HEALDSBURG
2010 URBAN WATER MANAGEMENT PLAN

City of Healdsburg
Utilities Department

July 2015

Prepared by

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SECTION 1 - PLAN PREPARATION

1.1 Introduction

This document sets forth the 2010 Urban Water Management Plan (UWMP) as required by the Urban Water Management Planning Act (Act), California Water Code §§ 10610 et seq. and to fulfill the requirements of the Water Conservation Bill of 2009 (SBX7-7), California Water Code §§ 10608-10608.64. The Act was enacted in 1983 with the purpose of requiring urban water suppliers "to develop water management plans to actively pursue the efficient use of available [water] supplies" (Water Code § 10610.4.). The Act requires each urban water supplier with 3,000 or more connections, or which supplies at least 3,000 acre-feet per year (AFY) of potable water, to submit a UWMP to the California Department of Water Resources (DWR) every five years. In 2010, the City of Healdsburg (City) had 4,332 connections within the City limits and therefore meets the threshold for this State requirement. As of 2013, the City had approximately 4,388 connections. The City's first UWMP was completed in the year 2000 followed by an update in 2005. This 2010 UWMP contains data through the year 2013. While the 2010 UWMP was not adopted until 2015, the City finds its water supply adequate to meet existing demands as well as the planned growth of the City and the City's wholesale customers. In the near term the City will begin development of the 2015 UWMP, which is due on July 1, 2016. Therefore the 2015 UWMP will quickly replace the 2010 UWMP and provide a foundation for the City's future water supply planning.

1.1.1 Purpose

The purpose of developing a UWMP is to evaluate whether a water supplier can meet the water demands of its water customers as projected over a 20- or 25-year planning horizon. This evaluation is accomplished through analysis of current and projected water supply and demand for normal, single-dry, or multiple-dry water year conditions. This UWMP has been developed with a 25-year planning horizon (2010-2035). The UWMP will:

- Identify measures to be implemented or projects to be undertaken to reduce water demands and address water supply shortfalls;
- Identify stages of action to address up to 50 percent reduction in water supplies during dry water years;
- Identify actions to be implemented in the event of a catastrophic interruption in water supplies;
- Assess the reliability of the sources during normal, single-dry, and multiple-dry water years; and
- Identify measures the City will plan to undertake in order to meet the State Legislature's requirement for a 20 percent per capita reduction in urban water use statewide by 2020.

The City's potable water sources come from several well fields that are located adjacent to the Russian River and Dry Creek. The City's wells are discussed in Section 4.

Senate Bill x7-7 (SBx7-7) was enacted in 2009 and contains several mandates designed to increase water conservation in California. For example, SBx7-7 requires a 20 percent statewide reduction in urban potable water use by the year 2020. The water use reduction required by each water supplier varies by region and includes year 2020 water savings targets measured in daily per capita use, as well as an interim water savings target to be met by 2015. Each water supplier's 2010 UWMP is required to establish the water use baseline from which targeted reductions are made (2498722.1).

1.1.2 Background

The State of California's Act as codified in California Water Code Sections 10610 through 10656 requires each urban water supplier with 3,000 or more connections, or which supplies at least 3,000 acre-feet per year (AFY) of potable water, to submit a UWMP to the California Department of Water Resources (DWR)

every five years. In 2010, the City had 4,332 connections within the City limits and therefore meets the threshold for this State requirement.[1] As of 2013, the City had approximately 4,388 connections.

Senate Bill x7-7 (SBx7-7) was passed by the California legislature and approved by the Governor in 2009. The bill amended the Act to require a 20 percent statewide reduction in urban potable water use by the year 2020. The water use reduction required by each water supplier varies by region and includes year 2020 water savings targets measured in daily per capita use, as well as an interim water savings target to be met by 2015. Each water supplier's 2010 UWMP is required to establish the water use baseline from which targeted reductions are made.

1.1.3 Structure of the Plan

The outline of this UWMP generally follows the suggested outline for a UWMP as presented in the *Guidebook to Assist Water Suppliers in the Preparation of a 2010 Urban Water Management Plan* developed by the DWR. The guidelines can be found in the following website link: http://www.water.ca.gov/urbanwatermanagement/guidebook/. The following table lists the key elements of each section in this report.

Table 1-1 – Structure of the Plan

Section	Title	Key Elements
1	Introduction and Plan Preparation	Introduction
		Coordination
		Plan Adoption, Submittal and Implementation
2	Service Area	Service Area Physical Description
		Service Area Population
3	System Demands	Baselines and Targets
		Water Demands
		Water Demand Projections for Retailers
		Water Use Reduction Plan
4	System Supplies	Water Sources
		Groundwater
		Transfer Opportunities
		Desalinated Water Opportunities
		Recycled Water Opportunities
		Future Water Supply Projects
5	Supply Reliability and Shortage Contingency Planning	Water Supply Reliability
		Water Shortage Contingency Planning
		Drought Planning
6	Demand Management Measures (DMMs)	Description of DMMs
		Implementation of DMMs

[1] Source: Annual report to the California Department of Public Health.

1.1.4 Level of Planning

The Act specifies the required content of each UWMP and allows for the level of detail provided in each UWMP to reflect the size and complexity of the water supplier. The Act requires projections in five-year increments for a minimum of 20 years. This UWMP considers a 25-year planning horizon through the year 2035.

1.1.5 Assumptions

The evaluation and projections in this document are based on the City's current understanding of its water rights and its planned (future) water supply projects. This document is a "living" document. As the City's water supply picture changes, the UWMP will be updated to incorporate those changes accordingly.

1.2 Coordination

This section describes the various agencies, districts, and stakeholders that were involved or the City communicated with to obtain input and information in preparing this UWMP.

1.2.1 Agency Coordination

The City meets regularly with the Sonoma County Water Agency (Water Agency), the County of Sonoma, Department of Transportation and Public Works (TPW) and other water rights holders along the northern Russian River, including vineyard owners.

The table below identifies the various agencies that the City is coordinating with during the UWMP preparation process.

Table 1-2 (DWR Table 1) – Public and Agency Coordination

Agency/Public Entity	Participated in Plan Development	Commented on the Draft	Attended Public Meetings	Was sent a Notice of Intent to Update UWMP	Was Sent a Notice of Intention to Adopt
Sonoma County Water Agency				X	
Sonoma County Public Works Department				X	
Syar Vineyard				X	
General Public	X	X	X	X	
Others					
To be completed after public meetings.					

1.2.2 Public Participation

Urban water suppliers are required by the Act to encourage active involvement of the community within the service area prior to and during the preparation of its UWMP. The Act also requires urban water suppliers to make a draft of the UWMP available for public review and to hold a public hearing regarding the findings of the UWMP prior to its adoption.

The City included a public notice in the two local newspapers notifying the public of the City's intent to prepare its UWMP and asked for public input during the preparation of the UWMP. City staff held a public

meeting focused on the water conservation baseline and targets and to receive input on the City's water conservation program implementation plans. This meeting was held at the Foss Creek Community Center on May 13, 2015.

The Draft UWMP was presented before the City Council on July 29, 2015. The meeting was publicly noticed and the public was given the opportunity to offer comments and ask questions about the UWMP. A copy of the Council resolution of adoption is included in Appendix A.

1.3 Plan Adoption, Submittal, and Implementation

The Final UWMP was adopted on July 29, 2015 and incorporates comments made by the City Council, the public, and other affected entities. The Final UWMP is available for public viewing at the following website link: http://www.ci.healdsburg.ca.us/622/Urban-Water-Management-Plan.

