake County Water District - The Lower Lake County Waterworks District #1 is a Public Agency which was organized in 1946 under the County Water District Law, California Water Code §30000 *et seq*. and contains a small incorporated area located in the southernmost portion of the City of Clearlake north of Cache Creek. The Latest annexation (Tish-a-Tang annexation) to the Lower Lake County Waterworks District #1 within the City occurred in 1974 and is located north of Cache Creek.

The location of these water service providers are indicated on the map below:

[3] Highlands Mutual Water Company, Consumer Confidence Report, 2019.

LAKE LOCAL AGENCY FORMATION COMMISSION
CLEARLAKE WATER SERVICE PROVIDERS



2.2 City of Clearlake Demographics

The 2010 US Census reported that Clearlake had a population of 15,250. According to the State Department of Finance, the January 1, 2013 population of Clearlake was 15,192 and the January 1, 2019 population was 14,828. By January 1, 2020 the population was further reduced to 14,297. Clearlake's population consists of approximately 24% of the County's population. The City of Clearlake had a growth rate of 1.46% between 2014 and 2018 yet between 2019 and 2020 was -0.5%. However, the City lost population due to the Valley Fire and other fires in Lower Lake and within the City of Clearlake itself.

The 2010 Census reported that 14,790 people (97.0% of the population) lived in households, 366 (2.4%) lived in non-institutionalized group quarters (such as Assisted Living), and 94 (0.6%) were institutionalized. In 2019 there were 460 people living in Group Quarters and 14,368 living in households.

There were 5,970 households according to the 2010 census, out of which 1,859 (31.1%) had children under the age of 18 living in them, there were 1,898 households (31.8%) which were made up of individuals and 739 (12.4%) had someone living alone who was 65 years of age or older. The remaining households were two or more adults living together.

The average household size was 2.48. There were 3,418 families (57.3% of all households); the average family size was 3.11. Contrasting with 2019 there was an average household size of 2.56 persons. Of the total 7,797 housing units there was a total 5,612 occupied housing units and 2,185 vacant units. The city's vacancy rate was 28.0%

The City of Clearlake population was spread out in age as follows:

CITY OF CLEARLAKE POPULATON AGE GROUPS 2010

Under the age of 18	3,656 people	24.0%
18 to 24	1,528 people	10.0%
25 to 44	3,384 people	22.2%
45 to 64	4,389 people	28.8%
65 years of age or older	2,293 people	15.0%
TOTAL	15,250 people	100.0%

The median age was 39.9 years in 2010. In 2019 the median age was younger at 37.9 years. In 2016 there were 7,743 males (51 percent) and 7,318 Females (49%).

There were 8,035 housing units in 2010, of which 3,190 (53.4%) were owner-occupied, and 2,780 (46.6%) were occupied by renters. In 2016 there were only 6,026 housing units in Clearlake of which 3,176 were owner occupied (52.70 percent) and 2,850 were renter occupied (47.30 percent). The homeowner vacancy rate was 5.9%; the rental vacancy rate was 12.1%.

In summary, the City's growth rate had become stagnant due to the fires. Prior to the fires the City had experienced a 4.4 percent population gain between 2010 and 2018. However, that growth had ceased and, in fact, declined in 2019. For the purposes of this MSR, LAFCo will use the growth rate between 2010 and 2018, which is 0.54%.

2.3 Disadvantaged Community Status

The City of Clearlake is considered a severely Disadvantaged Community since the Median Household Income is $30,318 compared to the State of California Median Household Income of $61,818 ($67,169).[4] These figures are further substantiated in the 2017 American Community Survey for the entire City which states the Median Household Income (MHI) is $27,034, which qualifies as a disadvantaged community as well as a severely disadvantaged community having a MHI of 20% and 40% of the State MHI ($67,169) respectively.[5]

The City of Clearlake including the Golden State Water, Highlands Mutual water and the Konocti County Water District are therefore all considered severely disadvantaged.

[4] Konocti County Water District, June 30, 2017.
[5] City of Clearlake Housing Element October 10, 2019

3 WATER SERVICE PROVIDERS BACKGROUND

3.1 Konocti County Water District Background

3.1.1 History and Water Service Providers in Clearlake

The Konocti County Water District (KCWD or District) was organized in 1961 and serves 1,795 active potable water connections today in the City of Clearlake. Most of these connections are single-family residential connections. The total service area of 1,100 acres (10,000 parcels) is contained entirely within the limits of the incorporated City, the District is bounded by State Highway 53 to the west, Bureau of Land Management (BLM) properties to the east, Dam Road to the south, and Hayes Avenue to the north. A history of the annexations to and detachments from the District is shown in Appendix B at the end of this report.

Other domestic water systems in the City of Clearlake are as follows:

A. Golden State Water
B. Highlands Water Company
C. Lower Lake Waterworks District #1

Water service area overlap has been found in two areas within the City of Clearlake. Based on a review of the service area maps prepared by LAFCo for the four water service providers within the City of Clearlake. The two areas involve an overlap with Golden State Water and Highlands Mutual Water Company and the Konocti County Water District and the Highlands Mutual Water Company (please see the Overlap Map along with the Highlands Mutual Water Company and the Konocti County Water District infrastructure maps located the end of this report).

1. Golden State Water and Highlands Mutual Water Company overlap.
This area involves an area south of Austin Road, both sides of Manchester Avenue and an area south of Laguna Vista Way and north of Davis Avenue. In a review of the infrastructure Maps at the end of this report Highlands Mutual has a 6” line north and south along Manchester and north and south along Highlands Streets and a 4” line along Austin Street east and west. Golden State Water serves the area between Laguna Vista and Davis Ave.

2. Konocti County Water District and the Highlands Mutual Water Company overlap.
The western portion of this area is served by Highlands Water Company and the area along and west of Irvine is served by Konocti County Water District. This area is within the Konocti County Water District service area but not within the Highlands Mutual Water agreement with Yolo County Flood Control.

LAFCo does not have the authority to change boundaries or service areas for the Golden State Water Company or the Highlands Mutual Water Company. The Service Area for the Golden State Water Company is established by the California Public Utilities Commission and the District’s water rights entitlement agreement with Yolo County Flood Control. The Highlands Mutual Water Company’s entitlement for its water service area is established through its water rights entitlement agreement with Yolo County Flood Control District.

LAFCo has the authority to regulate the district boundary for the Konocti County Water District. LAFCo may wish to signal a reduction in the Konocti County Water District's boundary by suggesting a detachment of the area west of Irvine not being served by the District. However, LAFCo does not have the authority to initiate detachments.

3.1.2 Konocti County Water District summary

The Konocti County Water District is one of four water systems serving the City of Clearlake.

According to the State Water Resources Control Board – Division of Drinking Water report of July 11, 2017 the Konocti County Water District had 1,795 active service connections (of which 1,781 are single-family residential dwellings) serving 4,130 people.

A total of 1.8 million gallons of storage is available to the distribution system.

In 2014, the average maximum daily demand was 424.6 gallons per day per connection (average over a 10-year period). Based on the current number of active connections the maximum daily demand for the entire system is 762,000 gallons per day. The surface water treatment plant can produce 864 gallons per minute. Depending upon the number of backwash events the maximum daily plant capacity ranges from 1.15 to 0.86 million gallons per day. Based on 3 backwashes per day the total source capacity is 0.96 MGD.

According to the State Water Resources Control Board (2017) the system must have adequate storage capacity to meet the peak hourly demand (PHD) for four hours. The PHD is 31,800 gallons per hour (GPH). Therefore, the System must have a minimum of 127,200 gallons available over a four hour period. The water treatment plant (666 gpm) and Highlands intertie (300 gpm) can supply 160,000 gallons and 72,000 gallons, respectively, during that period. The storage tanks can supply 1.8 million gallons during the four hour peak period.

The System must also have adequate storage capacity in both the Upper and Lower pressure zones. The Upper Zone/Zone 1, which supplies 66% of the distribution system, consists of 963,000 gallons. The Lower Zone/Zone 2, which supplies 34% of the distribution system, consists of 785,000 gallons. The System has adequate storage capacity in each pressure zone.

For the purposes of evaluating source capacity, it was assumed that the peak demand period coincides with the filters requiring 3 backwashes in a single day. The Highlands intertie can supply up to 300 gpm. Therefore, the System's total source capacity, 300 gpm plus 0.96 MGD, is adequate (180% of the requirement). Another factor to consider, is the intake pumps cavitation as a result of the low lake level and the condition of the transmission main. The district's new intake project and infrastructure has addressed this problem.

3.1.3 Address

Konocti County Water District, 15844 35th Ave Clearlake CA 95422
Mail: konoctiwater@mchsi.com

Phone: (707) 994-2561
Hours: 8:00 am – 04:30 pm Closed for lunch 12:00-1:00pm

Website: www.konocticountywaterdistrict.com

3.1.4 Vision Statement

The District's Vision is as follows:[6] "To Provide High Quality Drinking Water"

3.1.5 Mission Statement

The District's Mission is as follows:

> *Konocti County Water District has been created to provide the following services for the community and its citizens:*
> *1. To provide the best quality water at a reasonable price.*
> *2. To supply safe drinking water in accordance with California and Federal Regulations.*
> *3. To maintain sufficient water pressure in the drinking water system to ensure successful fire protection.*

3.1.6 Board of Directors

The Board of Directors for the Konocti County Water District elected at large as follows: [7]

President:	Raymond Carman
Vice-President:	Jeff Stanley
Directors:	Kirsten Priebe
	Audurey Barber
	Christine Flora

3.1.7 Staff[8]

The Konocti County Water District has adequate staff which meets the State requirements as follows:

As reported by the State Water Resources Control Board, the District employs five personnel that are certified by the Division as water treatment plant operators and are listed in the table below. Section 63765, Title 22 of the California Code of Regulations requires that the person with overall responsibility for a treatment facility with a

[6] Konocti CWD, https://konocticountywaterdistrict.com/, September 30, 2019.
[7] Konocti County Water District, Financial Statements for the years ended June, 30, 2018 and 2017, prepared by Robert W. Johnson, an Accountancy Corporation, 6234 Birdcage Street, Citrus Heights, CA 95610, October 23, 2018, Page 26.
[8] State Water Resources Control Board, Division of Drinking Water, Permit Report, Konocti County Water District, Amy Little, P.E., 7/11/2017, Pages 24-25.

classification of T4 must be certified as a grade T4 water treatment plant operator (e.g., chief operator).

Persons with eight-hour shift responsibility must be certified as grade T3 water treatment plant operators (e.g., shift operators). Mr. Frank Costner is the General Manager and shares primary responsibility for the operation of the entire system with Tom Parks. Also, all shift operators have a minimum of a grade T3 certification. There are operators-in-training that have reduced responsibility and the ability to contact either the shift or chief operator within an hour. Operators-in-training must have duties and ability to shift or chief operator specified in the approved Operations Plan.

General Manager:	Frank Costner T4/D2
Auditor/Secretary:	Paula Gallizioli
Tom Parks	Chief Water Operator T4/D2
Paul Hanners	Water Operator T4/D2
Scott Muchmore	Water Operator T2/D2
Benjamin Illia	Water Operator T3/D2
Ryan Strugnell	Water Operator T3/D3

The water treatment plant is staffed for one shift between 7:30 a.m. to 4:00 p.m. every day of the week. The shift operator's typical duties include the following: measure and record pH (raw, clarifier, and finished water), chemical dose rate, chlorine residuals, ozone residual, ambient air temperature, hours of operation of plant, plant flows, backwash time, operate the sludge press, measure finished water orthophosphate concentrations, and equipment maintenance and inspection. Moreover, major equipment or treatment process failures and corrective actions taken are recorded. Operators also have experience in performing repairs on chemical feeding systems with replacement parts available at the treatment plant.

In addition to the shift operator on Monday through Friday, two operators make repairs and maintain equipment at the water treatment plant and a distribution operator spends time within the distribution system primarily replacing meters and adding new service connections. No operators are on duty after the daily shift, but the day shift operator is on call if they need to be notified by the treatment plant's auto-dialer alarm system.

In addition to the water treatment plant operators, the District also employs personnel that perform distribution system duties, such as repairing water main leaks, flushing, replacing water meters and installing new service connections. Distribution operators perform bacteriological sampling.

The District has a 2008 Master Plan and prioritizes its projects based on age of existing equipment/infrastructure. The district plans to update this plan in about 3 years when its existing projects have been completed.

3.2 Konocti County Water District Water Source and Facilities

The following information on the water source and processing facilities is included to show that the District has a complicated process to complete in order to provide safe drinking water to the residents of the District.

3.2.1 Water Source

The Konocti County Water District's primary water supply is via a 1994 agreement to purchase up to 2,500 acre-feet per year with Yolo County Flood Control and Water Conservation District. This agreement was recently amended in 2017 and has been extended to December 31, 2025. The Agreement has a 10-year automatic renewal clause with a provision should the KCWD or the YCFCWCD desires not to renew. Cost of the water diversion per this agreement is $65.94 per acre foot. This agreement allows the District to store and divert water from Clear Lake for irrigation, domestic, municipal, and other beneficial uses. In the event of a water shortage from Clear Lake, municipal water use around Clear Lake shall have priority of over other uses.

The Konocti County Water District has agreed not to divert water from Clear Lake at any location other than that set forth in the Yolo County Flood Control District agreement. To provide water within additional territory, an amendment to the agreement is required.

There are two emergency water ties with the Highlands Mutual Water Company. In the event an emergency or disaster happens the Konocti Co. Water District shall notify the Yolo County Flood Control as soon as possible and shall receive permission from Yolo County Flood Control in the event the diversion lasts beyond thirty days.

The State Department of Drinking Water describes the Konocti County Water District water source as follows:

The District's water source is Clear Lake. Clear Lake is a natural, fresh water lake created by a volcanic dike extending across the upper Cache Creek Channel. It is a large, shallow body of water (averages 6.5 meters), with approximately 71 miles of shoreline, 68.5 square miles of surface area, and an average depth of 26 feet. Lake level is controlled through a series of gates in a concrete dam. Most of the water rights belong to the Yolo County Flood Control and Water Conservation District, even though the lake is located completely within Lake County.

The District purchases all of its water from the Yolo County Flood Control and Water Conservation District. The District currently has a 10-year agreement with the Yolo County Flood Control and Water Conservation District, entered into on March 2017, to purchase up to 2,500 acre-feet per year of Clear Lake water. This agreement as written may be renewed every 10 years. The District does not own any riparian water rights to Clear Lake.

Clear Lake is markedly eutrophic.[9] Wave motion in the shallow water keeps the lake mixing, except for brief periods in mid- and late-summer. Particulate inflow from the watershed provides nutrients, which support an abundance of phytoplankton. During late summer toxic cyanobacteria blooms typically develop. More importantly, during drought segments (1975-1977 and 1987-1992), UC Davis documented that the cyanobacteria

[9] Eutrophication (from Greek eutrophos, "well-nourished"), or hypertrophication, is when a body of water becomes overly enriched with minerals and nutrients which induce excessive growth of algae. This process may result in oxygen depletion of the water body. One example is an "algal bloom" or great increase of phytoplankton in a water body as a response to increased levels of nutrients. Eutrophication is often induced by the discharge of nitrate or phosphate-containing detergents, fertilizers, or sewage into an aquatic system.

blooms dramatically increase due to *additional nutrients being released within the sediments. This was supported during a recent drought, which peaked in 2014.*

Lake County administers permits to manage aquatic plants in Clear Lake. It's important for the District to communicate the location of its intake in order to facilitate required setbacks for chemical applications.

This source is Konocti CWD's primary water source and is used on a daily basis.[10]

3.2.2 Intake Facilities

The Konocti County Water District has a total of 930 gallons per minute or 1.3 million gallons of raw water per day using both intake water pumps. The surface water treatment plant can produce 864 gallons per minute. Depending upon the number of backwash events the maximum daily plant capacity ranges from 1.15 to 0.86 million gallons per day. Based on 3 backwashes per day the total source capacity is 0.96 MGD.

The intake pumps for the Konocti CWD are described below: *[11]*

The two intake pumps are located in a small pump house building on the shoreline of Clear Lake near the Redbud Park boat ramp just south of Beakban Island (which is within the boundary of the Highlands Water Company service area). The primary screened intake pipe is 8-inch diameter PVC. A second, backup intake line, installed parallel to the 8-inch PVC line, is a 6-inch diameter AC pipe.[12] The invert of each intake is at an elevation of approximately 1,313 feet and lies approximately 15 feet below the surface of the water. Each intake runs approximately 8" is 400'. 6" is 600' feet from the shoreline.

Water is conveyed through the Highlands service area via the two transmission lines (switching to PVC) 6" line is still AC until old highway 53, which are buried beneath Ballpark Avenue and Old Highway 53 to the treatment plant at Pacific and Manzanita Avenues. Both transmission lines travel approximately 4,270 feet to the treatment plant where they junction into a 10 inch steel pipe.