A copy of the Final UWMP will be submitted to the DWR and to the California State Library no later than 30 days after adoption by the City Council (see Appendix A for copy of transmittal letter). A copy of the Final UWMP will be made available for public viewing at City Hall during normal business hours. Implementation of the 2010 Final UWMP will be overseen by the City's Utilities Director.

SECTION 2 - SYSTEM DESCRIPTION

This section describes the physical characteristics of the City's water service area as well as current and projected population for the service area.

2.1 Service Area Description

The City of Healdsburg is located in the County of Sonoma (County), approximately 12 miles north of the City of Santa Rosa. The location of Healdsburg is shown in Figure 2-1. The City of Healdsburg is located between Highway 101 and the Russian River, which flows southward to the east of the City and crosses through the southern portion of the City in a westerly direction. The City's water service area is roughly equivalent to the City's sphere of influence, and includes the Fitch Mountain County Service Area (Figure 2-2).

The service area is approximately four square miles and serves primarily residential and commercial customers. The City rests at an elevation of approximately 106 feet above mean sea level.

The potable water distribution system contains three pressure zones that are each served by one or more storage reservoirs for a total of six storage reservoirs. Figure 2-2 demonstrates the pressure zones in various colors. The principal water mains in the distribution system range in size from 6 to 16 inches. Most of the distribution piping in the older areas of the City range in size from 1-1/2 to 4 inches, while the newer areas are served by pipes 6 to 8 inches in diameter. Figure 2-3 shows the approximate layout of the distribution system piping, along with the major physical components of the water system including wells, pump stations, reservoirs, and water sampling locations.

The City also has a recycled water distribution system with an active recycled water transmission main extending northward from the WWTF following the West Slough and terminating at a recycled water hydrant on Kinley Drive, southwest of Highway 101. Another segment of recycled water pipe extends southward from the WWTF to multiple Syar owned vineyard properties, approximately 4,382 feet from the WWTF (Figure 2-3).

Historically, the City's economy was supported by agriculture and logging. In more recent years, the City has experienced an increase in urban development and a diversification of the local economy with tourism as a growing element of the economy.

2.2 Climate

The City lies within the Russian River watershed and in a region which has a "Mediterranean" climate. The typical weather pattern is a wet winter and a dry summer season with little or no rain. Typically, only 4% of the annual rainfall falls during the five months of May through September. The annual mean temperature is 59.9°F.

The average annual rainfall for the region is approximately 42 inches per year, and the average annual rate of evapo-transpiration (ETo) of common turf grass is approximately 50.5 inches per year. ETo is a measurement of evaporation combined with transpiration and is expressed in the form of a rate. ETo can be generally described as the amount of precipitation needed for turf to grow in a specific region, whether from rain or irrigation. Monthly ETo, rainfall, and temperature averages, along with annual totals are summarized in Table 2-1, below.

Note that the climate averages presented in the following table are from data collected between 1931 and 2005 by the Western Climate Center. Averaged climate figures compiled from data available for the years of 1981 through 2010 from the Western Climate Center do not differ significantly from the below averages.

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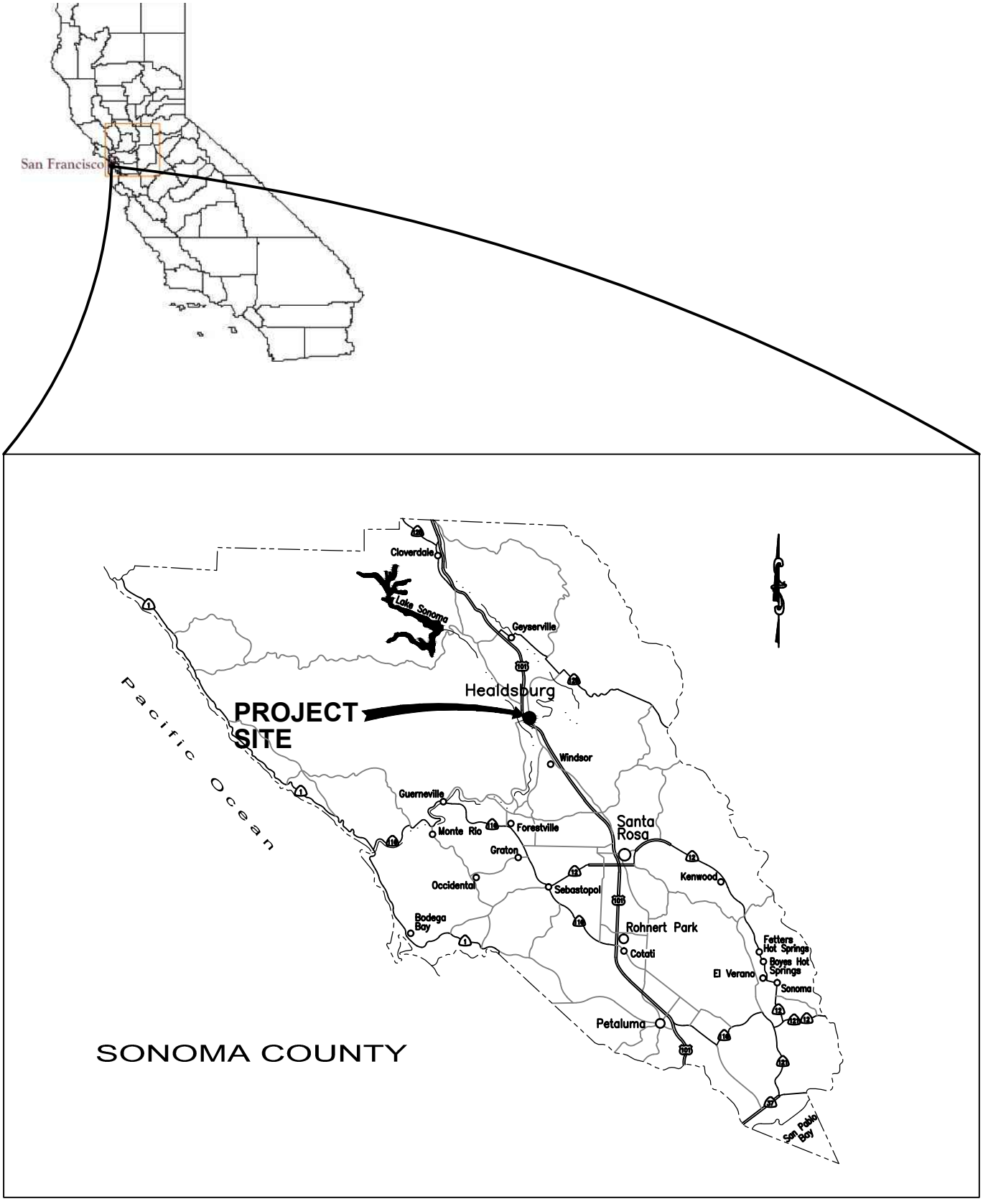
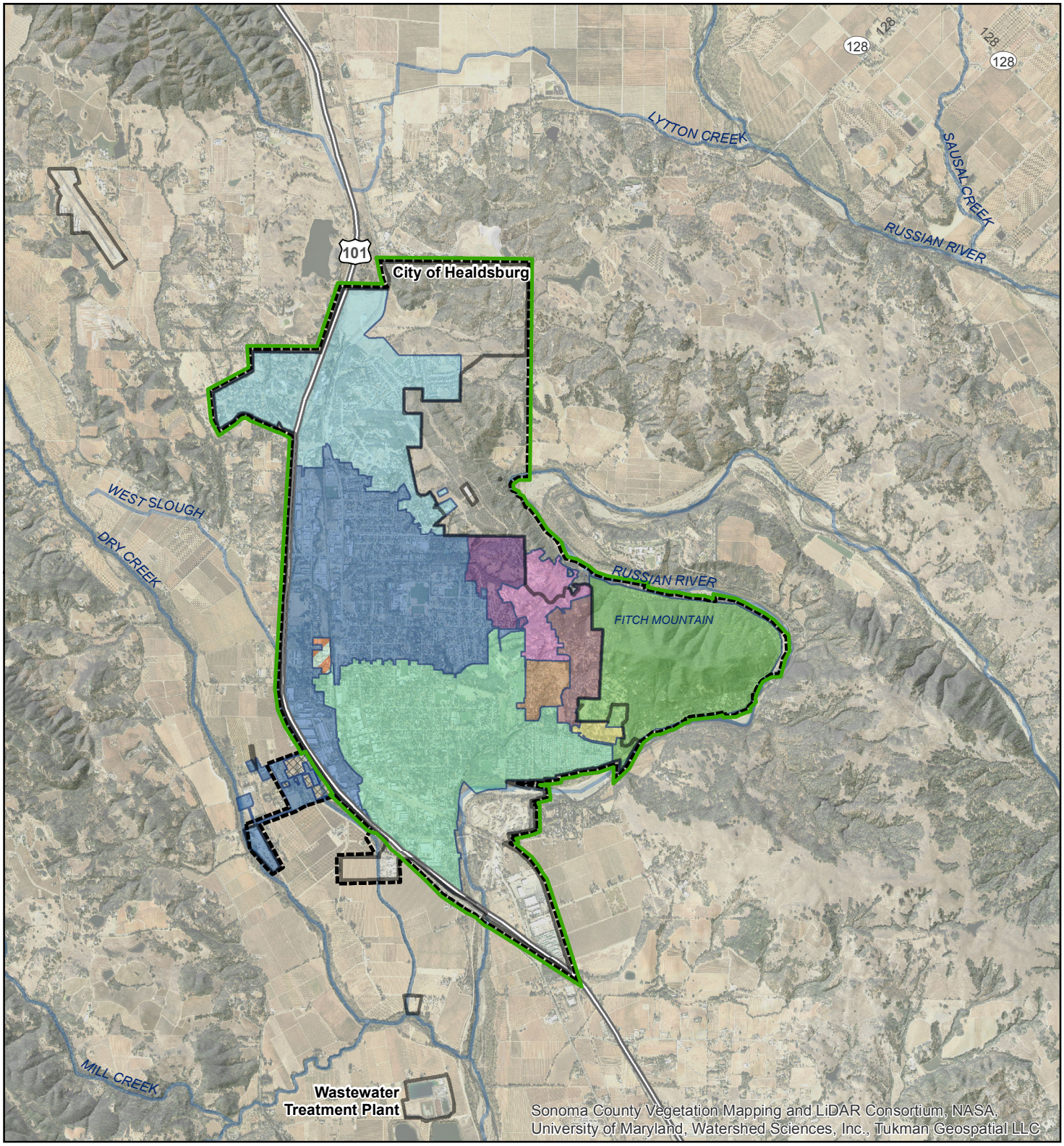