Both intake pumps can be selected to run on a variable frequency drive (VFD) controller and either pump can be used through either intake line. To adjust the speed of the pump, an operator must go to the pump house and adjust the potentiometer on the VFD controller. Raw water flow is controlled by SCADA (Supervisory control and data acquisition) from the plant. Typically, under normal demands only one pump is used at a given time.

The State of California identified deficiencies associated with the intake facility in 2014, but has allowed the District until December 31, 2021 to upgrade this facility or to work with a neighboring water system.[13] The pump building and pumps are being replaced. The Raw

[10] Konocti County Water District, Surface Water Treatment Plant Evaluation, Department of Drinking Water Field Operations Branch, page 1, July 18, 2017.
[11] Konocti County Water District, Surface Water Treatment Plant Evaluation, Department of Drinking Water Field Operations Branch, page 2, July 18, 2017.
[12] The proposed intake line can typically be increased in area by 10%. The combined area of the 6-inch and 8-inch line is 78.6 in^2. Increasing the area by 10% equates to 86.5 in^2, or an internal 10-inch diameter line. Given life expectancy for intake structures is 35 years, the District office would like to expand on the typical capacity growth allowance.
[13] State Water Resources Control Board letter to Frank Costner, General Manager, Konocti CWD, October 5, 2017.

Water Pipeline to the plant is being replaced. The pipeline going into the Lake is being extended into deeper water (1500'). Chemical systems (KMnO4, Potassium Permanganate) are being replaced and a new backup generator placed into service. Raw water pumping will be increased to 1800 gpm with all three pumps (two 700 gpm pumps and one 400 gpm pump) running. Part of the improvement projects will be a new clearwell tank increased from 100,000 to 500,000.

3.2.3 Water Storage

The district has a total of 1.8 million gallons of water storage available to the distribution system with a pressure sustaining valve separating three pressure zones: Upper, Lower and the Bermuda Triangle Zone supplied by a pressure reducing valve supplied by the Upper Zone.

Konocti County Water District Intake Pumps[14]

Number of Pumps	Capacity	Normal Operational Mode (Lead, lag, standby, etc.)	Controlled By
1	650 gpm (60 horse power)	Manually controlled based on flow – one pump used at a time (They could run both, but they never have.)	Surge tank level on at 11.8 ft., off at 12.8 ft. (adjustable)
1	400 gpm (40 horse power)	Manually controlled based on flow – one pump used at a time (They could run both, but they never have.)	Surge tank level on at 11.8 ft., off at 12.8 ft.

3.2.4 Drinking Water Pre-Treatment

The following table shows the Pre-Treatment chemicals used: [15]

Konocti County Water District Pre-Treatment Chemicals Used

Chemical	Injection Point	Frequency of Use	Dose Rate Range
Potassium Permanganate*	10 feet following intake pumps	Continuous (Intake Circuit)	0.1-9.3 mg/L
Ozone** (installed 2006)	At the base of ozone contactor	Continuous	0.9-3.5 mg/L (0.2 mg/L residual from contactor)
Aluminum Chloride Hydroxide (ACH)	After the ozone contactor, into a 12 inch ductile iron pipe at the in-line mechanical flash mixer (1994).	Continuous	14.2 – 60 mg/L
Liquid Chlorine*** (installed in 1994)	Several inches before inline mixer.	Needed in 2014	Not used in last 12 months
ProPAC 9890 (Coagulant Aid)	Several inches before inline mixer.	Continuous	Not reported
Muriatic Acid (HCl)	Several inches before inline mixer.	As Needed in late summer	0.5 – 16.4 mg/L Target pH is 8

[14] Konocti County Water District, Surface Water Treatment Plant Evaluation, Department of Drinking Water Field Operations Branch, page 2, July 18, 2017.
[15] Konocti County Water District, Surface Water Treatment Plant Evaluation, Department of Drinking Water Field Operations Branch, page 2, July 18, 2017.

* In 2003, potassium permanganate was added as a pre-oxidant – Carus dry chemical (97% active strength) is diluted to liquid form (2% solution strength). A 2.5 GPD diaphragm pump is used to deliver the solution to the raw water transmission main. There are back up chemical feed pumps at the water treatment plant.

** The ozone contactor is 2,250 gallons in volume. Pacific Ozone is the manufacturer of the generator. The diffuser is a plate under low pressure; ozone is drawn in via venturri nozzle.

*** A Microclor (Model MC60) liquid sodium hypochlorite generator with a titanium electrode was installed in 2013. A 19.8 GPH diaphragm pump applies the 0.8% solution at the mixer from a 2,500 gallon bulk tank. The District installed a new 60lb/day generator in 2013. In August 2020 a high capacity chlorine pump at 52.8 GPH was installed.

3.2.5 Flocculation

Flocculation is "a process of contact and adhesion whereby the particles of a dispersion form larger-size clusters". Flocculation is synonymous with agglomeration and coagulation / coalescence. The following table shows the flocculation process used: [16]

Konocti County Water District Flocculation

Type of Flocculator	Basin Size/Dimensions	Speed (rpm)
Two solids-contact upflow clarifiers each consisting of round vertical outside walls with a rapid mix tank and a recycle system nested in the center surrounded by a frustoconical skirt. Flocculation occurs in the center cone section of the clarifier with the aid of a variable speed turbine impeller and helimixer. The rotation of the helimixer draws the slurry from near the tank bottom up through the draft tube up to five times the design flow rate and combines it with the coagulant influent water. The combined flow passes downward in the flocculation hood with the major portion of the water continuously recirculated. The balance flows under the flocculation hood into the sludge blanket clarification zone.	Each basin is 40 feet in diameter with 14 feet side height and an overflow height of 13.5 feet. Each basin is designed to treat 920 gpm at a rise surface loading rate of 0.75 gpm/square foot (1,080 gpd/square foot). The effective surface area of each clarifier is 1,228 square foot.	C1: 1 rotation/ 22.2 minutes C2: 1 rotation/ 22.8 minutes

[16] Konocti County Water District, Surface Water Treatment Plant Evaluation, Department of Drinking Water Field Operations Branch, page 3, July 18, 2017.

Flocculators are used at all times. The 2014 drought event resulted in an aerotype cyanobacteria bloom which would float in the clarifiers. This impacted filter operations tremendously and the operators devised two approaches to minimize accumulation of floc at the surface:

(1) installed wood barriers, preventing algae from flowing through the holes into the weir, which had to be removed due to rotting state and

(2) a surface sludge sucker was installed on the perimeter of the clarifiers.

3.2.6 Sedimentation/Clarification[17]

The purpose of sedimentation is to enhance the filtration process by removing particulates. Sedimentation is the process by which suspended particles are removed from the water by means of gravity or separation. The following section explains the sedimentation and clarification process for the Konocti CWD.

Konocti County Water District Sedimentation and Clarification

Number of Basins	Type of Basin	Basin Dimensions
Two solids-contact upflow clarifiers	Solids-contact upflow clarifier. (See previous description in the "Flocculation Section".) Settled water is drawn off by six evenly spaced radial-overflow weir troughs. These troughs have a series of small 1.25 inch diameter holes that collect the clarified water.	(See previous description in the "Flocculation Section".)

Clarified water is discharged to a surge tank (8 foot diameter, 14 feet high, welded steel with no roof cover).

Sludge is discharged daily as follows:

> *Settled solids from the bottom of the clarifier are continuously raked to the center sludge cone. Daily, a series of pumps (clarifier to tank, sludge decant to press, and a diatomaceous earth precoat press pump) are manually operated to pump the sludge/slurry into the top of the thickener (15,000 gallon holding tank) before going through the sludge press. The rake speed in each clarifier can be manually adjusted from ten revolutions per hour down to one revolution per six hours.*
>
> *Due to the expense of discharging clarifier sludge to the sanitary sewer, in 1997, the District installed the filter press and thickener for dewatering sludge. The press produces filter cakes acceptable to the Lake County landfill. The left over water is recycled into the headworks of the plant.*

[17] Konocti County Water District, Surface Water Treatment Plant Evaluation, Department of Drinking Water Field Operations Branch, pages 3-4, July 18, 2017.

3.2.7 Surge Tank[18]

The surge tank controls raw water pump operations and the filter pump operations. There is one surge tank, which is 14 feet high and 8 feet in diameter. The tank holds 5,261 gallons. The surge tank receives water from the clarifiers and delivers it to the filter pumps.

3.2.8 Filtration[19]

The basic filtration process is shown in the following three tables:

Konocti County Water District Filter Pumps

Number of Pumps	Capacity	Normal Operational Mode	Controlled By
2	30 hp (650 gpm) 40 hp (700 gpm)	One pump used at a time (They could run both, but they never have.)	On/off is controlled by the 92,000 gallon clearwell level; A VFD* controller increases the pump speed if the level in the surge tank is greater than 11 feet and reduces it if the level is less than 11 feet

*VFD is a variable frequency drive, a type of adjustable-speed drive used in electro-mechanical drive systems to control AC motor speed and torque by varying motor input frequency and voltage.

Konocti County Water District Filter-Aid Chemicals

Chemical	Injection Point	Frequency of Use	Dose Range
ProPAC 9890	Approximately 12 feet prior to the filters	Emergency Filter effluent > 0.3 NTU*	0.1-5.6 mg/L

*NTU stands for Nephelometric Turbidity Unit

Konocti County Water District Filter Vessels

Number of Filters	Dimensions	Number of Cells	Surface Area
3	16 feet long (diameter 6 feet)	4	96 square feet (288sq/feet total) (24 square feet/cell)

[18] Konocti County Water District, Surface Water Treatment Plant Evaluation, Department of Drinking Water Field Operations Branch, page 5, July 18, 2017.
[19] Konocti County Water District, Surface Water Treatment Plant Evaluation, Department of Drinking Water Field Operations Branch, pages 5-6, July 18, 2017.

3.2.9 Backwash Volume Evaluation[20]

During a filter backwash discussion, it was reported that whether or not a filter is backwashed is dependent on the volume available in the concrete backwash basin. At a minimum, there should be room to backwash each filter three times in a day. During normal operations, the filters are backwashed once a day. During high turbidity events filters could be backwashed twice a day. Extreme turbidity events will require the backwash return water flows to be increased.

With three backwash events on three filters, four cells each and 8 minutes per cell to backwash and 5 minutes to filter-to-waste each filter, which amounts to 333 minutes of the plant offline. The backwash rate is typically 12 gpm/ft2 and a filter typically operates at 1.5 gpm/ft2. Backwashing for 288 minutes at 292 gpm generates a volume of 84,096 gallons. Filter-to-waste operations for 45 minutes at 144 gpm generates a volume of 6,480 gallons.

The concrete settling basin should have a minimum volume of 90,500 gallons. Assuming the current 127,000 gallon settling basin is filled 20% with sludge, there is likely adequate space for backwashing three times a day but not four. Also, this does not provide time for the System to service the basin, e.g. removing the sludge, which is likely necessary during peak demand periods nor does it account for the need to backwash the carbon filters. Additionally, the sludge ponds are in poor condition and should be upgraded and/or replaced.

Backwashing is performed when the GAC (granular activated carbon) filter effluent reaches 0.08 NTU (grab samples are measured for turbidity once per day) or when the pressure differential reaches 5 psi. This occurs about once every two weeks (summer) or once every month (winter). There needs to be room to backwash these filters during peak demand periods. Backwashing GAC usually takes about 15,000- 20,000 gallons each.

Operators must manually turn butterfly valves to coordinate the backwash process. Each filter is backwashed individually and the multimedia pressure filters have a filter-loading rate of 1.56-gpm/square foot. Backwash water is discharged to a 127,000 gallon settling basin.

[20] Konocti County Water District, Surface Water Treatment Plant Evaluation, Department of Drinking Water Field Operations Branch, pages 9-10, July 18, 2017.

3.2.10 Emergency Disinfection/Backup Disinfection[21]

In the event the chlorine generation systems fails, there are two means to apply a disinfectant at the water treatment plant. There are emergency procedures available to fill the bulk tank with(the district blends 12.5% cl2 with water to equal .8%) blended 12.5% to equal 0.8% solution strength of NaOCl (Sodium hypochlorite). The second system involves a separate chemical feed application. There is a 55-gallon crock with the ability to prepare a disinfectant system with an injection point upstream of the clearwell and post-GAC (Granular Activated Carbon) filtration.

During an August 2017 source water quality event, the System was delivering disinfectant directly to the clearwell to meet minimum disinfection requirements.

In its review, the State of California stated that the backwash facilities may not have adequate capacity during peak demand periods. The District was originally requested to submit an evaluation of the backwash capacity by December 31, 2019.[22] This date has been extended until July 1, 2023 since the State and the district are still evaluating the backwash facilities.

3.2.11 Chemical Feed Systems[23]

The Chemical Feed Pumps are shown on the following table.

[21] Konocti County Water District, Surface Water Treatment Plant Evaluation, Department of Drinking Water Field Operations Branch, page 13, July 18, 2017.
[22] State Water Resources Control Board letter to Frank Costner, General Manager, Konocti CWD, October 5, 2017.
[23] Konocti County Water District, Surface Water Treatment Plant Evaluation, Department of Drinking Water Field Operations Branch, page 14, July 18, 2017.

Konocti County Water District Chemical Feed Pumps*

Chemical	Feed Pump Type	Calibration Cylinders Frequency	Number	Capacity	Dose Rate Control	Storage
Potassium Perman-ganate Carus/NSF	LMI** pump type	Daily	2	2.5 GPH (Primary) 4.0 GPH (Backup)	Manually	2% solution of KMnO4 in 100 gallon located at the intake shed
Ozone	Baldor centrifugal pump	None	2	3 horse power (77 gpm)	Manually	On-site generation using Pacific Ozone (2-22 pounds/day)2 20lb/day units
Aluminum Chloride Hydroxide (ACH) (NTU Tech/NSF)	LMI pump B911-393SI	Daily	1	2.5 GPD	Manually	Plastic solution tank located in the chemical feed room
Backwash ACH***	LMI pump	Daily	1	2.5 GPH	Manually	Chemical Room
Hydro-chloric Acid (Sierra Chem/NSF) (31.5%;SG =1.16)	LMI pump	Daily	1	14.4 gpd	Manually	~ 50 gallon plastic storage crock contained in mobile plastic shelter
ProPAC 9890 (NTU Tech/NSF) (50%;SG= 1.34)	LMI pump (Acts as coagulant and filter aid)	Daily	2	CO: 5 gpd FA:24 gpd	Manually	35 gallon plastic storage crock (located in filter room and chemical room)
Liquid Chlorine (Sodium Hypo-chlorite 0.8%)	Alldos Piston Diaphragm KM – 253 – 67	Daily	1	20.6 gph	flow and residual paced by SCADA	2500 gallon
Orthophos-phate (Carus AquaMag C10)	LMI pump A971-353SI	Daily	1	0.42 gph	Manually	33 gallon barrels as delivered from manufacturer located in the chemical feed room

*All chemical feed pumps are equipped with calibration cylinders and all dosages are confirmed daily.
**LMI is a brand of pump.
*** ACH Aluminum Chloride Hydroxide

3.2.12 Turbidity Monitoring[24]

Turbidity monitoring is important to the customers of the Konocti County Water District because it is something they can see directly in their drinking water. Turbidity sampling and testing is shown in the following tables:

Konocti County Water District Raw and Recycled Water Turbidity[25]

	Raw Water Turbidity*	Recycled Water Turbidity
Sample Tap Location:	Raw water influent line	Point of injection into raw water line
Frequency of Sampling:	Continuous	Continuous
Type of Analyzer:	Surface Scatter 6 ratio turbidimeter	Surface Scatter 6 ratio turbidimeter
Type of Recorder:	SCADA	SCADA
Auto-dialer Alarm:	Yes	Yes
Plant Shut-down:	No	No
Alarm Set Points:	15-25 NTU**	10 NTU**
Turbidity Range (last 12 Months):	3.4 – 281 NTU**	Maximum 2.7 NTU**

* One raw water grab sample is taken per day and analyzed using a bench top Hach Company 2100 A.
**NTU stands for Nephelometric Turbidity Unit

Konocti County Water District Settled and Filtered Water Turbidity[26]

	Settled Water Turbidity	Filtered Water Turbidity
Sample Tap Location:	Combined Clarifier Effluent	After each filter and combined filter effluent
Frequency of Sampling:	Continuous 2 grabs/day	Continuous – combined Grab – individual filters
Type of Analyzer:	Surface Scatter 6 ratio turbidimeter	Hach Company 1720D Hach Company 1720A
Type of Recorder:	SCADA	Strip chart SCADA
Auto-dialer Alarm:	Yes	The *individual* filter cells turbidimeters do not have alarms. The combined filter turbidimeter does. The individual filters do have alarms
Plant Shut-down:	No	No
Alarm Set Points:	1.5 NTU (this may change seasonally)	No alarms for the individual filters. For the combined effluent, the alarm set point is 0.15 NTU.
Turbidity Range (last 12 Months):	0.4 – 16.9 NTU	0.04 – 0.94 NTU

[24] Konocti County Water District, Surface Water Treatment Plant Evaluation, Department of Drinking Water Field Operations Branch, page 16, July 18, 2017.
[25] Konocti County Water District, Surface Water Treatment Plant Evaluation, Department of Drinking Water Field Operations Branch, page 16, July 18, 2017.
[26] Konocti County Water District, Surface Water Treatment Plant Evaluation, Department of Drinking Water Field Operations Branch, page 17, July 18, 2017.

Note: One grab sample per day is taken from each clarifier and analyzed using a bench top Hach Company 2100. Grab samples are taken from each filter cell after backwash and measured with a bench top Hach Company 2100. Of most interest to consumers will be the finished water sampling as shown in the following table:

Konocti County Water District Finished Water Turbidity[27]

Sample Tap Location:	After clearwell
Frequency of Sampling:	Continuous
Type of Analyzer:	Hach Company 1720 D
Type of Recorder:	SCADA
Auto-dialer Alarm:	Yes
Plant Shut-down:	Yes
Alarm Set Points:	0.15 NTU (NTU stands for Nephelometric Turbidity Unit)
Turbidity Range (last 12 Months):	*No records available*

During the past year, approximately 95-100% of the reported finished turbidity values met the 0.1 NTU CAP (Nephelometric Turbidity Unit Cross Agency Priority) goal. This is an improvement from previous inspection findings for which the District would at times only meet the CAP goal 58% of the time in a month. The District made efforts to meet the NTU CAP goal following January 2005. In January 2005, only 46% of the reported turbidity values met the 0.1 NTU goal. Winter continues to be the most challenging season for the District to meet the CAP turbidity goal.

Konocti County Water District Turbidity History[28]

MONTH	Percentage Turbidity exceeds CAP* goal:**	Maximum Turbidity, NTU***
Dec 2016	1/31 or 3.2%	0.28
Jan 2017	5/31 or 16.2%	0.29
Feb 2017	0%	0.11
Mar 2017	0%	0.26
Apr 2017	3.3%	0.26
May 2017	0%	0.24
Jun 2017	33.3%	0.45

*CAP is Cross Agency Priority.
**This is reviewing the 95% of the CFE (combined filter effluent) for each day of the month.
*** NTU stands for Nephelometric Turbidity Unit.

[27] Konocti County Water District, Surface Water Treatment Plant Evaluation, Department of Drinking Water Field Operations Branch, page 17, July 18, 2017.
[28] Konocti County Water District, Surface Water Treatment Plant Evaluation, Department of Drinking Water Field Operations Branch, page 18, July 18, 2017.

3.2.13 Projects[29]

The following four projects were described in the Konocti County Water District Audit report:

In February of 2017, the District was awarded a $652,484 technical assistance and planning grant from the California Water Boards. The grant was used to complete the engineering and environmental review for the Water Treatment System Improvement Project. The Project included planning for a new intake line, raw water pump station, and raw water main from the pump house to the treatment plant, complete the 8x30 filter and pumping system and a new clear-well and high-lift pump station. The District has applied for the construction/loan grant financing part of the project. The loan/grant will consist of a $5 million dollar grant and $3.7 million dollar loan. The District received an 8.4 million grant for this project and is going out to bid. The bid opening will be on September 3, 2020.

The District is working with Lower Lake County Water District and Highlands Mutual Water Company to construct emergency inter-ties between the three service providers. Lower Lake County Water District is the lead agency for the project. Lower Lake has applied for and received a $246,693 technical assistance and outreach grant to do the environmental and engineering work. Konocti County Water District owns the property where the intertie between Lower Lake and Konocti will be constructed. Highlands Mutual Water Company owns the property where the intertie between Highlands Mutual Water Company and Konocti County Water District will be constructed pending grant funding including the following:

Replaced 6"AC pipe on 18th Ave with 8" for the Cities paving project installed 4 new hydrants. Total cost $450,000

New vacuum excavator in 2020 for $73,000

Main line extension

The District is working with RCAC[30] on a rate study. RCAC has received a grant to fund the rate study. The District needs to raise capital to pay for the project, fund increases in operational expenses, and to increase their reserves. The last rate increase including a 5-year rate ordinance was completed in 2019.[31]

The District has completed the plant tanks and piping painting project. The treatment plant tanks, filters, steel piping and catwalks were painted for $102,150.

[29] Konocti County Water District, Financial Statements for the years ended June, 30, 2018 and 2017, prepared by Robert W. Johnson, an Accountancy Corporation, 6234 Birdcage Street, Citrus Heights, CA 95610, October 23, 2018, Page 24.
[30] Founded in 1978, Rural Community Assistance Corporation (RCAC) is a 501(c) (3) nonprofit organization that provides training, technical and financial resources and advocacy so rural communities can achieve their goals and visions. RCAC's work includes environmental infrastructure (water, wastewater and solid waste facilities); affordable housing development; economic and leadership development; and community development finance.
[31] The Rate Study has been completed and the new rates are shown in Section 3.3 Fee Schedule.

3.2.14 Fire Flows

Fire hydrants are owned and maintained by the Konocti County Water District. Hydrants are most commonly used for fire suppression by firefighters and temporary use by businesses, and organizations. Hydrant flow tests are conducted to determine water availability in planning for firefighting activities, fire sprinkler systems or domestic water demand. The tests are also useful in determining the general condition of the water distribution system by detecting closed valves or wall deposits. A well-maintained water system enables firefighters to extinguish flames and prevent large- scale damage or loss of life.

Fire (Hydrant) Flow standards and testing procedures are included in National Fire Protection Association (NFPA) Bulletin NFPA 291. This document provides guidance on fire flow tests and marking of hydrants in order to determine and indicate the relative available fire service water supply from hydrants and to identify possible deficiencies which could be corrected to ensure adequate fire flows as needed.

In the past, Fire Agencies performed fire flow testing. This is no longer the practice. Fire Agencies no longer perform fire flow testing due to liability reasons. This service is provided by water service providers.

Determinations regarding the adequacy of fire flows are much more than the gallons per minute a fire hydrant yields. In fact, fire flow determinations are based on complex formulas as included in NFPA section 291. The adequacy of the fire flow is based on many factors including sprinklers within a development, the area the fire hydrant is located, the type of hydrant, land uses, water pressure and water pressure duration and the water flow itself. In the case of the Konocti County Water District and other water providers within the City of Clearlake the determination of the adequacy of fire flows is ultimately made by the Lake County Fire Protection District.

The Konocti County Water District at this time maintains 97 fire hydrants as shown in Appendix C. Appendix C also includes a map showing the locations of the fire hydrants. The majority of these hydrants are Dry Barrel Hydrants. There are 17 Warfhead Hydrants.

The District's water distribution system identifies the size of the water lines within the District. The majority of the water lines are 6" and above. However, there are a few 4 and 2 inch lines. The backbone of the water system consists of 8 and 10 inch lines (see Appendix C).

KCWD is a pressure system meaning water pressures depend upon gravity. There are 15 homes near the source tanks that have low water pressures meaning the fire flow in this area is lower.

3.3 The Golden State Water Company - Clearlake

American States Water Company (AWR) is the parent of Golden State Water Company and American States Utility Services, Inc. Through its utility subsidiary, Golden State Water Company, AWR provides water service to residents across California located within more than 80 communities throughout 10 counties in Northern, Coastal and Southern California (approximately 255,000 customers).

The Golden State Water Company is a public utility that serves the western portion of the City (between Sycamore Street to the east and the southeastern shore of Clear Lake to the west) as well as a non-contiguous, seven-block segment of the central portion of the City. Water from this particular utility is sourced from the surface water of Clear Lake, which is treated at Golden State Water Company's Sonoma Water Treatment Plant. An intake is located along the lake shore, and water is pumped up to the treatment plant located within City boundaries. Golden State Water Company services a population of 6,189 people (assuming 2.91 pph) and provides a total of 2,127 service connections to residential and nonresidential customers.

3.3.1 Golden State Water Company Contact Information

The Golden State Water Company is located at 14595 Olympic Drive, Clearlake, California 95422. Phone: 707.994.9118. The Golden State Water Company has a web site: www.gswater.com/clearlake

3.3.2 Golden State Water Company Improvements

Improvements to this system are managed in an ongoing capital improvement plan, mainly focused on replacing old water mains in the Clearlake area. On an annual basis, 2 to 3 water mains are to be changed, based on their age and condition. Recently completed projects include the Lower Lake Pipeline, consisting of 2,000 linear feet of pipeline and three fire hydrants and 34 water services; the Crandall and Hill Pipeline consisting of 1,000 linear feet of pipeline, two fire hydrants, and 39 additional services; and a new generator at the Lakeshore Water Plant.

Current and upcoming projects include installation of six Variable Frequency Drives to optimize the water treatment process and the Napa street pipeline, which includes 800 linear feet of pipeline, one fire hydrant and nine additional services. A variety of miscellaneous improvements to pumping stations are also identified in the capital improvement plan. No deficiencies in water service have been identified.

3.3.3 Golden State Water Company Establishment of Rates

As a regulated utility, Golden State Water's rates are determined by the California Public Utilities Commission (CPUC) through a General Rate Case (GRC) with the purpose of ensuring customers receive a fair rate for safe, reliable, quality water service.

Every three years, Golden State Water is required to file a GRC with the state to propose a rate structure necessary to meet operating expenses and infrastructure improvements. The Golden State Water Company (Golden State Water) filed its General Rate Case (GRC) application on July 15, 2020, proposing local infrastructure investments and water

rates for the years 2022, 2023 and 2024. The GRC process is thorough and takes approximately 18 months to ensure rates are fair and provide reliable, quality water service. Therefore, customers are encouraged to participate in the ratemaking proceedings, and their interests are protected throughout the process by the state's Public Advocates Office. The rate adjustments and infrastructure investments proposed for 2022-24 are pending approval through the GRC process. Any adjustment to current rates would not be implemented until Jan. 1, 2022 at the earliest.

The Golden State Water Company is required to submit the General Rate Case application in accordance with a schedule set by the California Public Utilities Commission (CPUC). The Company recognizes the current challenges in California presented by the COVID-19 pandemic.

As with other water utilities, the Golden State Water Company is committed to responsibly maintain local water infrastructure to ensure continued safe and reliable premium water service within its service area. And as with other water service providers throughout California in its proposal for 2022-24 GRC filing, infrastructure investments are a primary driver of rate adjustments; however, the ever-increasing cost of doing business in California is also reflected in rates. Higher taxes and regulatory fees, as well as legislative and voter-approved initiatives, all contribute to increased operational expenses.

According to the Golden State Water's 2020 Consumer Confidence Report water quality for 2019 in Clearlake continues to meet all federal and state water quality standards to protect public health and safety.

Source capacity of the GSWC was calculated by the SWRCB to be sufficient to supply the ten-year Max Day Demand. An intertie is in place with Highlands MWC as a back-up source of up to 500 gpm (single pump).

The overall surface water treatment capacity is 1.70 MGD. The Company has adequate source capacity. Based on a water purchase contract (issued August 4, 1992) between the Company and Yolo County Flood Control and Water Conservation District, the Company is restricted to 37.13 MG (prescriptive[32]) plus 260.68 MG (additional) for a total of 297.81 MG. For the past ten years, the Company produced between 166.7 and 199.5 MG. The Company has adequate water rights.

Recital C of the water purchase agreement states, "In the event that there is a shortage of water available from Clear Lake, municipal water use around Clear Lake shall have priority over other uses." Condition 10 states, "This Agreement shall remain in effect until January 1, 2022… After January 1, 2022, this Agreement shall automatically be renewed for a successive ten year term or terms,..."

There have been changes in the water system since the 2016 inspection, as follows:

2016: Clearwell replacement (exceeds 100,000 gallons; needs permit)

2017: GAC (granular activated carbon) filter media replaced; Country Club pipeline replacement

[32] Typically prescriptive water rights are acquired through the courts; however, this is included in the Yolo contract.

2018: installation of generators at intake facility and surface water treatment plant; Kern/Crandall and Hill Area/Mesa Dr. to Lakeshore/Lower Lakeshore pipeline projects

2019: Double wall containment in place for potassium permanganate chemical feed system near the intake. Intake structure improvements made

3.3.4 2020 GSWC State Water Resources Control Board (SWRCB) sanitary survey findings

The SWRCB, Division of Drinking Water physically evaluated the water treatment and distribution system facilities for the GSWC, Clearlake Public Water System on December 12, 2019 and January 8, 2020. The purpose of the survey is to protect public health by documenting the current state of the water system, analyzing any sanitary hazards, and recommending water system improvements. The overall findings were the facilities were operated by knowledgeable staff and in good condition. The SWRCB's instrumentation expectations (e.g. water quality verifications) were exceeded at the surface water treatment plant.

To continue with compliance with the California Health and Safety Code and the California Code of Regulations, the SWRCB recommended the following:

1. Support the reduction of organics at the Water Treatment Plant given the likely influx of nutrients and organics to Clear Lake associated with the 2018 Mendocino Complex fire.

2. Consider activating an ozone facility although not required at this time the SWRCB recommended a system to manage cyanotoxins (microsystins and anatoxin-a) currently present in Clear Lake at varying concentrations at different times throughout the year.

3. Based on the SWRCB review of the California Code of Regulations, the surface water treatment facility is classified as a T3 facility and the distribution system is classified as a D2 system.[33]

3.3.5 Consumer Confidence Report:

The latest Consumer Confidence Report was prepared for Water Quality for 2020. The Golden State Water Company conducted an assessment in 2021 of the drinking water source serving the customers of its Clearlake System. Clear Lake is considered most vulnerable to the following activities not associated with detected contaminants: Lake recreation, sanitary sewer overflows, septic system areas, erosion from agricultural and urban areas, timber harvesting, runoff from roads, construction, gravel mining, wildfires, controlled burns, off highway vehicle (OHV) use, dredging and filling, and fertilizer use.

[33] State Water Resources Control Board, Division of Drinking Water 2019-2020 Sanitary Survey Findings for the Golden State Water Company, Clearlake, CA, March 2, 2020.

Clearlake Water System – Source Water Quality						
Primary Standards - Health Based (units)	**Primary MCL**	**PHG (MCLG)**	**Range of Detection**	**Average Level**	**Most Recent Sampling Date**	**Typical Source of Constituent**
Turbidity						
Highest single measurement of treated surface water:	TT = 1.0	n/a	n/a	0.3	2020	Soil Runoff
Lowest percent of all monthly readings of less than 0.3 NTU	TT = 95	n/a	n/a	98.7%	2020	Soil runoff
Inorganic Constituents						
Fluoride (mg/L)	2.0	1	n/a	0.13	2020	Erosion of natural deposits; water additive that promotes strong teeth; discharge from fertilizer and aluminum factories
Secondary Standards - Aesthetic (units)	**Secondary MCL**	**PHG (MCLG)**	**Range of Detection**	**Average Level**	**Most Recent Sampling Date**	**Typical Source of Constituent**
Chloride (mg/L)	500	n/a	n/a	7.1	2020	Runoff/leaching from natural deposits; seawater influence
Odor — Threshold (units)	3	n/a	n/a	2	2020	Naturally-occurring organic materials
Specific Conductance (µS/cm)	1600	n/a	n/a	310	2020	Substances that form ions when in water; seawater influence
Sulfate (mg/L)	500	n/a	n/a	6.9	2020	Runoff/leaching from natural deposits; industrial wastes
Total Dissolved Solids (mg/L)	1000	n/a	n/a	160	2020	Runoff/leaching from natural deposits
Other Parameters (units)	**Notification Level**	**PHG (MCLG)**	**Range of Detection**	**Average Level**	**Most Recent Sampling Date**	**Typical Source of Constituent**
Alkalinity (mg/L)	n/a	n/a	140 - 170	170	2020	
Calcium (mg/L)	n/a	n/a	n/a	26	2020	
Hardness [as CaCO3] (mg/L)	n/a	n/a	n/a	150	2020	The sum of polyvalent cations present in the water, generally magnesium and calcium; the cations are usually naturally occurring
Hardness [as CaCO3] (grains/gal)	n/a	n/a	n/a	7.6	2020	
Magnesium (mg/L)	n/a	n/a	n/a	17	2020	
pH (pH units)	n/a	n/a	7.7-8.5	8.1	2020	
Potassium (mg/L)	n/a	n/a	n/a	1.8	2020	
Sodium (mg/L)	n/a	n/a	n/a	12	2020	Refers to the salt present in the water and is generally naturally occurring

ND = Not Detected
CaCO3 = Calcium Carbonate
This table includes data only on constituents that were detected.