City of Healdsburg
Urban Water Management Plan Update 2013
Healdsburg, California

LOCATION MAP

Job Number 8411468
Revision
Date May 2015

Figure 2-1



Water Pressure Zones

- Cadoul
- CSA41/24
- Hidden Acres
- Iverson North
- Iverson South
- Latimer
- Panorama
- Sunset
- Tayman
- Multiple Zones
- No Service
- Limited Access Highway
- Healdsburg City Limits
- Named Streams & Rivers
- Sphere of Influence
- Water Service Boundary

Paper Size 8.5" x 11" (ANSI A)

0 1,000 2,000 3,000 4,000 5,000

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California II FIPS 0402 Feet

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City of Healdsburg
Urban Water Management Plan Update 2013

Job Number 8411468.10
Revision A
Date 01 May 2015

Water Service Areas and Pressure Zones

Figure 2-2

2235 Mercury Way Suite 150 Santa Rosa CA 95407 USA T 707 523 1010 F 707 527 8679 E santarosa@ghd.com W www.ghd.com

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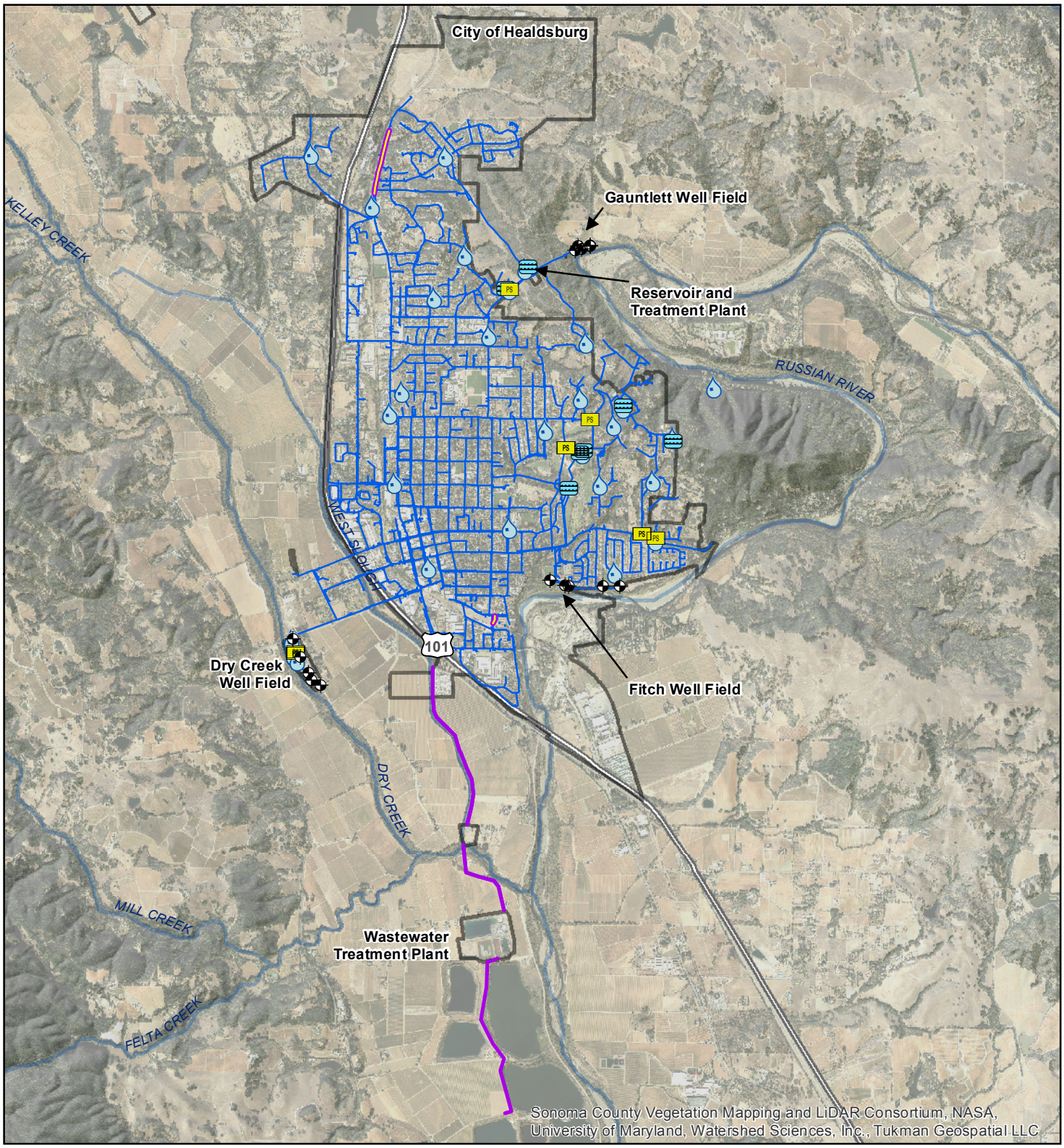
Data source: City of Healdsburg, Water Distribution, 2014; County of Sonoma, Imagery, 2013. Created by:sndove



Pump Station
Storage
Well
Water Sample Location
Water Main
Inactive Reclaimed Water Main
Reclaimed Water Main
Limited Access Highway
Healdsburg City Limits
Named Streams & Rivers

Paper Size 8.5" x 11" (ANSI A)
0 1,000 2,000 3,000 4,000 5,000
Feet
Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California II FIPS 0402 Feet

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City of Healdsburg
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Job Number 8411468.10
Revision 1
Date 16 Jul 2015

Water Distribution System

Figure 2-3

G:\Projects\02072 - Healdsburg\02072-8411468 UWMP 2013-2015\08-GIS\Maps\Figures\F2-3 Water Distribution System.mxd 2235 Mercury Way Suite 150 Santa Rosa CA 95407 USA T 707 523 1010 F 707 527 8679 E santarosa@ghd.com W www.ghd.com

Data source: City of Healdsburg, Water Distribution, 2014; County of Sonoma, Imagery, 2013. Created by:afisher2

Table 2-1
Monthly Climatic Averages

Month	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Annual Total or Average
Standard Monthly Average ETo [a] (inches)	1.27	1.85	3.26	4.70	5.94	6.99	7.77	6.80	5.21	3.53	1.97	1.22	50.51”
Average Rainfall (inches)	8.97	7.44	5.41	2.59	0.99	0.30	0.04	0.13	0.39	2.24	5.35	8.05	41.9”
Average Temperature (°F)	47.8	51.5	54.5	58.2	63.4	68.4	70.7	70.4	68.7	62.8	54.2	48.3	59.9° average

Notes:
a = ETo data averaged from August 1986 to May 1994. The reference “crop” is typical turf grasses.

2.3 Service Area Population

The City’s General Plan, 2009 ABAG population projections, and US Census data were all reviewed and incorporated into the population projections.

According to the U.S. Census Bureau, the City of Healdsburg’s population in 2010 was 11,254. Based on California Department of Finance figures, there were an estimated 11,455 residents in the City of Healdsburg in 2013. The City also provides potable water service to the approximately 950 residents of Fitch Mountain, therefore the population of the entire service area was approximately 12,204 in 2010 and 12,405 in 2013.

In the 2005 UWMP, it was a stated projection that the City’s service area population of 12,200 would grow to 13,000 by the year 2010. Based on U.S. Census Bureau estimates, there was virtually no net population growth in the City during that time period. When comparing the 2013 City population with that of 2010, there was an average growth rate of 0.8% per year for those three years. When calculating population growth in the City of Healdsburg for the years 2009 through 2013, the average population growth for those years was zero percent.

Based on population projections for the City of one percent per year up to 2025 and 0.8 percent from 2025 to 2035, the population for the City would reach 13,972 by the year 2035. Taking a conservative approach and applying that growth rate to Fitch Mountain service area, that would bring the population of the City plus the Fitch Mountain service area to 15,119 by the year 2035. These actual population figures and projections are presented in Table 2-2 below.

Table 2-2 (DWR Table 2)

Population – Current and Projected

Year	2010	2013	2014	2015	2020	2025	2030	2035
Population - In City Limits	11,254	11,455	11,564	11,680	12,275	12,902	13,426	13,972
Population - Outside City Limits	950	950	950	960	1,008	1,060	1,103	1,148
Total Population in Service Area	12,204	12,405	12,514	12,639	13,284	13,961	14,529	15,119
Average Increase		0.6%	1.0%	1.0%	1.0%	1.0%	0.8%	0.8%

2010 population number is from the US Census

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SECTION 3 - SYSTEM DEMANDS

This section of the UWMP presents the City's water system demands, and provides the actual and projected number of water accounts and annual water use in five-year increments between 2005 and 2035. Based on the water system demands, the baseline (daily per capita) water use from 2010 was calculated, and the 2020 urban water use target with an interim target for 2015 were established as required by Senate Bill (SB) SBx7-7.

3.1 Baselines and Targets

Senate Bill SBx7-7 established new requirements for the 2010 UWMP to include the development of baseline water use and urban water use targets. Specifically, each urban water supplier must develop a long-term baseline daily per capita water use, establish a per capita water use target for 2020, and provide an interim water use target for 2015. By determining the baseline and water use targets, the City can help fulfill the requirement set forth by SBx7-7.

The purpose of SBx7-7 is to establish requirements for the State of California to reduce its statewide urban per capita water use by 20 percent by the year 2020. An interim target is set for 2015 which requires a 10 percent reduction in urban per capita water use. After year 2021, failure to meet the 2020 water use target constitutes a violation of law. The City is required to meet these water use targets, and is on schedule to meet them.

Compliance with the 2015 and 2020 water use targets is also a requirement for eligibility for State water grants and loans. A discussion of the baselines and targets is provided in the following sections.

3.1.1 Base Daily Per Capita Water Use

The base daily per capita water use is the water supplier's average gross daily per capita use, in gallons. The baseline includes all water entering the water distribution system, including water losses. The baseline daily per capita water use, however, does not include recycled water delivered within the supplier's service area, water placed into long-term storage, or water conveyed for use by another urban water supplier (per CA Water Code 10608.12).

The City's "water distribution system" does not include the Fitch Mountain Service area to which the City is a wholesale supplier. The water distribution system in that service area is owned and operated by the County of Sonoma, and is therefore not required to meet the water use targets established in the City's UWMP.

The purpose of developing a baseline daily per capita water use is to establish a benchmark from which the 2015 and 2020 water use targets are derived. For most urban water suppliers, the base daily per capita water use is developed based on a 10-year average, beginning no earlier than 1994 and ending no later than 2010.

To determine the baseline daily per capita water use, the 2008 recycled water supplied and the 2008 total urban water supplied were used to determine the number of years that can be included in the base period range. Specifically, if water suppliers whose recycled water supply in 2008 was 10 percent or greater than the total urban water supply, then the baseline daily per capita water use can be developed using a 10-15 year range. Since the City did not deliver recycled water prior to 2008, the base period range must be no more than 10 years.

Table 3-1 summarizes the base period water deliveries and shows that the City did not deliver more recycled water than 10 percent of the total water supply in 2008.