Clearlake Water System – Distribution Water Quality						
Disinfection Byproducts and Disinfectant Residuals (units)	**Primary MCL (MRDL)**	**PHG (MRDLG)**	**Range of Detection**	**Average Level**	**Most Recent Sampling Date**	**Typical Source of Constituent**
Chlorine [as Cl2] (mg/L)	(4.0)	(4)	0.2 - 1.5	0.7	2020	Drinking water disinfectant added for treatment
HAA5 [Sum of 5 Haloacetic Acids] (µg/L)	60	n/a	16-36	34	2020	Byproduct of drinking water disinfection
TTHMs [Total Trihalomethanes] (µg/L)	80	n/a	4.2-29	23	2020	Byproduct of drinking water disinfection
Inorganic Constituents (units)	**Action Level**	**PHG (MCLG)**	**Sample Data**	**90th % Level**	**Most Recent Sampling Date**	**Typical Source of Constituent**
Copper (mg/L)	1.3	0.3	None of the 20 samples collected exceeded the action level.	0.32	2020	Internal corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
Lead sampling in schools and residential plumbing	**Action Level**	**PHG**	**Sample Data**	**90th % Level**	**Most Recent Sampling Date**	**Typical Source**	**Number of Schools Tested (a)**
None of the 20 samples Lead (µg/L)	15	0.2	collected exceeded the action level.	N/D	2020	Internal corrosion of household water plumbing systems; discharges from 1 industrial manufacturers; erosion of natural deposits.	1

(a) The State of California made lead sampling in schools mandatory with a compliance window through 2019. ND = Not Detected
This table includes data only on constituents that were detected.

3.4 Highlands Mutual Water Company

The Highlands Mutual Water Company is a private water provider formed on March 16, 1925 under California Law for the purpose of owning and operating a water supply distribution and fire protection system serving portions of the City of Clearlake. The Company operates as a mutual water company, that is, the shareholders[34] of the company are the water users and the owners of real estate within the Company's service area that delivers water to the central portion of the City (between the southeastern shore of Clear Lake to the west and Highway 53 to the east).

The treatment plant facility is located at 14774 Hillcrest Avenue in the City of Clearlake. The treatment plant can produce 2,500,000 treated gallons per day. This private utility serves a population of 6,072 people with water via a total of 2,568 service connections to residential and non-residential customers. Raw water is drawn from Clear Lake and pumped by one of two vertical turbine pumps. Water flows through ozone contact

[34] Shares are issued at the rate of one per parcel, and no one may buy more shares than the number of parcels he or she owns and shares may not be sold separately from the right to water evidenced by the share of stock in the water company. Financial Statements and Independent Audit Report for the year ended Dec 31, 2021 Robert W. Johnson.

chambers and water turbidity clarifiers. Water is then delivered to a duel media filter system. Water is then disinfected and delivered to a storage facility consisting of six storage tanks having a total storage capacity of 4,900,000 gallons[35].

3.4.1 Highlands Water Company Contact information:

The Highlands Mutual Water Company is located at 14580 Lakeshore Drive, Clearlake California. Phone # is (707) 994-2393. Website is www.highlandswater.com

The Board of Directors is compensated for attendance at regular, special and emergency meetings. The Board of Directors is elected at each annual meeting of the shareholders. The following members sit on the Board of Directors:

Board President:	John Eckhardt
Vice-President	Delmar Fellers
Secretary	Mark Coats
Treasurer	Kathryn Fitts
Member	Robert Kraft

Regular meetings of the Board of Directors are held at 6:00 PM at 14580 Lakeshore Drive on the last Wednesday of each Month.

3.4.2 Highlands Water Company Bylaws and Policies

The most recent bylaws for the Highlands Mutual Water Company were amended in 2015. The Bylaws consist of protocols for Meetings, Directors, Officers, Amendments to Bylaws, Certificates of Shares, a description of the territory served, Assessments, System Operation and certification of adoption.

The Mutual Water Company has adopted Rates, Fees, Transfer and Construction policies and specifications which are available at the Mutual Water Company's website www.highlandswater.com

3.4.3 Highlands Mutual Water Company Water System Inspection Report – March 2010

A full permit was issued to Highlands Mutual Water Company (Company) on April 5, 1994. An amendment to the permit was made in September 1995 to include pH adjustment using zinc orthophosphate and coagulant using polyaluminum hydroxychloride. The last amendment permit was issued in September 2007 for the addition of potassium permanganate, liquid sodium hypochlorite, new GAC filters and Laguna Pump Station.

In 2009 the filter media and support gravel were replaced for the primary filters and a screw press for dewatering sludge was commissioned in 2008. Recent improvements to the water system is a water main replacement project on Emory Avenue in Clearlake, were completed in June 2020.

[35] Highlands Mutual Water Company, Consumer Confidence Report, 2019.

The Company uses Clear Lake as its only year-round source. Two intake pumps are centrifugal horizontal split-case pumps used to pump water to the treatment plant. The pump used during the winter is a 125 HP and has a capacity of 1,600 gallons per minute (gpm). The pump used during the summer is 200 HP and has a capacity of 2,000 gpm. During the Department inspection, the 200 HP pump was offline for repairs. The 125 HP pump was off-line the day before which meant the Company could not treat water for a day and had to relied on system storage. A new motor was installed for the 125 HP pump.

Clear Lake is a large (approximately 68 square miles), shallow, eutrophic lake in Northern California at an elevation of 1,325 feet. The water system has prescriptive water rights for 78.89 acre-feet (25.7 million gallons) per year. In addition, Yolo County Flood Control and Water Conservation District will provide up to 3,000 acre-feet (978 million gallons) per year to the Company. Due to its eutrophic state, there is a large amount of organic material in the water source that must be removed in the treatment process. Large algae blooms occur during the summer (May-October) causing significant taste, odor, and color problems, interfering with coagulation and clogging the filters.

The following stages consist of water treatment, pumping, storage and control systems beginning with the intake of water from Clear Lake and ends with customer delivery:

1. Lake Water Pumps:
Raw water is drawn from Clear Lake and pumped by one of two Large Vertical Turbine Pumps located on Beakbane Island to the Hillcrest Avenue Treatment Plant for processing.

2. Ozone Gas Treatment:
The primary use of Ozone Gas is to help control lake water taste and odor that occur during the warm summer months. Ozone gas is considered a more effective and a faster disinfectant than chlorine. However due to its short life it is not used in storage or distribution systems.

3. Clarification:
Water flows through each ozone contact chamber into a clarifier for next stage of treatment.
Two clarifiers settle out about 90% of the turbidity (particles) from the water.

4. Dual Media Filters:
Settled water is drawn from the top of each clarifier by pumps and delivered to a dual media filter system, consisting of anthracite coal and filter sand.
There are eight dual media filters; four dual media filters per clarifier.

5. Granular Activated Carbon (GAC) Filters:
Water from the dual media filters flows into GAC Filters for further removal and control of taste and odors.

6. Chlorine (Cl2) Disinfectant:
The final stage of the water treatment process involves the injection of chlorine as a disinfectant.

7. Treated Water Storage Tanks:
4,900,000 gallons of treated water storage capacity is comprised of six storage tanks.

8. System Control and Data Acquisition (SCADA)
A SCADA system controls the operation and data collection of the water system.

3.4.4 Consumer Confidence Report

The Highlands Mutual Water Company tests the drinking water quality for many constituents as required by State and Federal Regulations. The 2020 report shows the results of our monitoring for the period January 1 - December 31, 2019. This report is available on the Highlands Mutual Water Company website: www.highlandswater.com
Connections with Other Water Systems:

> *The Company has a permanent interconnection with California Cities Water Company (Golden State) as well as two interconnections with Konocti County Water District (Konocti). There are only verbal agreements to provide or receive water from either water system. Water borrowed is repaid in water on a gallon to gallon basis. This system appears to work well as there are currently working relationships between the company and the two systems.*

3.4.5 The Highlands Mutual Water Company Financials and Audit

A financial audit was prepared for the year ending December 31, 2019. This audit involved performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements. During the period of the audit total operating revenues were $2,551,032 and operating expenses were $2,858,301, an operating loss of $307,269. Non-operating income was $76,898 and loss before corporate income taxes was $4,853. The total loss was $235,224.

Expenses included $30,977 for water purchases, $1,055,895 for water treatment, transmission and distribution was $732,309, administrative costs were $569,878 and Depreciation was $489,242 totaling $2,858,301.

Cash flows were decreased by $186,345 and beginning of year cash and cash equivalents decreased from 2,208,402 to $4,022,057. At the end of 2019 the Company's cash deposits was $1,086,115 and the bank balances were $1,096,603.

The following table shows the updated financial projections for the Highlands Mutual Water Company. Additional information on the Budget and Audit can be found on the Lake LAFCo website.

Highlands Mutual Water Company 2021 Projected Budget		
INCOME		
	2020 Actual	**2021 Projection**
Base Rate	1,173,404.27	1,175,701.08
Consumption	1,826,800.77	1,826,800.77
Fire Line	2,670.00	3,000.00
Penalties/Fees	65,505.00	120,000.00
TOTAL	**$3,068,380.04**	**$3,125,501.85**
EXPENSE		
	2020 Actual	**2021 Projection**
Administrative	1,188,946.70	1,276,408.00
Plant	1,107,092.26	1,120,858.00
Distribution	708,855.53	725,333.00
TOTAL	**$3,004,924.49**	**$3,122,599.00**
	Projected Profit	
2021 Projected Profit		$2,902.85

Highlands Mutual Water Company 2021 Projected Income		
	2020 Actual	**2021 Projection**
Base Rate*	1,173,404.27	1,175,701.08
Consumption**	1,826,800.77	1,826,800.77
Fire Line***	2,670.00	3,000.00
Penalties****	65,505.00	120,000.00
2020 Total	**$3,068,380.04**	
2021 Projected Income		**$3,125501.85**

*Base Rate projection based off monthly average total of $97,783.69 plus 3 new 5/8" connections and one 3" connection.
**Consumption projection based off 0f 2020 billed with usage rate $5.30.
***Fire Line includes the 4 new connections in 2020.
****Penalties projection based off of January 2021 charges as penalties were drastically lower in 2020 due to early Covid-19 restrictions.

3.5 The Lower Lake County Waterworks District #1

The Lower Lake County Waterworks District #1 organized in 1946 under the County Water District Law, California Water Code §30000 *et seq*. and contains a small incorporated area located in the southernmost portion of the City of Clearlake north of Cache Creek. The Latest annexation (Tish-a-Tang annexation) to the Lower Lake County Waterworks District #1 within the City occurred in 1974 and is located north of Cache Creek.

3.6 Water Fee Comparison Schedule

A general fee comparison of other water districts or agencies is below. The Konocti County Water District prepares an annual comprehensive fee comparison analysis with other districts and water providers in Lake County. Circumstances, water rights, terrain, raw water costs, grant eligibility, age of the infrastructure, and management are only a few of the many factors that are included in the establishment of water rates.

WATER RATE COMPARISON CHART

Agency	Monthly/ Bi-monthly	Base Service Fee	Costs per 7.48 gal (100 ccf)
Konocti County WD	Monthly	$35.88 5/8 meter	0.04 per cf up to 2,000 cf 0.04 per cf over 2,000 cf
Highlands Water	Monthly Base Charge	$36.30 5/8 Inch $51.70 ¾ inch	$5.30 per 748 gallons (or 100 cf)
Golden State Water	Monthly	40.25	$8.25 per 748 gallons (or 100cf)
City of Lakeport	Monthly	$34.85 ¾ inch	$1.92 0-6 cf $2.23 7.12 cf $5.54 13 cf +
Clearlake Oaks	Monthly	46.52 (Includes $15.41 Capital Replacement Projects Fee)	$1.42, 0-11,220 gallons $1.64 11,221 -14,952 gallons & $2.19 14,953+ gallons
Lower Lake CWD#1	Monthly $63.36 (includes 400cf) 5/8 & ¾ meter)		Overage charges: $1.57 up to 1,100cf (increases with usage)

3.7 Water Rate Analysis

There are four water systems within the incorporated city of Clearlake. This review focuses upon three of them including the Highlands Mutual Water Company, the Golden State Water Company and the Konocti County Water District. Notwithstanding policies regarding lower income customers one can conclude upon the comparison of these three water systems that The Golden State Water Company has the highest rates at 40.25 per month and $8.25 per 100 cubic feet followed by Highlands Mutual Water at $36.30 per month and $5.30 per 100 cubic feet and the lowest is Konocti County Water at $35.88 per month and $0.04 per 100 cubic feet. Connection fees for the Highlands Mutual water company are based on connection sizes. A 5/8 Inch meter is $4,485, a 3/4 inch meter is $6,728 a 1 inch meter is $11,213, a 1 1/2 inch meter is $22,425 and a 2" meter is $35,880. All three water providers have construction standards for new connections and installation fees.

Konocti County Water District Installation Fees				
Meter size	**Mater Capacity gpm**	**Installation Charge**	**Assessment Fee**	**Capacity expansion fee**
5/8" x ¾"	20	Time and materials to install	$1150.49	$6,000.00
¾"	30	Time and materials to install	$1150.49	$9,000.00
1"	50	Time and materials to install	$1150.49	$15,000.00
1.5"	100	Time and materials to install	$1150.49	$30,000.00
2"	160	Time and materials to install	$1150.49	$48,000.00

3.8 KCWD Budget

The following table shows the Income Budget for the Konocti County Water District for the 2021-2022 fiscal year. The Expense Budget is shown on the two following pages. A budget shows estimated costs, the actual funds expended will be shown in the Audit.

Konocti County Water District 2021-2022 Approved Budget			
Operating Income			
Account Name	**FY 18-19 Budget**	**Actual 6/30/2019**	**Final FY 21-22 Budget**
Water Sales (90.15% of Budget)	1,215,000.00	1,235,609.10	1,450,268.00
Hydrant Water Sales	2,500.00	2,355.34	500.00
New Meter Sales	12,000.00	0	12,000.00
Meter Sales Time and Materials	2,000.00	0	2,000.00
Reconnect Fees	22,000.00	22,480.00	25,000.00
Transfer Fees	2,000.00	4,520.00	5,000.00
Bank Fees	400.00	236.00	200.00
Late Fees*	55,000.00	53,568.98	135,000.00
Vandalism Fees	2,000.00	3,450.00	2,500
Lien Fees	1,000.00	2,287.80	1,500.00
Non-Active Stand By	10,000.00	9,134.24	10,000.00
Stand By Assessments	40,000.00	35,753.00	38,000.00
Name Change Fee	6,200.00	1,280.00	1,500.00
Service Call	200.00	50.00	200.00
Misc. Income	200.00	0	100.00
TOTAL	**1,370,500.00**	**1,370,724.46**	**1,683,500.00**
Non-Operating Revenue			
707 Antenna Income	38,000.00	39,306.67	40,600.00
708 Property Tax	30,500.00	33,652.78	40,000.00
710 Interest Income	2,900.00	5,209.40	3,900.00
TOTAL	**71,400**	**78,168.85**	**84,500.00**

* It is unfortunate that in a low-income District so much is expended on late fees in addition to actual water charges.

As shown above, the water sales provide most of the District income ($1,450,000). The amount received from property taxes is considerably less ($40,000).

The expense budget shown on the following two pages is fairly detailed to provide the public with knowledge of the various expenses that the District must pay to operate.

Konocti County Water District 2021-2022 Approved Budget			
Operating Expenses Page 1 of 2			
Account Name	**FY 18-19 Budget**	**Actual 6/30/2019**	**Final FY 21-22 Budget**
General Manager	89,440.00	90,396.77	97,385.60
Auditor/Secretary	56,160.00	56,587.18	69,700.80
Salaries-Lead Clerk	39,520.00	39,405.24	43,630.00
Account Clerk I	6,100.00	5,078.40	5,600.00
Salaries Lead Operator	71,406.40	70,536.18	76,548.00
Salaries-Operators	205,920.00	183,566.24	240,240.00
Salaries-Laborer	38,000.00	27,074.37	10,000.00
On Call	9,125.00	9,100.00	13,035.00
Over-time Expense	20,000.00	11,528.88	10,000.00
Payroll Taxes	47,000.00	41,142.37	52,000.00
Workers Comp	14,400.00	13,351.29	14,400.00
Advertising/Publishing	1,200.00	75.33	1,200.00
Director's Fees (14 meetings)	13,000.00	13,567.90	15,400.00
Director Education	1,200.00	0	1,200.00
OSHA Assessment	200.00	0	200.00
Computer Software	4,500.00	5,465.72	6,000.00
Bank Charges	500.00	360.00	500.00
Liability Insurance	25,000.00	22,009.48	23,557.00
Director's Insurance	2,700.00	2,445.51	2,565.00
Depreciation	285,000.00	260,093.79	285,000.00
Dues and Subscriptions	1,800.00	1,558.58	1,800.00
Pension Contribution	45,000.00	53,872.34	87,000.00
Employee Health Insurance	85,000.00	102,079.77	95,000.00
Office Supplies	7,000.00	7,305.01	9,000.00
Supplies-Meter	-	-	5,000.00
Supplies-Sand, Gravel	-	445.88	1,500.00
Supplies-Asphalt	-	-	2,000.00
Supplies-Lab	12,000.00	14,437.06	11,000.00
Supplies-New Service	900.00	35.87	900.00
Safety Equipment	6,000.00	1,494.60	6,000.00
Minor Equipment	5,000.00	1,246.99	5,000.00
Publishing	-	-	1,100.00
Copies and Printing	1,000.00	1,045.77	1,000.00
Notary Fees	750.00	1,003.00	750.00
Lien Fees	500.00	816.00	800.00
Postage	9,000.00	7,529.29	10,000.00
Taxes-Property	200.00	113.72	200.00
Consulting Fees	500.00	-	500.00
Contractor Fees	500.00	-	500.00
Professional/Legal Fees	1,500.00	2,729.00	6,000.00
Audit Fees	7,750.00	7,850.00	8,050.00
Grounds Maintenance	5,000.00	3,432.76	5,000.00

(Continued on next page.)

Konocti County Water District 2021-2022 Approved Budget			
Operating Expenses Page 2 of 2			
Account Name	**FY 18-19 Budget**	**Actual 6/30/2019**	**Projected FY 21-22 Budget**
Repairs and Maintenance:			
Water Treatment	130,000.00	172,406.50	235,000.00
Distribution	10,000.00	58,242.98	15,000.00
Customer Account	10,000.00	1,825.06	3,000.00
Administration	10,000.00	946.46	3,000.00
Vehicle Maintenance	5,000.00	8,710.25	5,500.00
Gas Expense	6,000.00	9,021.01	10,000.00
Backhoe Maintenance	1,500.00	442.13	2,000.00
Equipment Rental	500.00	-	500.00
Communications	7,100.00	8,261.03	9,000.00
Telephone	5,500.00	4,125.74	3,500.00
Utilities	135,000.00	140,943.81	140,000.00
Chemicals-Chlorine	2,500.00	-	2,000.00
Chemicals-ACH (Aluminum Chlorohydrate)	21,000.00	42,111.40	23,000.00
Chemicals Other	1,000.00	-	1,000.00
Chemicals KMNO4 (Potassium Permanganate)	9,000.00	17,541.61	9,000.00
Chemicals Diatomaceous Earth	4,100.00	9,626.38	10,000.00
Chemicals Salt	4,000.00	2,464.52	4,300.00
Chemicals Ortho Phosphate	7,000.00	6,144.38	10,000.00
Chemicals Muriatic Acid	4,000.00	558.78	1,000.00
Clothing Allowance	3,250.00	1,501.10	3,250.00
Water Analysis	20,000.00	14,867.88	16,000.00
Employee Education	2,000.00	988.00	2,000.00
Watershed Survey	-	*	-
SWRCB Fees	3,500.00	3,492.00	3,800.00
County Fees	1,500.00	1,662.67	1,700.00
Water Purchases	33,000.00	28,954.14	31,000.00
Mileage	500.00	208.59	500.00
Bad Debt	500.00	1,287.50	1,000.00
Cash Drawer	50.00	115.75	200.00
Misc. Expense	-	15,174.00	-
Backhoe Payments	-	-	-
Loan Payment	-	-	-
Totals	**$1,557,271.40**	**$1,610,693.96**	**$1,785,742.40**
Konocti County Water District Non-Operating Expenses			
Interest Back	538.00	550.00	0
Interest Loan	10,339.00	10,362.56	4,100.00
Totals	**10,877.00**	**10,912.56**	**4,100.00**

3.9 KCWD Audit

A budget is based on proposed spending but the Audit is based on funds actually spent. The District's resources are allocated to and accounted for in these basic financial statements as an enterprise fund type. The enterprise fund is used to account for operations that are financed and operated in a manner similar to a private business enterprise, where the intent of the governing body is that the costs (expenses, including depreciation) of providing goods or services to the general public on a continuing basis be financed or recovered primarily through user charges or where the governing body has decided that periodic determination of revenues earned, expenses incurred, and/or net income is appropriate for capital maintenance, public policy management control accountability or other policies. Net assets represent the amount available for future operations.

3.9.1 Net Position

The following table shows the Konocti County Water District Net Position for fiscal years 2017 and 2018.

Konocti County Water District Statement of Net Position[36]		
	2018	**2017**
ASSETS AND DEFERRED OUTFLOWS		
Current assets		
Cash*	232,453	200,247
LAIF (Local Agency Investment Fund)	282,530	278,552
Receivables-utility	209,876	237,069
Receivables-other	51,463	13,981
Inventory	137,817	131,824
Prepaid expenses	19,160	24,112
TOTAL CURRENT ASSETS	933,299	885,785
Capital assets, at cost (all capital assets, including infrastructure)	12,375,923	12,163,233
Less, accumulated depreciation (increases each year)	-4,943,906	-4,642,940
	7,432,017	7,520,283
Work in progress	+904,666	+396,215
	8,336,683	7,916,498
Deferred Outflows (Defined Benefit Retirement Plan)	132,206	154,267
TOTAL	**9,402,188**	**8,956,550**
LIABILITIES, DEFERRED INFLOWS AND NET POSITION		
Current liabilities		
Current portion Long Term debt	111,190	107,700
Accounts payable	55,245	43,382
Accrued payroll and taxes	(2,963)	(6,975)
Accrued vacation and sick pay**	39,629	36,188
Advance grant proceeds	-	84,522
Meter deposits	2,350	2,350
TOTAL CURRENT LIABILITIES	205,451	267,167
Long-Term Debt, Net	258,114	369,284
Net pension liability	191,872	156,305
Deferred inflows	5,711	9,219
Total liabilities and deferred inflows	661,148	801,975
Net position		
Net investment in capital assets	7,967,379	7,439,514
Restricted	-	-
Unrestricted	773,661	715,061
	8,741,040	8,154,575
	9,402,188	8,959,550

*On February 15, 2017 the Board of Directors approved a motion to reserve cash in the amount of $500,000. This reserve will be established in the future from excess cash balances.

**Vested or accumulated vacation and sick leave that is expected to be liquidated with expendable available financial resources is reported as an expense and as a current liability.

[36] Konocti County Water District, Financial Statements for the years ended June, 30, 2018 and 2017, prepared by Robert W. Johnson, an Accountancy Corporation, 6234 Birdcage Street, Citrus Heights, CA 95610, October 23, 2018, Page 4.

3.9.2 Statement of Revenues, Expenses and Changes in Net Position

The Statement of Revenues, Expenses and Changes in Net Position includes budget expenses in consolidated categories.

Konocti County Water District Statement of Revenues, Expenses and Changes in Net Position for the years ended June 30, 2018 and 2017[37]		
	2018	**2017**
Operating revenues		
Water sales	$1,193,225	$1,231,209
Fees	87,963	79,976
Assessments	46,007	47,802
New Meter Sales	6,000	12,000
Hydrant water sales	2,230	5,973
TOTAL OPERATING REVENUES	1,335,515	1,376,960
Operating expenses		
Source of supply	32,427	29,066
Transmission and distribution	127,389	117,824
Treatment	635,232	587,960
Pumping	39,632	38,222
Customer accounts	185,554	175,077
Administrative and general	153,116	158,358
Depreciation**	300,965	311,605
Total operating expenses	**1,474,315**	**1,418,112**
Operating income (loss)	(138,800)	(41,152)
Non-operating revenues (expenses)		
Interest income	4,045	2,140
Property taxes	45,685	43,326
Other income	38,274	145,355
Interest expense	(14,386)	(7,976)
	73,618	**182,845**
Income (loss) before contributions (carried forward)	(65,182)	141,693
Income (loss) before contributions (brought forward)	(65,182)	141,693
Capital contributions-grant*	651,647	-
Changes in net position	586,465	141,693
Total Net position		
Beginning	8,154,575	7,831,678
Prior period entry to correct accum. depreciation	-	181,204
Beginning, as restated	8,154,575	8,012,882
Ending	**$8,741,040**	**$8,154,575**

*Net position for 2018 has increased due to the grant received. Water sales were actually lower in 2018 compared to 2017.

**Property and equipment is recorded on the basis of purchase cost. Assets acquired by developer contribution are recorded at estimated cost or fair market value at the date of acquisition. Depreciation is calculated using the straight-line method over the estimated useful lives of five to sixty years.

[37] Konocti County Water District, Financial Statements for the years ended June, 30, 2018 and 2017, prepared by Robert W. Johnson, an Accountancy Corporation, 6234 Birdcage Street, Citrus Heights, CA 95610, October 23, 2018, Pages 5-6.

3.9.3 Statement of Cash Flows

The following table shows the cash flows for the years 2017 and 2018.

Konocti County Water District Statement of Cash Flows for the years ended June 30, 2018 and 2017[38]		
	2018	**2017**
Cash flows from operating activities:		
Receipts from customers	1,325,226	1,343,293
Payment to suppliers	(722,931)	(722,300)
Payments to employees	(462,545)	(445,435)
Net cash provided by operating activities	139,750	175,558
Cash flows from noncapital financing activities:		
Receipts from property taxes, operating income	83,959	188,681
Cash flows from capital and related financing activities:		
Proceeds from long-term debt	-	450,000
Capital contributions-grant	651,647	-
Property additions	(721,151)	(793,024)
Payment of long-term debt	(107,680)	(56,800)
Interest expense	(14,386)	(7,976)
	(191,570)	(407,800)
Cash flows from investing activities: Interest	4,045	2,140
Net increase/(decrease) in cash, cash equivalents	36,184	(41,421)
Cash and cash equivalents:*		
Beginning of year	478,799	520,220
End of year	$514,983	$478,799
Reconciliation of operating income (loss) to net cash provided by operating activities:		
Operating income (loss)	(138,800)	(41,152)
Adjustments to reconcile operating income (loss) to net cash provided by operating activities:		
Depreciation expense	300,965	311,605
Changes in operating assets, liabilities, deferred inflows and deferred outflows:		
Receivables	(10,289)	(40,605)
Inventory	(5,993)	(2,401)
Prepaids	4,952	(23,112)
Payables and accrued expenses	19,317	29,133
Net pension liability and related deferreds	54,120	(137,003)
Deposit	-	-
Deferred grant	(84,522)	79,093
	278,550	216,710
Net cash provided by operating activities	**$139,750**	**$175,558**
Supplemental information:		
Cash expended for interest	14,386	7,976

[38] Konocti County Water District, Financial Statements for the years ended June, 30, 2018 and 2017, prepared by Robert W. Johnson, an Accountancy Corporation, 6234 Birdcage Street, Citrus Heights, CA 95610, October 23, 2018, Pages 7-8.

*All highly liquid investments with a maturity of three months or less when purchased, are considered to be cash equivalents.

3.9.4 Changes in Capital Assets

The following table is shown to explain the costs that go into the amount for depreciation.

Konocti County Water District Changes in Capital Assets 6-30-17 to 6-30-18[39]				
	Balance 6-30-17	**Additions**	**Disposals**	**Balance 6-30-18**
Land	220,197	75,830		296,027
Office Equip.	50,704	1,045		51,749
Treatment plant	2,556,133	32,081		2,588,214
Office building	75,651	-		75,651
Storage tanks	935,212	102,150		1,037
Distribution lines	7,986,493	-		7,986,493
Heavy equipment	122,515	-		122,515
Vehicles	188,215	-		188,215
Tools	28,103	1,594		**29,697**
TOTAL	**12,163,223**	**212,700**		**12,375,923**
Work in Progress: DWSRF* Project	**396,215**	**508,451**		**904,666**

*Drinking Water State Revolving Fund (The Drinking Water State Revolving Fund (DWSRF) program is a federal-state partnership to help ensure safe drinking water. Created by the 1996 Amendments to the Safe Drinking Water Act (SDWA) the program provides financial support to water systems and to state safe water programs.)

3.9.5 Long-term Debt

The following table shows the long-term debt for the Konocti County Water District:

Konocti County Water District Long-term Debt at 6-30-18[40]					
	Balance 6-30-17	**Financing**	**Principal Payments**	**Balance 6-30-18**	**Current Portion**
Backhoe contract	61,510	-	22,702	38,808	23,137
Bank loan	415,474	-	84,978	330,496	88,053
Total	476,984	-	107,680	369,304	111,190

[39] Konocti County Water District, Financial Statements for the years ended June, 30, 2018 and 2017, prepared by Robert W. Johnson, an Accountancy Corporation, 6234 Birdcage Street, Citrus Heights, CA 95610, October 23, 2018, Pages 14-15.
[40] Konocti County Water District, Financial Statements for the years ended June, 30, 2018 and 2017, prepared by Robert W. Johnson, an Accountancy Corporation, 6234 Birdcage Street, Citrus Heights, CA 95610, October 23, 2018 Page 16.

In February, 2016, the District purchased a new 310L Loader Backhoe for $101,115. The District financed $91,115 of this purchase, payable at $1,973 monthly including 1.90% interest through February, 2020.

In January 2017, the District borrowed $450,000 from a bank in order to replace a water main on 18th Avenue. This loan is payable $8,199 monthly including 3.56% interest for five years through January 2022. The loan is collateralized by inventory, equipment and accounts receivable.

Long-term debt matures as follows:

Konocti County Water District Long-term Debt Maturity[41]			
	Principal	**Interest**	**Total**
2019	$111,190	$10,875	$122,065
2020	106,910	7,264	114,174
2021	94,541	3,850	98,391
2022	56,663	674	57,337
	369,304	**22,663**	**391,967**

3.9.6 Risk of Loss

The District purchases commercial insurance to provide for risk of loss from theft of, damage to, or destruction of assets, or injuries to employees.

3.9.7 Defined Benefit Retirement Plan[42]

Description of Plan

The District contributes to the California Public Employees Retirement System (CalPERS), a cost sharing multiple-employer defined benefit pension plan. The District participates in the miscellaneous 2% at 55 risk pool and 2% at 62 risk pool. CalPERS provides retirement and disability benefits, annual cost-of-living adjustments, and death benefits to plan members and beneficiaries.

CalPERS acts as a common investment and administrative agent for participating public employers within the State of California. CalPERS requires agencies with less than 100 eligible to participate in the System.

Benefits vest after five years of service. District employees who retire at age 50 to 63 and with over 5 years of credited service are entitled to an annual retirement benefit, payable monthly for life, in an amount equal to two percent of their average salary during their last 36 month of employment.

A menu of benefits provision as well as other requirements is established by State Statues within the Public Employees Retirement Law. The plan selects optional benefit provisions

[41] Konocti County Water District, Financial Statements for the years ended June, 30, 2018 and 2017, prepared by Robert W. Johnson, an Accountancy Corporation, 6234 Birdcage Street, Citrus Heights, CA 95610, October 23, 2018 Page 16.
[42] Konocti County Water District, Financial Statements for the years ended June, 30, 2018 and 2017, prepared by Robert W. Johnson, an Accountancy Corporation, 6234 Birdcage Street, Citrus Heights, CA 95610, October 23, 2018 Page 17.

from the benefit menu by contract with Cal PERS and adopts those benefits through District resolution. CalPERS issues a separate comprehensive annual financial report. Copies of the Cal PERS' annual financial report may be obtained from the CalPERS Executive Office, 400 P Street, Sacramento CA 95814.

Funding Policy

The Plans' provisions and benefits in affect at June 30, 2019, are summarized as follows:

Konocti County Water District Retirement Plan Information[43]		
	Miscellaneous-Classic PERS	**Miscellaneous-PERPA***
Benefit Formula	2% @ 55 years old	2% at 62 years old
Benefit vesting schedule	5 years	5 years
Benefit payments	Monthly to life	Monthly to life
Full Retirement Age	55 or older	62 or older
Required employee contribution rates	7.0%	6.250%
Required employer contribution rates	8.418%	6.533%

*PERPA, Public Employees Pension Reform Act

It is hoped that as the workforce has more PERPA employees the burden on the employer will be reduced. For the year ended June 30, 2018, the contributions recognized as part of pension expense were as follows:

Konocti County Water District Retirement Plan Contribution June 30, 2018[44]	
	Miscellaneous Employees
Contributions-employer	25,065
Contributions-employee (paid by employer)	16,162
Contributions-employee (paid by employees)	5,385
Total	**$46,612**

[43] Konocti County Water District, Financial Statements for the years ended June, 30, 2018 and 2017, prepared by Robert W. Johnson, an Accountancy Corporation, 6234 Birdcage Street, Citrus Heights, CA 95610, October 23, 2018 Page 17.
[44] Konocti County Water District, Financial Statements for the years ended June, 30, 2018 and 2017, prepared by Robert W. Johnson, an Accountancy Corporation, 6234 Birdcage Street, Citrus Heights, CA 95610, October 23, 2018 Page 18.