Table 3-1 (DWR Table 13)

Base Period Ranges

Base	Parameter	Value	Units
10- to 15-Year Base Period	2008 total water deliveries	2,297	Acre-feet per year
	2008 total volume of delivered recycled water	0	Acre-feet per year
	2008 recycled water as a percent of total deliveries	0	percent
	Number of years in base period [a]	10	years
	Year beginning base period range	1995	NA
	Year ending base period range [b]	2004	NA
5-Year Base Period	Number of years in base period	5	years
	Year beginning base period range	2003	NA
	Year ending base period range [c]	2007	NA

Notes:

a = If the 2008 recycled water percent is less than 10 percent, then the base period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the base period is a continuous 10- to 15-year period.

b = The ending year must be between December 31, 2004 and December 31, 2010. c = The ending year must be between December 31, 2007 and December 31, 2010.

The reported water deliveries for 2008 in Table 3-1 do not include sales outside the City's water service area. For the development of the City's base daily per capita water use, a 10-year average from 1995 to 2004 was used. Table 3-2 summarizes the City's annual production and per capita water use during this 10-year period.

Table 3-2 (DWR Table 14)

Base Daily Per Capita Water Use – 10- Year Range[1]

Base Period Year		Distribution System Population	Gross Water Production (mg/yr)	Gross Annual Production (AFY)	Annual Daily Per Capita Water Use (gpcd)
Sequence Year	Calendar Year				
Year 1	1995	9,788	795.3	2,440.7	223
Year 2	1996	9,800	771.9	2,368.8	216
Year 3	1997	9,875	684.3	2,099.9	190
Year 4	1998	10,100	711.9	2,184.8	193
Year 5	1999	10,250	777.5	2,386.2	208
Year 6	2000	10,722	763.1	2,341.9	195
Year 7	2001	11,381	802.4	2,462.6	193
Year 8	2002	11,650	870.1	2,670.4	205
Year 9	2003	11,628	831.2	2,550.8	196
Year 10	2004	11,639	900.2	2,762.6	212
				Base Daily Per Capita Water Use	**203**

[1]This table is developed using data for the City of Healdsburg retail distribution system.

The 10-year base daily per capita water use is derived by averaging the annual daily per capita water use over the 10-year time period. As shown in Table 3-2 (DWR Table 14), the City's base daily per capita (person) water use is 203 gallons per capita per day (gpcd). The base daily per capita water use was developed using the U.S. Census data and population estimates that corresponds with the limits of the City's distribution system and the City's retail water service area, as per the 2010 UWMP Guidelines. Gross water use was calculated by adding all well production as reported annually to the Water Quality Control Board Division of Drinking Water (WQCB DDW) by the City, and subtracting water sold wholesale to County districts. The baseline per capita water use of 203 gpcd (calculated in Table 3-2 as the average of the daily per capita water use for the 10 year period) is only 1 gpcd higher than the per capita water use value that was used to develop future water demands in the City's 2003 Water System Master Plan[2].

Another requirement for the 2010 UWMP is for each urban water supplier to determine its 5-year base daily per capita water use using a 5-year range ending no earlier than 2007 and no later than 2010. If the 5-year base daily water use exceeds 100 gpcd, then the 2020 water use target established by the City must be less than or equal to 95 percent of this 5-year baseline. Table 3-3 summarizes the 5-year daily water use from 2003 through 2007. The 5-year base daily water use was determined to be 195 gpcd, which is the average base daily water use for this 5-year period. Because the base daily water use is greater than 100 gpcd, the 2020 water use target established by the City should not be greater than 95% of 195 gpcd. Development of the City's 2020 water use target is discussed in Section 3.1.2.

[2] City of Healdsburg Water System Master Plan, October 2003 by HDR

Table 3-3 (DWR Table 15)

Base Daily Per Capita Water Use – 5-Year Range – AFY[1]

Base Period Year		Distribution System Population	System Gross Water Use (mg)	Gross Annual Production (AFY)	Base Daily Per Capita Water Use (gpcd)
Sequence Year	Calendar Year				
Year 1	2003	11,628	831.2	2,550.8	196
Year 2	2004	11,639	900.2	2,762.6	212
Year 3	2005	11,661	844.3	2,591.2	198
Year 4	2006	11,651	802.4	2,462.4	189
Year 5	2007	11,641	759.5	2,330.9	179
Base Daily Per Capita Water Use				**2,540**	**195**

[1]Does not include water sold wholesale.

3.1.2 Water Use Targets (2015, 2020)

Under SBx7-7, each individual urban water supplier must develop a water use target for year 2020 using one of four allowable methods, discussed below. Note that the 2015 interim target is a water use target that is halfway between the base daily per capita water use of 203 gpcd (Table 3-2) and the 2020 water use target. There is no penalty for an agency not achieving its 2015 interim target.

The California Department of Water Resources (DWR) is the agency responsible for establishing the four methodologies for determining water use targets. Three methods are provided in SBx7-7 and the fourth was subsequently established by the DWR. The City can choose one of the four methods described below to develop the 2015 and 2020 water use targets:

- Method 1 : 80 percent of Base Daily Per Capita Use;
- Method 2: Performance standards based on actual water use data for indoor residential water use, landscaped area, and commercial, industrial and institutional (CII) water use;
- Method 3: 95 percent of the North Coast hydrologic region target (130 gpcd target) (see Figure 3-1); or
- Method 4: Savings by water sector (indoor residential and CII) and landscape and water loss savings.

A more complete description of each method can be found in the DWR's *Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan* dated March 2011.

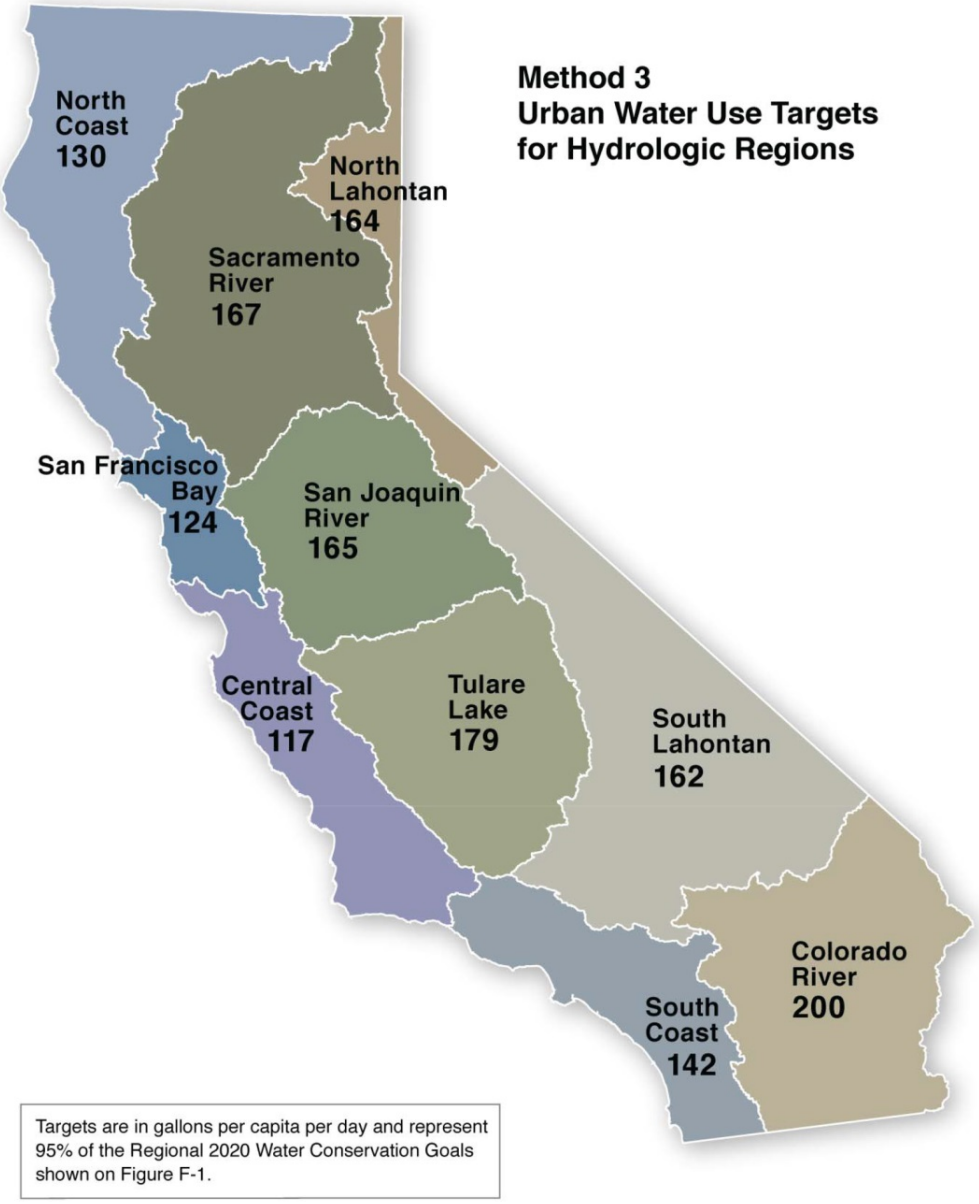

Figure 3-1: Hydrologic Region Map for Method 3

The City Council adopted Method 1 for the development of its individual water use target. Based on the City's base daily per capita use of 203 gpcd (Table 3-2), the City's per capita water use targets in comparison to the projected per capita water use are shown in Table 3-4. The 2020 water use target of 162 gpcd is 80% of the base daily per capita use of 203 gpcd. This is based on the year range of 1995-2004, as described in Section 3.1.1.

Table 3-4
Water Use Targets (gpcd) (Method 1)

Calendar Year	Target
2015	182
2020	**162**

Once the water use targets are determined, SBx7-7 requires confirmation that the water use targets meet the minimum water use reduction established by statute, as described in Section 3.1. The established 2020 water use target must be less than or equal to 95 percent of the five-year base daily per capita use. As shown in Table 3-3 (DWR Table 15), the 5-year base daily per capita water use is 195 gpcd. Ninety-five percent of 195 gpcd is 185 gpcd. Because the water use target calculated by Method 1 (Table 3-4) is less than 185 gpcd, no further adjustments need to be made; therefore the City can establish the 2020 water use target as 162 gpcd.

3.2 Water Demands

The water demand and water conservation savings analysis was conducted using data derived from the City's utility billing system and well production data.

3.2.1 Past and Current Water Deliveries

Water use sectors within the City include residential, commercial, industrial, institutional, governmental, landscape, and other water use. Water use in the City's service area is predominantly residential use. In 2013, the residential customers numbered approximately 80 percent of the total water billing accounts and received approximately 70 percent of the total water deliveries. Commercial customers are the next largest customer type and were approximately 11 percent of the total water billing accounts in 2013 and received approximately 16 percent of the total water deliveries.

In the following tables, institutional facilities include all City property, schools and churches, unless noted otherwise. Landscape areas include areas under both residential and non-residential properties. Note that while commercial hydrants require a manual adjustment, the flow from the hydrants is accounted as part of the commercial sector.

Past customer water use for the year 2005 is presented in Table 3-5 (DWR Table 3) and was obtained from actual billing data provided by City's Finance Department.

Table 3-5 (DWR Table 3)

Water Deliveries – Actual, 2005 – AFY

Water Use Sectors	2005	
	# of Accounts	Volume (AF)
Residential	3,710	1,440
Commercial/ Industrial [a]	471	545
Institutional (City Accounts)	26	37
Other	0	0
Total	**4,207**	**2,023**

a = Schools and churches are included in the commercial category

Customer water use for years 2010 and 2013, as presented in Table 3-6 (DWR Table 4) and Table 3-7 (DWR Table 4a), are also based on actual billing data for the various water use sectors.

Table 3-6 (DWR Table 4)

Water Deliveries – Actual, 2010 – AFY

Water Use Sectors	2010	
	# of Accounts	Volume (AF)
Residential	3,723	1,201
Commercial	489	300
Industrial	39	41
Institutional/ Governmental	71	64
Landscape	86	156
Other	0	0
Total	**4,408**	**1,762**

Table 3-7 (DWR Table 4a)

Water Deliveries – Actual, 2013 – AFY

Water Use Sectors	2010	
	# of Accounts	Volume (AFY)
Residential	3,837	1,454
Commercial	334	347
Industrial	29	50
Institutional/ Governmental	28	34
Landscape	158	240
Other	0	0
Total	**4,387**	**2,125**

3.2.2 Projected Water Deliveries

Water use projections are based on an assumed population growth rate using on US Census data, ABAG population projections, and actual population data. Projected water deliveries are based on the proportion of customer sectors remaining similar to the current proportion, which is similar to the proportion of water use since at least 2000.

The General Plan EIR has generalized estimates of land areas to be developed into commercial or industrial uses; however, without specific business use information, it is difficult to determine specific water use estimates. Therefore, it was assumed that water consumption for increased commercial growth would remain the same as the current proportion. The growth rate, as discussed in Section 2, is estimated to be at one percent (1.0%) per year through 2025 and at eight tenths of one percent (0.8%) per year from 2025 through 2035. These growth rates were applied to all demand sectors equally. These projections in this section are based on actual population and water consumption figures for the years 2010 and 2013. For a discussion on the population projections, see Section 2.

Like projections, these are based on a set of assumptions. Actual future population and water consumption may differ from these projections based on unseen circumstances.

Table 3-8 (DWR Table 5)
Water Deliveries – Projected, 2015 – AFY

Water Use Sectors	2015	
	# of Accounts	Volume
Residential	3,914	1,483
Commercial	341	337
Industrial	30	51
Institutional/ Governmental	29	34
Landscape	161	245
Other	0	0
Total	**4,475**	**2,151**

Table 3-9 (DWR Table 6)
Water Deliveries – Projected, 2020 – AFY

Water Use Sectors	2020	
	# of Accounts	Volume
Residential	4,114	1,559
Commercial	358	355
Industrial	31	54
Institutional/ Governmental	30	36
Landscape	169	257
Other	0	0
Total	**4,703**	**2,261**

Table 3-10 (DWR Table 7)

Water Deliveries — Projected, 2025, 2030, and 2035 – AFY

Water Use Sectors	2025		2030		2035	
	Metered		Metered		Metered	
	# of Accounts	Volume	# of Accounts	Volume	# of Accounts	Volume
Residential	4,324	1,638	4,500	1,705	4,683	1,774
Commercial	366	373	380	388	396	404
Industrial	33	57	34	59	35	61
Institutional/ Governmental	32	38	33	40	34	41
Landscape	178	270	185	281	193	293
Other	-	-	-	-	-	-
Total	**4,932**	**2,376**	**5,132**	**2,473**	**5,341**	**2,573**

Please note that the above tables show water deliveries by customer demand only. They do not include water losses or unaccounted-for water. The additional water uses and losses are addressed in Section 3.2.4.