4 WATER DISTRICT MUNICIPAL SERVICE REVIEW (MSR)

4.1 Growth and Population Projections for the Clearlake Area[45]

Purpose: To evaluate service needs based on existing and anticipated growth patterns and population projections.

4.1.1 Clearlake Area Water District Area Population Projections

A golf course and residential development in the City of Clearlake was proposed in 2005.[46]

The City's growth rate had become stagnant in the past couple of years due to the fires. Prior to the fires, the City had experienced a 4.4 percent population gain between 2010 and 2018. However, that growth has significantly declined according to the State of California, Department of Finance projections for 2019.

Assuming the growth rate returns to the levels experienced between 2010 and 2018, a 0.54% population growth rate can be expected.

The planning and zoning for the area within the Konocti County Water District, the Highlands Mutual Water Company and the Golden State Water company are under the jurisdiction of the City of Clearlake. The District and the two water companies and the City should maintain close communication with each other regarding plans for development within the District.

4.1.2 MSR Determinations on Growth and Population Projections for the Clearlake Area

MSR 1-1) The Konocti County Water District, the Highlands Mutual Water Company and Golden State Water Company (herein referred to as the "Clearlake Water Providers") are located entirely within the City of Clearlake and the City has jurisdiction over growth, planning and development review.

4.2 Location and Characteristics of any Disadvantaged Unincorporated Communities (DUC) within or Contiguous to Clearlake Water Service Providers[47]

Purpose: To identify those areas with a Median Household Income of less than 80% of the State's Median Household Income.

4.2.1 Determination of the Clearlake Area as Disadvantaged Unincorporated Community (DUC) Status

The Clearlake Water Service providers serve territory with many low-income residents and is considered a "disadvantaged" community since the area has an income level of less than 80% of the Median Household income (MHI) of the State ($60,188). The entire City,

[45] California Government Code Section 56430. (a) (1)
[46] State Water Resources Control Board, Division of Drinking Water, Permit Report, Konocti County Water District, Amy Little, P.E., 7/11/2017, Page 6.
[47] California Government Code Section 56430. (a) (2)

including the Konocti County Water District, Highlands Mutual and the Golden State Water Company is considered to be located in both a Disadvantaged Community as well as a Severely Disadvantaged Community (Median Household Income less than 40% of the State MHI) based on survey data.

4.2.2 MSR Determinations in Disadvantaged Unincorporated Communities within water service providers in Clearlake

MSR 2-1) The areas served by the Clearlake Water Providers are located within the City of Clearlake, which is both a Disadvantaged Community and a Severely Disadvantaged Community based on survey data even though the US Census reports the median household income is $31,551 compared with the state of California Median Household Income of $75,235.[48]

4.3 Water Agency Capacity and Infrastructure

Purpose: To evaluate the present and planned capacity of public facilities, adequacy of public services, and infrastructure needs or deficiencies including needs or deficiencies related to sewers, municipal and industrial water, and structural fire protection in any disadvantaged, communities within or contiguous to the sphere of influence.[49]

4.3.1 Capacity and Infrastructure

A. Konocti County Water District Analysis

The Konocti County Water District is one of four water systems serving the City of Clearlake.

According to the State Water Resources Control Board – Division of Drinking Water report of July 11, 2017 the Konocti County Water District had 1,795 active service connections (of which 1,781 are single-family residential dwellings) serving 4,130 people.

A total of 1.8 million gallons of storage is available to the distribution system.

In 2014, the average maximum daily demand was 424.6 gallons per day per connection (average over a 10-year period). Based on the current number of active connections the maximum daily demand for the entire system is 762,000 gallons per day. The surface water treatment plant can produce 864 gallons per minute. Depending upon the number of backwash events the maximum daily plant capacity ranges from 1.15 to 0.86 million gallons per day. Based on 3 backwashes per day the total source capacity is 0.96 MGD.

According to the State Water Resources Control Board (2017), "The System must have adequate storage capacity to meet the peak hourly demand (PHD) for four hours." The PHD is 31,800 gallons per hour (GPH). Therefore, the System must have a minimum of 127,200 gallons available over a four hour period. The water treatment plant (666 gpm) and Highlands intertie (300 gpm) can supply 160,000 gallons and 72,000 gallons,

[48] U.S. Census Bureau QuickFacts: Clearlake city, California, August 30, 2021
[49] California Government Code Section 56430. (a) (3)

respectively, during that period. The storage tanks can supply 1.8 million gallons during the four hour peak period.

The System must also have adequate storage capacity in both the Upper and Lower pressure zones. The Upper Zone/Zone 1, which supplies 66% of the distribution system, consists of 963,000 gallons. The Lower Zone/Zone 2, which supplies 34% of the distribution system, consists of 785,000 gallons. The System has adequate storage capacity in each pressure zone.

For the purposes of evaluating source capacity, it was assumed that the peak demand period coincides with the filters requiring 3 backwashes in a single day. The Highlands intertie can supply up to 300 gpm. Therefore, the System's total source capacity, 300 gpm plus 0.96 MGD, is adequate (180% of the requirement). Another factor to consider, is the intake pumps cavitating as a result of the low lake level and the condition of the transmission main. The District's new intake project and infrastructure has addressed this problem.

The State reports the following regarding the Konocti County Water District water supply and treatment:[50]

The System is entitled to purchase from the Yolo County Flood Control and Conservation District up to 2,500 acre-feet per year of Clear Lake water. This is equivalent to 814.6 MG per year or 2.23 MGD. The System's contract with Yolo County Flood Control and Water Conservation District was renewed in 2017 and expires in 2026. In reviewing the agreement the geographic area of the district is consistent with the district boundary. The System must also maintain a Bed Management contract with Lake County (between the high water mark and zero Rumsey) and State of California (below zero Rumsey).

According to the California Waterworks Standards, source capacity must equal or exceed maximum day demand. With the maximum day demand equal to 762,000 gallons and a total active source capacity of 0.96 MGD with a 300 gpm intertie, source capacity is adequate to meet demands. The System needed to rely on an intertie in 2014 in order to meet peak demands during a challenging water quality period and low Lake water level. This is a principal reason to receive the $652,000 planning and technical assistance grant and the 8.4 million grant.

Konocti County Water District has one treatment plant. The facility includes conventional treatment with additional treatment to meet turbidity performance standards, including pre-oxidants, coagulant/filtration aids, and granular activated carbon filtration. Filtration is achieved through pressure filtration and inactivation of pathogens is achieved through the application of sodium hypochlorite generated onsite.

Standard development practices require developers to provide the necessary infrastructure for new development. In most cases new or additional infrastructure to serve new development are not grant eligible. The District does not have the responsibility to ensure adequate infrastructure is present for new development. Some exceptions exist for low income areas and job creation activities. This KCWD as well as other districts have

[50] State Water Resources Control Board, Division of Drinking Water, Permit Report, Konocti County Water District, Amy Little, P.E., 7/11/2017, Pages 8-10.

development standards that must be met to accommodate new development. Not being the land use authority it is necessary the City require new development to pay its way. In this effort it is necessary to comment on all city entitlement requests. Rate payers in the District should not be responsible to construct infrastructure for new development.

B. Highlands Mutual Water Company Analysis

The most recent State Water Resources Control Board inspection report was conducted in 2010. The Company currently serves an estimated population of 5,300 (as reported in the 2008 Annual Report to the Department) through 2,307 active service connections. All connections are metered. During 2008, the Company produced 212 MG. This translates to an average daily use of 0.58 MGD or 251 gallons per day per connection (gpdc). The month of maximum use was July; 35.4 million gallons were produced. On the day of maximum use, the system produced 1.47 MG.

The Company uses Clear Lake as its only year-round source. Two intake pumps are centrifugal horizontal split-case pumps used to pump water to the treatment plant. The pump used during the winter is a 125 HP and has a capacity of 1,600 gallons per minute (gpm). The pump used during the summer is 200 HP and has a capacity of 2,000 gpm. During the Department inspection, the 200 HP pump was offline for repairs. The 125 HP pump was off-line the day before which meant the Company could not treat water for a day and had to relied on system storage. A new motor was installed for the 125 HP pump. Both pumps are old and unreliable. On March 9, 2010, the Department was notified that two new submersible pumps were ordered and will be installed sometime in April 2010. These pumps will be replacements for the existing centrifugal pumps.

Clear Lake is a large (approximately 68 square miles), shallow, eutrophic lake in Northern California at an elevation of 1,325 ft. The water system has prescriptive water rights for 78.89 acre-feet (25.7 million gallons) per year. In addition, Yolo County Flood Control and Water Conservation District will provide up to 3,000 acre-feet (978 million gallons) per year to the Company. Due to its eutrophic state, there is a large amount of organic material in the water source that must be removed in the treatment process. Large algae blooms occur during the summer (May-October) causing significant taste, odor, and color problems, interfering with coagulation and clogging the filters.

HIGHLANDS MUTUAL WATER COMPANY STORAGE TANKS				
Tank No. / Name	**Type**	**Capacity (gallons)**	**Zone Served**	**Condition and Comments**
Plant Clearwell	Welded Steel	396,934 (385,000)*	1	Good condition, no cathodic protection. All water to the distribution system flows through the plant clearwell. Inspected and cleaned in 2007.
Plant Storage Tank	Redwood	270,573 (209,800)*	1	Good condition. All water to the distribution system flows through the plant storage tank. Tank was re-lined in 1998 and cleaned and inspected in 2007/2008.
Fillmore Street	Welded Steel	2,206,035	2	Good condition, receives water from Zone 1. Tank was installed in 1980; it was cleaned and inspected in 2007. Cathodic protection replaced in 2006.
Upper Spruce	Welded Steel	676,431	3	Good condition, no cathodic protection. Receives water from Zone 1. Tank was installed in 1998; it was cleaned and inspected in 2007.
Lower Spruce	Welded Steel	507,324	3	Good condition. Water is gravity fed from Upper Spruce. Tank was cleaned and inspected in 2007.
20th Avenue	Welded Steel	845,539	4	Good condition. Receives water from zone 1 through the use of the 20th Avenue Booster station. Tank was installed in 1997 and was inspected in 2007, but not cleaned.

* Actual usable capacity of tanks in Zone 1

Total Highlands Mutual Water Company Storage Capacity:

Total Storage Capacity – 4,830,129 gallons
Total for Zone 1 – 2,800,835 gallons (594,800 usable gallons at the treatment plant plus the additional 2,206,035 gallons from Zone 2 which can provide water to the zone as described above in this report)
Total for Zone 2 – 2,206,035 gallons
Total for Zone 3 – 1,183,755 gallons
Total for Zone 4 – 845,539 gallons

C. Golden State Water Analysis

American States Water Company (AWR) is the parent of Golden State Water Company and American States Utility Services, Inc. Through its utility subsidiary, Golden State Water Company, AWR provides water service to residents across California located within more than 80 communities throughout 10 counties in Northern, Coastal and Southern California (approximately 255,000 customers).

The Golden State Water Company is a public utility that serves the western portion of the City (between Sycamore Street to the east and the southeastern shore of Clear Lake to

the west) as well as a non-contiguous, seven-block segment of the central portion of the City. Water from this particular utility is sourced from the surface water of Clear Lake, which is treated at Golden State Water Company's Sonoma Water Treatment Plant. An intake is located along the lake shore, and water is pumped up to the treatment plant located within City boundaries. Golden State Water Company services a population of 6,189 people (assuming 2.91 pph) and provides a total of 2,127 service connections to residential and nonresidential customers.

The Golden State Water Company is located at 14595 Olympic Drive, Clearlake, California 95422. Phone: 707.994.9118. The Golden State Water Company has a web site: www.gswater.com/clearlake

Improvements to this system are managed in an ongoing capital improvement plan, mainly focused on replacing old water mains in the Clearlake area. On an annual basis, 2 to 3 water mains are to be changed, based on their age and condition. Recently completed projects include the Lower Lake Pipeline, consisting of 2,000 linear feet of pipeline and three fire hydrants and 34 water services; the Crandall and Hill Pipeline consisting of 1,000 linear feet of pipeline, two fire hydrants, and 39 additional services; and a new generator at the Lakeshore Water Plant.

Current and upcoming projects include installation of six Variable Frequency Drives to optimize the water treatment process and the Napa street pipeline, which includes 800 linear feet of pipeline, one fire hydrant and nine additional services. A variety of miscellaneous improvements to pumping stations are also identified in the capital improvement plan. No deficiencies in water service have been identified.

4.3.2 MSR Determinations on Capacity and Infrastructure for Konocti County Water District

MSR 3.1) The Clearlake Water Providers are continuously working to improve their water treatment and delivery system. The water providers have the capacity and entitlements to provide water service. The water providers currently have the source, treatment and storage capacity to serve their respective territory. This is a result of continuous improvements.

MSR 3.2) In Clearlake, Fire Flow Testing is conducted by the Clearlake Water Providers. The Clearlake Water Providers should together for consistency purposes establish a schedule for Fire Flow testing. For example, testing when new development is proposed or on a bi-annual basis notwithstanding a drought.

MSR 3.3) The Clearlake Water Providers, the City of Clearlake, and the Lake County FPD need to continue to cooperate in the Development review and entitlement processes including building and planning codes with the City taking the lead. Development review should include improved interaction with the fire department, water providers and the County. Careful consideration in requiring adequate fire flows should be required as determined by the Fire Protection District and improvements must be constructed and be paid for prior to new development.

MSR 3.4) Fire Flows are of concern in various areas throughout the City. While improvements are continuously being made to components of the various water systems in the City the problem of substandard fire flows continue to exist. Inadequate fire flow problems are addressed when there is adequate funding and a compelling need for improvements.

MSR 3.5) The Clearlake Water Providers realize improvements for new development must be paid by new development since in most cases grant money is not available to any water provider to pay for upgraded infrastructure to support new development (an exception might be grant money for job creation). Also, those costs should not be underwritten by existing customers.

MSR 3.6) The Konocti County Water District is eligible to receive government grants and loans on behalf the District. The Highlands Mutual Water Company and the Golden State Mutual Water Company are not by themselves eligible to obtain government grants. However, in a partnership with the City or other public agency, grants might be able to be obtained to address health and safety concerns and the provision of safe and a reliable supply of water in problematic areas. Grants are rarely given for new development excepting in cases where creation new jobs is a condition of the grant and a public agency takes the lead in securing the grant.

MSR 3.7 The City of Clearlake has applied to the State Water Resources Control Board for technical assistance to collaborate with the fire district and local water providers.

MSR 3.8 It is recommended under the leadership of the City, a JPA or Special Collaboration group be established to review development proposals and make recommendations, as appropriate regarding domestic water issues of concern.

4.4 Financial Ability to Provide Services[51]

Purpose: To evaluate factors that affect the financing of needed improvements and to identify practices or opportunities that may help eliminate unnecessary costs without decreasing service levels.

4.4.1 Financial Considerations for Konocti County Water District

The Konocti County Water District has an up-to-date fee schedule and adequate funds to operate the District. In addition, the District is eligible and has been granted substantial amounts of money to upgrade its facilities for existing customers. The fee schedule, budget and audit information are current as shown in this report.

[51] California Government Code Section 56430. (a) (4)

4.4.2 MSR Determinations on Financing

MSR 4-1) The water providers maintain adequate finances to operate and comply with laws requiring a budget and an audit in a timely manner.

MSR 4-2 The water providers periodically update their fee schedules. A component in updating a fee schedule is to maintain annual comparisons with other agencies within Lake County and to analyze needs and costs to adequately maintain and run the water system.

MSR 4.3 In reviewing basic water provider charges for water services provided in Clearlake the following basic charges by provider exist:

Konocti County WD	Monthly	$34.50	0.04 per cf ($4.00 per 100cf)
Highlands Water	Monthly Base Charge 5/8 Inch $51.70 ¾ inch	$36.30	$5.30 per 748 gallons (or 100 cf)
Golden State Water	Monthly	40.25	$8.25 per 748 gallons (or 100cf)

MSR 4.4 Of the three water providers entirely within Clearlake, the Konocti County Water District (KCWD) has the lowest monthly base charge at $34.50 per meter and the Golden State Water Company (GSWC) is the highest at $40.25 per meter. Charges for 100 cubic feet of water are $4.00 for the KCWD, $5.30 for Highland Mutual Water Company (HMWC) and $8.25 for the GSWC (subject to CPUC approval). The GSWC has a low income assistance program with oversight by the CPUC's Low Income Oversight Board established by special legislation.

MSR 4-5 The Konocti County Water District has annual audits prepared and complies with state laws regarding district auditing for a California District and the Highlands Mutual Water Company's most recent audit for the year ending December 2019 and the PUC ensures financial audits are prepared for Public Utilities such as the Golden State Water Company. No adverse findings were found in the audits prepared for the Highlands Mutual Water Company and the Konocti Co. Water District.