In the City's 2005 UWMP, it was predicted that the City's customer demand for the year 2025 would be 3,035 AFY. Because of the unexpected events of the economic recession and the consequent slowed population growth, and because of the City's increased water use efficiency, current water customer demand projections have been adjusted downward to 2,376 AFY, as shown in Table 3-10 (DWR Table 7). The adjustment was made by using the actual metered volume of water reported in 2013 (Table 3-7) and projecting volume of water at a percentage equal to the population growth rate.

The customer demand projections above are not specific to proposed developments, but rather based on anticipated population growth and water consumption patterns. These calculations assume that all customer sectors, as listed in the demand tables above, will grow at the same rate as the residential population sector. Additionally, these calculations are based on a gross per capita consumption rate of 165 gpcd. This is the actual per capita per day *gross* consumption for the City in 2013. This is a per capita consumption rate that is only 3 gpcd higher than the 2020 target of 162 gpcd indicating that the City is on track to meet this goal.

Like all projections and forecasts, these demand projections are based on a series of assumptions, based on information available at the time the projections are made.

3.2.3 Water Sold to Other Agencies

Since the mid-1990s, the City has sold water to the County of Sonoma Department of Transportation and Public Works (TPW) under the County's operation of the Fitch Mountain County Service Area (CSA) #41 Zone (TPW Fitch Service Area), which is a small water system located outside of the City's limits. The TPW had its own Russian River water right (Permit No. 13059); therefore, to the extent allowed under the

permit limits, water produced from the City's Russian River wells and sold to the TPW is reported against the County Permit No. 13059, not the City's permit.

Between 1999 and October 2008, the City had a seasonal restriction on the use of its Gauntlett well fields due to water quality. Because of the addition of the microfiltration treatment system on the Gauntlett well fields, the City no longer has that restriction. Additionally, the TPW no longer holds a water right, and therefore their usage is reported along with the City's municipal water service, where it is not separated out.

At the time of the 2005 UWMP, the TPW had its own water rights permit, separate from the City's. However, that water right has now been transferred to the City. The TPW's water delivery system, however, continues to be owned and operated by the County of Sonoma, not the City. Therefore, water sold to them is considered a wholesale water sale.

Table 3-11 (DWR Table 9) below summarizes actual water sales from the City of Healdsburg to the TPW, as well as water sales projections. The amounts for years 2005, 2010 and 2013 are actual and based on City production and utility data. The amounts for the subsequent years are extrapolated using the same population growth formula discussed in Chapter 2.

Table 3-11 (DWR Table 9)

Sales to Other Water Agencies – AFY

Water Distributed	2005	2010	2013	2015	2020	2025	2030	2035
County Department of Transportation and Public Works (Fitch Mountain)	**24.0**	**29.7**	**21.3**	**21.7**	**22.8**	**23.9**	**24.9**	**25.9**

3.2.4 Actual and Projected "Other" Water Demands

Table 3-12 (DWR Table 10) shows unaccounted-for water which is defined to be the difference between water produced and water sold to customers. This differential between water supply and metered water use includes system flushing, leak repair flushing, hydrant leaks, street sweeping and known leaks that are subsequently repaired. The remainder is "unaccounted-for" water, that is, un-metered water and/or water leaking from the distribution system. Unaccounted-for water can also result from meter inaccuracies. The City has no other water uses such as, for example, groundwater recharge or conjunctive use, at this time.

The unaccounted water use was determined by comparing the City's gross annual water production to the City's metered water deliveries. In 2005, the City's unaccounted water was 23 percent. In 2010 it was 8 percent, and in 2013, unaccounted for water was 2 percent. Although the industry standard indicates that 10 percent or less is considered acceptable, 2% is extremely low for unaccounted water use. The low percentage of unaccounted water may be attributed to the replacement of some mainlines and water meters during this time period, but it is also assumed that there is an anomaly in the data set provided by the City. As such, the City is implementing better quality assurance and quality control procedures, such as meter calibration and replacement, to correctly determine the amount of unaccounted water use in the City. For projecting future water losses, a 10 percent loss is assumed from 2015 through 2035.

Table 3-12 (DWR Table 10) shows actual losses for 2005 and 2010 and estimates losses for the years 2015 through 2035. This loss estimate is intended to account for unanticipated water leaks, water breaks, etc. that could occur.

Table 3-12 (DWR Table 10)

Additional Water Uses and Losses – AFY

Water Use	2005	2010	2015	2020	2025	2030	2035
Saline Barriers	0	0	0	0	0	0	0
Groundwater Recharge	0	0	0	0	0	0	0
Conjunctive Use	0	0	0	0	0	0	0
Raw Water	0	0	0	0	0	0	0
Recycled Water*	0	0	5	5	5	5	5
Unaccounted-for System Losses	465	141	215	226	238	247	257
Other (define)	0	0	0	0	0	0	0
Total	**465**	**141**	**220**	**231**	**243**	**252**	**262**

*Recycled water use within City limits only. Amounts indicated do not represent total planned use.

3.2.5 Summary of Total Water Use

Table 3-13 (DWR Table 11) summarizes the actual water use in 2005 and 2010 and projects water use for years 2015 through 2035. As with previous tables, water use for years 2005 and 2013 are actual water use figures.

Table 3-13 (DWR Table 11)

Total Water Use – AFY

Water Use	2005	2010	2015	2020	2025	2030	2035
Total Water Deliveries (from Tables 3 to 7)	2,023	1,762	2,151	2,261	2,376	2,473	2,573
Sales to Other Water Agencies (from Table 9)	24.0	29.7	21.7	22.8	23.9	24.9	25.9
Additional Water Uses and Losses	465	141	215	226	238	247	257
Total	**2,512**	**1,933**	**2,388**	**2,510**	**2,638**	**2,745**	**2,857**

3.2.6 Lower Income Water Use Projections

SBx7-7 includes a new requirement for identifying water use projections for lower income households. Under the statute, a lower income household is defined by California Health and Safety Code as being 80 percent of the median income, adjusted for family size. Based on City of Healdsburg data from the *United States Census 2010*, the estimated 80 percent median income is approximately $45,575, and lower income households are assumed to comprise approximately 30 percent of the total residential households. Low-income households are households with incomes less than twice the federal poverty line, as defined by the U.S. Office of Management and Budget. The United States Census 2010 indicated that the City of Healdsburg had 14.5% persons below poverty level, and therefore it was assumed that 30%, or approximately twice that percentage, can be used to represent low-income households. Table 3-15 (DWR Table 8) shows the projected water demands for lower income households, using the 30 percent of total residential projected water use; the City does not have records of water use for single vs.

multi-family residential use. The lower-income water demands are not added to the previous demand tables. These are a subset of the total residential water use projections for the City.

Table 3-14 (DWR Table 8)

Lower-Income Projected Water Demands – AFY

Water Distributed	2015	2020	2025	2030	2035
Residential (Single and Multi-Family)	445	561	492	511	752

3.3 Water Demand Projections for Retailers

The City has been the water supplier for its service area since 1898, when the City acquired a privately-owned water system[3]. The City's potable water sources are well fields along the Russian River that are directly affected by river water flow. Because the wells are directly affected by the river flow, a groundwater study was not completed for these water supply sources, but rather they are treated as surface water flow or groundwater under the influence of surface water.