MSR 4-6 The Konocti County Water District is successful in obtaining grant funding to upgrade facilities for existing customers. Grants might be able to be obtained for Golden State Mutual Water Company and the Highlands Mutual Water company in a partnership with a governmental agency such as the City of Clearlake in areas where safe and reliable water supply is threatened.

4.5 Status of and Opportunities for Shared Facilities[52]

Purpose: To evaluate the opportunities for a jurisdiction to share facilities and resources to develop more efficient service delivery systems.

4.5.1 Facilities

There are not many things a water district can do to share its facilities. Like other water districts in Lake County small equipment is shared as needed. The Konocti County Water District has two interties to the Highlands Mutual Water Company as follows: [53]

> ***Intertie No. 1 – Konocti supplies Highlands Mutual Water Company***
> *This intertie is located near the Highlands Mutual Water Company's 19th Avenue storage tank but the intertie is owned and maintained by Konocti CWD. It is a six-inch diameter main with a double check valve and the System gravity feeds Highlands Mutual Water Company. Given the current configuration, water can only flow from the District's distribution system to Highlands Mutual Water Company.*
>
> *The intertie was tested fourteen years ago and problems were associated with the high pressures in the Konocti CWD system relative to the Highlands MWC system. Flow rates at this intertie are unknown and any future use will require a pressure regulator to be installed. There is no pump at this intertie to allow water to be discharged into the District's system. If Konocti CWD needed to utilize this emergency intertie, flanges are available to install a temporary pump station.*
>
> ***Intertie No. 2 – Highlands Mutual Water Company supplies Konocti***
> *There is a six-inch interconnection with a 40 horse power booster pump (with an estimated 300 gpm capacity) that supplies the System's ten-inch main leaving the water treatment plant. The booster pump is owned and operated by the Highlands Mutual. The intertie is located off Spruce Avenue on the property of two of Highland's water tanks. The pump would discharge against a static hydraulic head of approximately 270 feet. Current plumbing does not allow water to gravity flow from the District to Highland's distribution system.*

The Konocti County Water District is also working with the Lower Lake County Waterworks District to construct an intertie between the two districts.

4.5.2 MSR Determinations on Shared Facilities for Water Service Providers in Clearlake

MSR 5-1) The Highlands Mutual Water Company and the Golden State Water Company and the Konocti County Water District work with each other as much as possible to provide better and more dependable service.

MSR 5-2) The Konocti County Water District has two interties with Highlands and soon to be Lower Lake CWD.

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[52] California Government Code Section 56430. (a)(5)
[53] State Water Resources Control Board, Division of Drinking Water, Permit Report, Konocti County Water District, Amy Little, P.E., 7/11/2017, Page 8.

MSR 5-3) The water providers in Clearlake as well as the City need to work closely with the Lake County Fire Protection District to ensure adequate provisions are included for new development in Clearlake.

MSR 5-4) Much of the water infrastructure was developed prior to the City's incorporation in 1980 and before the establishment of specific fire flow requirements for new development. The Clearlake Water providers all work to ensure adequate, safe and reliable water is available to their customers.

MSR 5-5 The Clearlake Water Providers cooperate to provide adequate water services within areas where the principal water provider may not be able.

4.6 Accountability for Community Service Needs, Government Structure and Operational Efficiencies[54]

Purpose: To consider the advantages and disadvantages of various government structures that could provide public services, to evaluate the management capabilities of the organization and to evaluate the accessibility and levels of public participation associated with the agency's decision-making and management processes.

4.6.1 Government Structure

The Konocti County Water District has a five-member board of directors and maintains a website to provide information to the public. The District supplied all the requested information needed to compile this report in a timely manner. The District complies with state codes regarding the operation of a public water system. The other districts are not required to have an MSR or SOI adopted by Lake LAFCo.

4.6.2 MSR Determinations on Local Accountability and Governance

MSR 6-1) The Konocti County Water District and the Highlands Mutual water company each maintain a five-member board of directors, which holds regular meetings open to the public.

MSR 6-2) The Clearlake Water Service providers appear to be well managed with compliance with state laws for their specific type of organization.

MSR 6-3) The Clearlake Water providers all maintain financial records, including a budget and an audit.

MSR 6-4) As a governmental agency, the Konocti County Water District complies with the Brown Act, Public Records Act and the Political Reform Act. Legal requirements vary depending upon the type of water service provider.

MSR 6-5) All of the Clearlake Water providers provided Lake LAFCo with documents as requested in a timely manner.

[54] California Government Code Section 56430. (a)(6).

MSR 6.6) The Clearlake Water providers each maintain a webpage to inform the public about the operation of the agency.

MSR 6.7) Governance of the water service providers within the City of Clearlake is not the same. The water service providers are formed and operate differently and are subject to different rules and regulations yet must comply with California water quality requirements and standards.

MSR 6.8) Yolo County Flood Control and Water Conservation District has the water rights to Clearlake. Each water service provider has a water rights agreement that specify the location and amount of water to be taken from Clear Lake. There are areas where one service provider is providing water service within the geographic area of another service provider. This happens because water service is best provided by one given provider in a specific area. It does not appear there is a desire to encroach into other service provider's territory to increase the number of connections.

MSR 6.9) For agencies subject to LAFCo's jurisdiction, LAFCo establishes the service area and Sphere of Influence. For all water providers in Clearlake, service areas as established by a specific water rights agreement with Yolo County Flood Control. It is recommended that as water rights agreements are renewed Yolo County should carefully review service areas and reconcile service areas with actual services being provided and eliminate overlapping service areas.

5 KONOCTI COUNTY WATER DISTRICT SPHERE OF INFLUENCE (SOI)

5.1 Recommendation for Konocti County Water District Sphere of Influence

The Konocti County Water District Sphere of Influence should be expanded to allow the District to annex additional land including its intake facility on Lakeshore Blvd. on Clear Lake, which is owned by the District. In addition service area gaps within the City should be placed into the Konocti County Water District. The Sphere Map shows the areas to be included in the District's Sphere of Influence. The District continuously undergoes infrastructure improvements and utilizes grant funding to the maximum extent possible to provide safe and reliable supply and improve capacity.

5.2 Present and Planned Land Uses in the Konocti County Water District Area, Including Agricultural and Open Space Lands[55]

5.2.1 City of Clearlake General Plan and Zoning for Konocti County Water District SOI Area

The City of Clearlake General Plan shows primarily residential uses (both high- and low-density) within the water providers' service areas.

5.2.2 SOI Determinations on Present and Planned Land Use for the Clearlake Area

SOI 1.1] The City of Clearlake has recently prepared an updated General Plan, Housing Element and Zoning Ordinance. Lake LAFCo in its 2015 Sphere Update, recommended the City's Sphere of Influence remain coterminous with its boundaries.

SOI 1.2] The City is the Land Use Authority for territory within its jurisdiction. The City has the authority to review and to issue all land use entitlements within its jurisdiction.

5.3 Present and Probable Need for Public Facilities and Services in the Konocti County Water District Area[56]

5.3.1 Municipal Service Background

The water providers supply water to customers within their service areas.

5.3.2 SOI Determinations on Facilities and Services Present and Probable Need for the Clearlake water providers

SOI 2.1] Notwithstanding limited financial resources, the City provides adequate services for services it provides.

[55] California Government Code Section 56425 (e)(1)
[56] California Government Code Section 56425 (e)(2)

SOI 2.2] The City should take a proactive role in the issuance of development entitlements to ensure the provisions of adequate safe and reliable fire, wastewater and water services. This may be in the form of leading a coordination effort to resolve existing and anticipated deficiencies.

SOI 2.3] The City does not provide fire, wastewater or water services within its jurisdiction and therefore with the exception of its land use authority has limited ability to control or manage these services.

SOI 2.4] The City should actively participate with those service providers where deficiencies exist and coordinate with those providers to resolve problems as they arise.

5.4 Present Capacity of Public Facilities Present and Adequacy of Public Services[57]

5.4.1 Capacity Background

Based on the analysis included in the service review, the capacity of the Clearlake Services providers is adequate notwithstanding some deficiencies in fire flows. The Service Providers are working together to increase the capacity with interties to the other water providers.

5.4.2 SOI Determinations on Public Facilities Present and Future Capacity for the Clearlake Water Service providers

SOI 3.1] While the City is not the current water provider within its jurisdiction, a city may provide domestic water services. Likewise, a County Water District, a Mutual Water Company or a Public Utility may provide water services for customers within the entire city.

SOI 3.2] Water services are generally adequate within the City of Clearlake except for deficiencies such as substandard fire flows in various parts of the City.

SOI 3.3] While the water providers coordinate with each other, it appears to be a duplication of effort with three water providers providing similar services within Clearlake.

SOI 3.4] Extensive additional analysis will be needed to determine the best or optimum water service provider.

[57] California Government Code Section 56425 (e)(3)

5.5 Social or Economic Communities of Interest for Konocti County Water District [58]

5.5.1 Konocti County Water District Community Background

It is difficult for residents of each specific water provider to have a separate community identity apart from the City of Clearlake and Lake County. The providers are viewed as a necessary service utility rather than as a community boundary.

5.5.2 SOI Determinations on Social or Economic Communities of Interest for the Clearlake Water providers

SOI 4-1] The water providers are all located within the City of Clearlake and are all members of the same community of interest. Likewise, most of the population and structures within the Lake County Fire Protection District are located within the City of Clearlake.

5.6 Disadvantaged Unincorporated Community Status[59]

5.6.1 Disadvantaged Unincorporated Communities

The Clearlake water providers have many low-income residents as does the entire City of Clearlake and is considered “disadvantaged” and “severely disadvantaged”.

5.6.2 Clearlake Water Service Providers Disadvantaged Unincorporated Community Status

SOI 5.1] The area within the City of Clearlake is considered a disadvantaged Community meaning the median household income is less than 80% of the State median household income. Many areas of the City are considered severely disadvantaged meaning the median household income is less than 60% of the State’s median household income.

[58] California Government Code Section 56425 (e)(4)
[59] California Government Code Section 56425 (e)(5)

APPENDIX A LOCAL GOVERNEMENT SPENDING ISSUES

1 Municipal Financial Constraints

Municipal service providers are constrained in their capacity to finance services by the inability to increase property taxes, requirements for voter approval for new or increased taxes, and requirements of voter approval for parcel taxes and assessments used to finance services. Municipalities must obtain majority voter approval to increase or impose new general taxes and two-thirds voter approval for special taxes.

Limitations on property tax rates and increases in taxable property values are financing constraints. Property tax revenues are subject to a formulaic allocation and are vulnerable to State budget needs. Agencies formed since the adoption of Proposition 13 in 1978 often lack adequate financing.

1.1 California Local Government Finance Background

The financial ability of the cities and special districts to provide services is affected by financial constraints. City service providers rely on a variety of revenue sources to fund city operating costs as follows:
Property Taxes
Benefit Assessments
Special Taxes
Proposition 172 Funds
Other contributions from city or district general funds.
As a funding source, property taxes are constrained by statewide initiatives that have been passed by voters over the years and special legislation. Seven of these measures are explained below:

A. Proposition 13

Proposition 13 (which California voters approved in 1978) has the following three impacts:

- Limits the ad valorem property tax rate
- Limits growth of the assessed value of property
- Requires voter approval of certain local taxes.

Generally, this measure fixes the ad valorem tax at one percent of value; except for taxes to repay certain voter approved bonded indebtedness. In response to the adoption of Proposition 13, the Legislature enacted Assembly Bill 8 (AB 8) in 1979 to establish property tax allocation formulas.

B. AB 8

Generally, AB 8 allocates property tax revenue to the local agencies within each tax rate area based on the proportion each agency received during the three fiscal years preceding adoption of Proposition 13. This allocation formula benefits local agencies, which had relatively high tax rates at the time Proposition 13 was enacted.

C. Proposition 98

Proposition 98, which California voters approved in 1988, requires the State to maintain a minimum level of school funding. In 1992 and 1993, the Legislature began shifting billions of local property taxes to schools in response to State budget deficits. Local property taxes were diverted from local governments into the Educational Revenue Augmentation Fund (ERAF) and transferred to school districts and community college districts to reduce the amount paid by the State general fund.

Local agencies throughout the State lost significant property tax revenue due to this shift. Proposition 172 was enacted to help offset property tax revenue losses of cities and counties that were shifted to the ERAF for schools in 1992.

D. Proposition 172

Proposition 172, enacted in 1993, provides the revenue of a half-cent sales tax to counties and cities for public safety purposes, including police, fire, district attorneys, corrections and lifeguards. Proposition 172 also requires cities and counties to continue providing public safety funding at or above the amount provided in FY 92-93.

E. Proposition 218

Proposition 218, which California voters approved in 1996, requires voter- or property owner-approval of increased local taxes, assessments, and property-related fees. A two-thirds affirmative vote is required to impose a Special Tax, for example, a tax for a specific purpose such as a fire district special tax.

However, majority voter approval is required for imposing or increasing general taxes such as business license or utility taxes, which can be used for any governmental purpose. These requirements do not apply to user fees, development impact fees and Mello-Roos districts.

F. Mello-Roos Community Facilities Act

The Mello-Roos Community Facilities Act of 1982 allows any county, city, special district, school district or joint powers authority to establish a Mello-Roos Community Facilities District (a “CFD”), which allows for financing of public improvements and services. The services and improvements that Mello-Roos CFDs can finance include streets, sewer systems and other basic infrastructure, police protection, fire protection, ambulance services, schools, parks, libraries, museums and other cultural facilities. By law, the CFD is also entitled to recover expenses needed to form the CFD and administer the annual special taxes and bonded debt.

A CFD is created by a sponsoring local government agency. The proposed district will include all properties that will benefit from the improvements to be constructed or the services to be provided. A CFD cannot be formed without a two-thirds majority vote of residents living within the proposed boundaries. Or, if there are fewer than 12 residents, the vote is instead conducted of current landowners.

In many cases, that may be a single owner or developer. Once approved, a Special Tax Lien is placed against each property in the CFD. Property owners then pay a Special Tax each year.

If the project cost is high, municipal bonds will be sold by the CFD to provide the large amount of money initially needed to build the improvements or fund the services. The Special Tax cannot be directly based on the value of the property. Special Taxes instead are based on mathematical formulas that take into account property characteristics such as use of the property, square footage of the structure and lot size. The formula is defined at the time of formation, and will include a maximum special tax amount and a percentage maximum annual increase.

If bonds were issued by the CFD, special taxes will be charged annually until the bonds are paid off in full. Often, after bonds are paid off, a CFD will continue to charge a reduced fee to maintain the improvements.

G. Development Impact Fees

A county, cities, special districts, school districts, and private utilities may impose development impact fees on new construction for purposes of defraying the cost of putting in place public infrastructure and services to support new development.

To impose development impact fees, a jurisdiction must justify the fees as an offset to the impact of future development on facilities. This usually requires a special financial study. The fees must be committed within five years to the projects for which they were collected, and the district, city or county must keep separate funds for each development impact fee.

1.2 Financing Opportunities that Require Voter Approval

Financing opportunities that require voter approval include the following five taxes:

1. Special taxes such as parcel taxes
2. Increases in general taxes such as utility taxes
3. Sales and use taxes
4. Business license taxes
5. Transient occupancy taxes

Communities may elect to form business improvement districts to finance supplemental services, or Mello-Roos districts to finance development-related infrastructure extension. Agencies may finance facilities with voter-approved (general obligation) bonded indebtedness.

1.3 Financing Opportunities that Do Not Require Voter Approval

Financing opportunities that do not require voter approval include imposition of or increases in fees to more fully recover the costs of providing services, including user fees and Development Impact Fees to recover the actual cost of services provided and infrastructure.

Development Impact Fees and user fees must be based on reasonable costs, and may be imposed and increased without voter approval. Development Impact Fees may not be used to subsidize operating costs. Agencies may also finance many types of facility improvements through bond instruments that do not require voter approval.

Water rates and rate structures are not subject to regulation by other agencies. Utility providers may increase rates annually, and often do so. Generally, there is no voter approval requirement for rate increases, although notification of utility users is required. Water providers must maintain an enterprise fund for the respective utility separate from other funds, and may not use revenues to finance unrelated governmental activities.

2 Public Management Standards

While public sector management standards do vary depending on the size and scope of an organization, there are minimum standards. Well-managed organizations do the following eight activities:

1. Evaluate employees annually.
2. Prepare a budget before the beginning of the fiscal year.
3. Conduct periodic financial audits to safeguard the public trust.
4. Maintain current financial records.
5. Periodically evaluate rates and fees.
6. Plan and budget for capital replacement needs.
7. Conduct advance planning for future growth.
8. Make best efforts to meet regulatory requirements.

Most of the professionally managed and staffed agencies implement many of these best management practices. LAFCo encourages all local agencies to conduct timely financial record keeping for each city function and make financial information available to the public.

3 Public Participation in Government

The Brown Act (California Government Code Section 54950 et seq.) is intended to insure that public boards shall take their actions openly and that deliberations shall be conducted openly.

The Brown Act establishes requirements for the following:

- Open meetings
- Agendas that describe the business to be conducted at the meeting
- Notice for meetings
- Meaningful opportunity for the public to comment

Few exceptions for meeting in closed sessions and reports of items discussed in closed sessions.

According to California Government Section 54959:
Each member of a legislative body who attends a meeting of that legislative body where action is taken in violation of any provision of this chapter, and where the member intends to deprive the public of information to which the member knows or has reason to know the public is entitled under this chapter, is guilty of a misdemeanor.

Section 54960 states the following:
(a) The district attorney or any interested person may commence an action by mandamus, injunction or declaratory relief for the purpose of stopping or preventing violations or threatened violations of this chapter by members of the legislative body of a local agency or to determine the applicability of this chapter to actions or threatened future action of the legislative body

APPENDIX B
KONOCTI COUNTY WATER DISTRICT ANNEXATIONS AND DETACHMENTS

Konocti County Water District History

January 9, 1961	District Formation
January 1, 1962	District Detachment
January 1, 1962	Hughes Addition
April 24, 1092	Spruce Avenue and Eureka Avenue Annexation #1962-1
June 4, 1962	Coyle Annexation Annex 1962-2
March 25, 1965	Annexation 1963-1
December 1, 1965	District Exclusion 1965-1
January 1, 1967	Boundary Revision
December 7, 1970	Clear Lake Highlands Tract No 1, 2 & 5 Annexation
January 1, 1971	Boundary Revision
January 1, 1972	Boundary Revision
April 9, 1973	Jones-Coolahan Detachment
February 20, 2008	Davis Avenue Annexation (file 2005-0011)

Source: California State Board of Equalization Record

APPENDIX C

FIRE HYDRANT DATA AND HYDRANT LOCATIONS

ABBREVIATIONS

AB	Assembly Bill
ACH	Aluminum Chloride Hydroxide
AC	pipe Asbestos-cement pipe
ACWA	Association of California Water Agencies
AF	Acre-feet
AFA	Acre-feet per annum
AWWA	American Water Works Association
BLM	Bureau of Land Management (US)
CalPERS	California Public Employees' Retirement System
CAP	Cross Agency Priority
CEQA	California Environmental Quality Act
CFD	Community Facilities District
CIF	Capital Improvement Fee
CIP	Capital Improvement Program
CKH Act	Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000
CWD	County Water District
County	Lake County
District	Konocti County Water District
DUC	Disadvantaged Unincorporated Community
DWSRF	Drinking Water State Revolving Fund
EDU	Equivalent Dwelling Unit
FICA	Federal Insurance Contributions Act
FY	Fiscal Year
GAC	Granular Activated Carbon
GASB	Government Accounting Standards Board
GPM	gallons per minute

GRC	General Rate Case (Public Utilities Commission)
LAFCo	Local Agency Formation Commission
LAIF	Local Agency Investment Fund (State of California)
MG	Million Gallons
MGD	million gallons per day
MSR	Municipal Service Review (LAFCo)
MWC	Mutual Water Company
NTU	Nephelometric Turbidity Unit
O&M	Operations and Maintenance
OPEB	Other Postemployment Benefits
PERPA	Public Employees Pension Reform Act (California)
PG&E	Pacific Gas and Electric Company
PHD	Peak Hourly Demand
PUD	Public Utility District
PVC	poly-vinyl-chloride (pipe material)
RCAC	Rural Community Assistance Corporation
RV	Recreational Vehicle
SB	Senate Bill
SCADA	Supervisory Control and Data Acquisition
SOI	Sphere of Influence (LAFCo)
SR	State Route
SWRCB	State Water Resources Control Board
T&D	Treatment and Distribution
UC	University of California
USDA	United States Department of Agriculture
VFD	variable frequency drive
WTP	Water Treatment Plant

DEFINITIONS

Acre Foot (AF): The volume of water that will cover one acre to a depth of one foot, 325,850 U.S. Gallons or 1,233,342 liters (approximately).

Agriculture: Use of land for the production of food and fiber, including the growing of crops and/or the grazing of animals on natural prime or improved pastureland.

Aquifer: An underground, water-bearing layer of earth, porous rock, sand, or gravel, through which water can seep or be held in natural storage. Aquifers generally hold sufficient water to be used as a water supply.

Available Supply: the quantity of groundwater, which can be withdrawn annually from a groundwater basin without exceeding safe yield of the basin.

Board of Directors: the legislative body or governing board of a district.

Board of Supervisors: the legislative body or governing board of a county.

California Environmental Quality Act (CEQA): A State Law requiring State and local agencies to regulate activities with consideration for environmental protection. If a proposed activity has the potential for a significant adverse environmental impact, an environmental impact report (EIR) must be prepared and certified as to its adequacy before taking action on the proposed project.

Capital Improvement Plan (CIP): is a short-range plan, usually four to ten years, which identifies capital projects and equipment purchases, provides a planning schedule and identifies options for financing the plan. Essentially, the plan provides a link between a municipality, school district, parks and recreation department and/or other local government entity and a comprehensive and strategic plans and the entity's annual budget.

Census-Designated Place (CDP): a concentration of population identified by the United States Census Bureau for statistical purposes. CDPs are delineated for each decennial census as the statistical counterparts of incorporated places such as cities, towns, and villages. CDPs are populated areas that lack separate municipal government, but which otherwise physically resemble incorporated places. CDPs are delineated solely to provide data for settled concentrations of population that are identifiable by name but are not legally incorporated under the laws of the state in which they are located. They include small rural communities, colonias located along the U.S. border with Mexico, and unincorporated resort and retirement communities. The boundaries of a CDP have no legal status. Thus, they may not always correspond with the local understanding of the area or community with the same name. However, criteria established for the 2010 Census require that a CDP name "be one that is recognized and used in daily communication by the residents of the community" (not "a name developed solely for planning or other purposes") and recommend that a CDP's boundaries be mapped based on the geographic extent associated with residents' use of the place name.

Certified Public Accountant (CPA): the statutory title of qualified accountants in the United States who have passed the Uniform Certified Public Accountant Examination and have met additional state education and experience requirements for certification as a CPA.

Community Facilities District: Under the Mello-Roos Community Facilities Act of 1982 (Section 53311, et seq.) a legislative body may create within its jurisdiction a special tax district that can finance tax-exempt bonds for the planning, design, acquisition, construction, and/or operation of public facilities, as well as public services for district residents. Special taxes levied solely within the district are used to repay the bonds.

Environmental Impact Report (EIR): A report required pursuant to the California Environmental Quality Act that assesses all the environmental characteristics of an area, determines what effects or impact will result if the area is altered or disturbed by a proposed action, and identifies alternatives or other measures to avoid or reduce those impacts. (See California Environmental Quality Act.)

Infrastructure: Public services and facilities such as sewage-disposal systems, water-supply systems, and other utility systems, schools and roads.

Inhabited territory: Inhabited territory means territory within which there reside 12 or more registered voters. The number of registered voters as determined by the elections officer, shall be established as of the date a certificate of filing is issued by the executive officer. All other territory shall be deemed "uninhabited."[60]

IRWM: The Integrated Regional Water Management (IRWM) Grant Program is a competitive grant program first created under the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002 (Proposition 50) with continuing funding provided by the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coast Protection Bond Act of 2006 (Proposition 84). Complementary funding was also provided by the Disaster Preparedness and Flood Prevention Bond Act or 2006 (Proposition 1E) for Storm water Flood Management Grant Program. The program is administered by the Department of Water Resources to award funds to local public agencies and non-profit organizations, for projects and programs to improve water supply reliability and improve and protect water quality. Such projects and programs must be consistent with an adopted IRWM Plan.[61]

Land Use Classification: A system for classifying and designating the appropriate use of properties.

Leapfrog Development: New development separated from existing development by substantial vacant land.

[60] California Government Code Section 56046
[61] State of California, http://bondaccountability.resources.ca.gov/Program.aspx?ProgramPK=14&Program=Integrated%20Regional%20Water%20Management&PropositionPK=4, May 30, 2018.

Local Agency Formation Commission (LAFCo): A five-or seven-member commission within each county that reviews and evaluates all proposals for formation of special districts, incorporation of cities, annexation to special districts or cities, consolidation of districts, and merger of districts with cities. Each county's LAFCo is empowered to approve, disapprove, or conditionally approve such proposals. The LAFCo members generally include two county supervisors, two city council members, and one member representing the general public. Some LAFCOs include two representatives of special districts.

Maximum Contaminant Level (MCL): The designation given by the U.S. Environmental Protection Agency (USEPA) to water-quality standards promulgated under the Safe Drinking Water Act. The MCL is the greatest amount of a contaminant that can be present in drinking water without causing a risk to human health.[62]

Maximum Contaminant Level Goal (MCLG): the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are set by the U.S. Environmental Protection Agency (USEPA).

Maximum Residual Disinfectant Level (MRDL): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residential Disinfectant Level Goal (MRDLG): The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

Per Capita Water Use: The water produced by or introduced into the system of a water supplier divided by the total residential population; normally expressed in gallons per capita per day (gpcd).

Percolation: The downward movement of water through the soil or alluvium to a ground water table.

pH: a measure of the relative acidity or alkalinity of water. Water with a pH of 7 is neutral; lower pH levels indicate increasing acidity, while pH levels higher than 7 indicate increasingly basic solutions.[63]

Potable Water: Water of a quality suitable for drinking.[64]

pound-force per square inch gauge (Psig): a unit of pressure relative to the surrounding atmosphere.[65]

[62] http://ga.water.usgs.gov/edu/dictionary.html
[63] http://ga.water.usgs.gov/edu/dictionary.html#P, November 29, 2011.
[64] http://ga.water.usgs.gov/edu/dictionary.html
[65] http://www.convertunits.com/info/psig, March 27, 2012

Proposition 13: (Article XIIIA of the California Constitution) Passed in 1978, this proposition enacted sweeping changes to the California property tax system. Under Prop. 13, property taxes cannot exceed 1% of the value of the property and assessed valuations cannot increase by more than 2% per year. Property is subject to reassessment when there is a transfer of ownership or improvements are made.[66]

Proposition 218: (Article XIIID of the California Constitution) This proposition, named "The Right to Vote on Taxes Act", filled some of the perceived loopholes of Proposition 13. Under Proposition 218, assessments may only increase with a two-thirds majority vote of the qualified voters within the District. In addition to the two-thirds voter approval requirement, Proposition 218 states that effective July 1, 1997, any assessments levied may not be more than the costs necessary to provide the service, proceeds may not be used for any other purpose other than providing the services intended, and assessments may only be levied for services that are immediately available to property owners.[67]

Public Health Goal (PHG): The level of a contaminant in drinking water below, which there is no known or expected risk to health. PHGs are set by the California Environmental Protection Agency.

Ranchette: A single dwelling unit occupied by a non-farming household on a parcel of 2.5 to 20 acres that has been subdivided from agricultural land.

Recharge: flow to groundwater storage from precipitation, infiltration from streams, irrigation, spreading basins and other sources of water.

Regulatory Action Level (AL): The concentration of a contaminant, which, if exceeded, triggers treatment or other requirements that a water system must follow.

Sanitary Sewer: A system of subterranean conduits that carries refuse liquids or waste matter to a plant where the sewage is treated, as contrasted with storm drainage systems (that carry surface water) and septic tanks or leech fields (that hold refuse liquids and waste matter on-site).

Secondary Drinking Water Standards (SDWS): MCLs for contaminants that affect taste, odor, or appearance of the drinking water. Contaminants with SDWSs do not affect the health at the MCL levels.

Sphere of Influence (SOI): The probable physical boundaries and service area of a local agency, as determined by the Local Agency Formation Commission (LAFCo) of the county.

Treatment Technique (TT): A required process intended to reduce the level of a contaminant in drinking water.

[66] http://www.californiataxdata.com/A_Free_Resources/glossary_PS.asp#ps_08
[67] http://www.californiataxdata.com/A_Free_Resources/glossary_PS.asp#ps_08

Urban: Of, relating to, characteristic of, or constituting a city. Urban areas are generally characterized by moderate and higher density residential development (i.e., three or more dwelling units per acre), commercial development, and industrial development, and the availability of public services required for that development, specifically central water and sewer service, an extensive road network, public transit, and other such services (e.g., safety and emergency response). Development not providing such services may be "non-urban" or "rural". CEQA defines "urbanized area" as an area that has a population density of at least 1,000 persons per square mile (Public Resources Code Section 21080.14(b)).

Urban Services: Utilities (such as water, gas, electricity, and sewer) and public services (such as police, fire protection, schools, parks, and recreation) provided to an urbanized or urbanizing area.

Variances and Exemptions: Department permission to exceed an MCL or not comply with a treatment technique under certain conditions.

Zoning: The division of a city by legislative regulations into areas, or zones, that specify allowable uses for real property and size restrictions for buildings within these areas; a program that implements policies of the general plan.

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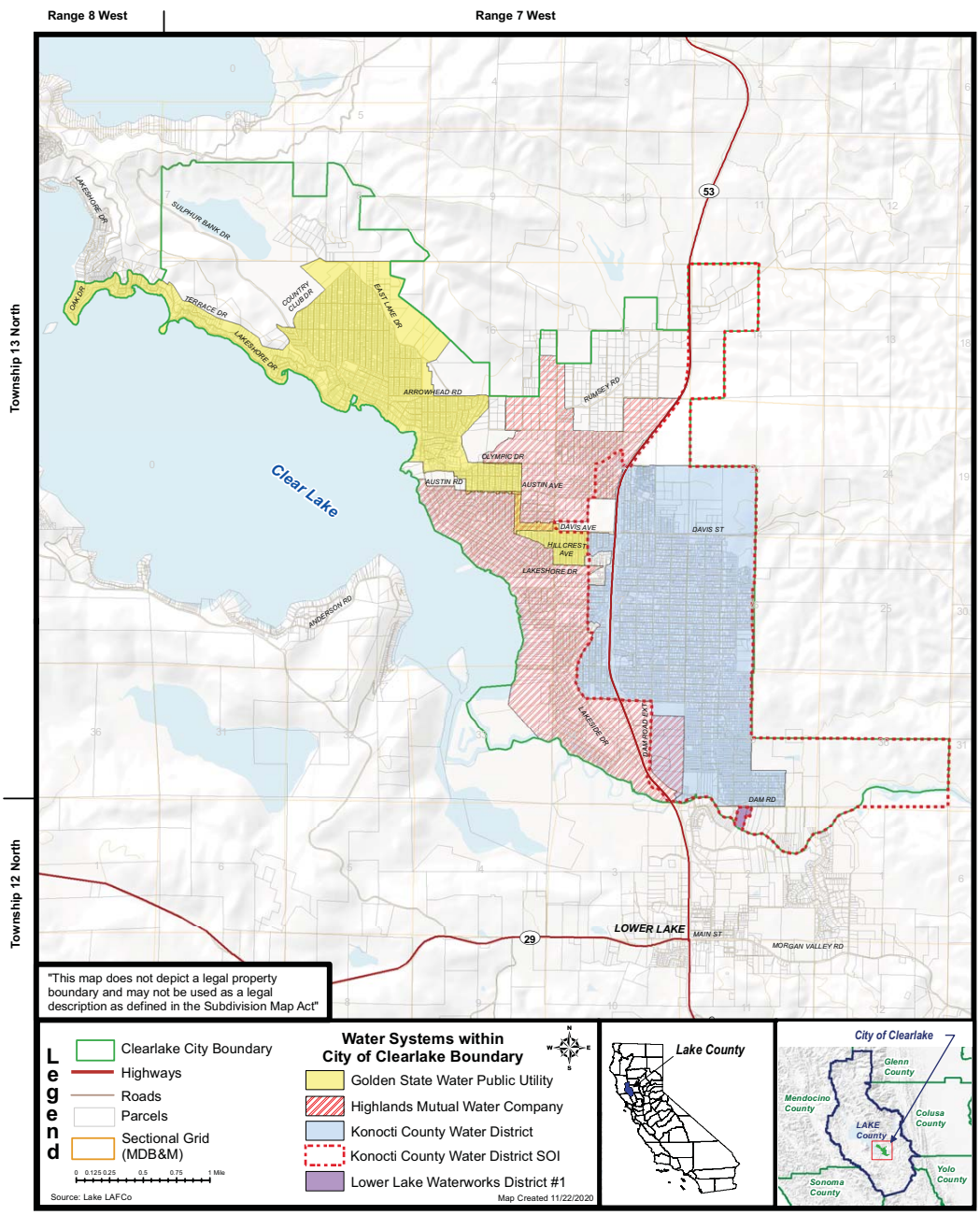
LAKE LOCAL AGENCY FORMATION COMMISSION
CLEARLAKE WATER SERVICE PROVIDERS



Boundary and DRAFT Sphere of Influence MAP for the Konocti Co. Water District