Dry Creek is a tributary to the Russian River, entering the Russian River just south (downstream) of the City. Based on well tests, the Dry Creek wells are not under the direct influence of surface water. The Russian River's flow has also been augmented by diversions from the Eel River since 1908 for operation of the Potter Valley hydroelectric power plant.

Russian River and Dry Creek water flows are controlled by releases from two dams. Warm Springs Dam is located on Dry Creek and forms Lake Sonoma. Coyote Dam is located on the East Fork of the Russian River to the north of Ukiah and forms Lake Mendocino. Both Lake Sonoma and Lake Mendocino have separate pools for water supply and flood control, determined by the elevation of the water surface. Above a specific elevation, the United States Army Corps of Engineers (Corps) controls releases for flood control; below that elevation the Sonoma County Water Agency (Water Agency) controls releases for water supply.

3.4 Water Use Reduction Plan

According to the requirements of the Urban Water Management Plan Guidebook, *"urban retail water suppliers are to prepare a plan for implementing the Water Conservation Bill of 2009* [SBx7-7] *and conduct a public meeting which includes consideration of economic impacts."*

Since the development of the 2005 UWMP, the City has greatly increased its water conservation efforts. Although the City of Healdsburg is not a signatory of the California Urban Water Conservation Council (CUWCC), the City has addressed water system leaks, meter calibration and replacement, and is in the process of developing a robust water conservation program. Details of the City's water use reduction plan are discussed in detail in Section 6.0.

3.5 Current Plan and Economic Impacts

The City has attained the interim 2015 and the 2020 water reduction targets years, as stated above. In large part, this is due to the efforts in public works to repair water system leaks and repair or replace water meters, as discussed in Section 6.0 of this report. These efforts fall under the budget category of Operations and Maintenance (O&M) and are partially offset by capturing water commodity rates revenue previously not being captured.

[3] Operations Evaluation Department of Public Works, October 1991, amended January 1992. Brelje & Race Consulting Civil Engineers.

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SECTION 4 - SYSTEM SUPPLIES

This section describes the City's water supplies, which are from groundwater well field sources, the water treatment system, recycled water supply, and future water supply projects. Water supply constraints, such as water rights and water quality, are also discussed in this Section.

4.1 Current and Planned Water Supply Sources

4.1.1 City Water Sources

The City's water supply originates from three well fields that are located along the Russian River and Dry Creek. The three well fields are: the Gauntlett Well Field, the Fitch Well Field and the Dry Creek Well Field.

The Gauntlett and Fitch Well Fields are supplied by the Russian River, and are located on the east side of Highway 101. The Gauntlett well field is located outside of the northeastern part of the City boundary. The Fitch Well Field is located alongside the Russian River, where the river runs in a westerly direction at the southeastern part of the City. The Dry Creek Well Field is located along Dry Creek on the west side of Highway 101, southwest of the City. Dry Creek is a tributary of the Russian River. These three well fields combined have a total of 15 wells, 11 of which are actively operating. The inactive wells are not used due to a variety of issues, such as manganese, turbidity, or a need for well casing rehabilitation. Below is a summary of the number of active and inactive wells within each well field:

- Gauntlett Well Field has 5 wells, 4 of which are active. The water from these wells is treated through a microfiltration plant before being discharged into a storage reservoir, where it is then distributed to customers.
- The Fitch Well Field has 5 wells, 4 of which are active; 3 wells are actively used for the City's potable use and the fourth active well is used for the irrigation of Badger Park and the Tayman Park Golf Course. One well, due to high levels of manganese in the groundwater, is inactive.
- The Dry Creek Well Field has 5 wells, 3 of which are active. These wells have seasonal use restrictions.
- In summary, the City has a total of fifteen wells, eleven of them active.

Figure 2-3 shows the approximate location of each of the well fields in relation to the City boundary.

The City's water system also includes eleven booster pumps, six emergency water storage tanks, one reservoir, and approximately 60 miles of water distribution pipelines. The City operates a tertiary level wastewater treatment plant, known as the City of Healdsburg's Wastewater Treatment, Reclamation and Disposal Facility WWTF which treats wastewater to Title 22 recycled water standards. A recycled water delivery pipeline has been constructed from the WWTF to a location near the City's southern boundary, where it passes several treatment system ponds and to an active vineyard. A relatively small percentage of the City's treated wastewater is delivered to irrigate several vineyards just north and south of the WWTF. This water does not, however, offset the City's potable water use; it is offsetting the use of groundwater derived from private wells. Note that a hydrant accesses the recycled water system at Kinley Drive and at the WWTF. These hydrants can be accessed by water tank trucks. Further detail is provided in Section 4.1.6.

The City has obtained an additional water right from the County of Sonoma, known as the Fitch Mountain Diggers Bend water right. The Fitch Mountain Diggers Bend water right allows for three diversion points located on the Russian River. Because one of the diversion points overlaps the Fitch diversion point, the City diverts water equivalent to the Diggers Bend right from the Fitch well field. The water rights for Diggers Bend, as well as for each of the well fields, are further discussed in the following section. Due to seasonal turbidity issues, the diversions are limited to dry months when turbidity in the Russian River is within acceptable water quality limits. The City is exploring treatment options to eliminate the turbidity

issue so that diversions would be allowable throughout the year. This City expects to have the turbidity issues resolved and the restrictions lifted by 2020.

4.1.2 Water Rights

The Russian River's flow has been augmented by diversions from the Eel River since 1908 for the operation of the Potter Valley hydroelectric power plant. Under the California State Water Resources Control Board (SWRCB) permits 8594, 7847, and 11039, the State allows the City, under specific terms and conditions, to divert (pump) water from the Russian River and Dry Creek using their well fields. Additionally, the City has one application pending with the SWRCB for additional water rights on Dry Creek.

Table 4-1 summarizes the total water supply available to the City based on current water rights for each of the three well fields.

Table 4-1 - Existing Water Rights and Diversion Limits

Permit Number	Location	Maximum Water Right (AFY)	Actual Currently Available Supply (AFY)	Diversion Rate Limit (cfs)[a]	Diversion Season
	Dry Creek Water Rights				
8594 (A 014068)	Dry Creek Well Field	426.5[b]	424	1.0	April 1 to November 1
	Russian River Water Rights				
7847 (A013217)	Fitch Well Field	1,385	1,385	3.0	Year Round
11039 (A 017121)	Gauntlett Well Field	1,865	1,865	4.0	Year Round [c]
13059 (A 017632)	Fitch Mountain – Diggers Bend Diversion Points	578	578	1.39	April 1 to November 1
Total		**4,254.5**	**4,252**		

Notes:

a = Cubic feet per second

b = There is a diversion limit applicable to water right 8594 of 1 cfs from April through October. This limitation lowers the annual maximum diversion to 424 AF.

c = With the issuance of the City's current Domestic Water Supply Permit in 1999, operation of the Gauntlett and Fitch well fields was restricted to May 1st through October 31st due to elevated levels in turbidity. This was a temporary condition that was eliminated on the Gauntlett well field in October 2005 with the microfiltration water treatment system. In 1988, the permit Order was amended so that the combined maximum annual use under the two permits for 7847 and 11039 was limited to 3,250 acre-feet.

On December 5, 1997, the City filed for an additional water right permit for Dry Creek water (Application Number A30663). The application seeks an appropriative right to divert an additional 880 AFY from the five existing Dry Creek wells at a maximum rate of 1.6 cfs from April 1st through October 31st, and 2.6 cfs from November 1st through March 31st. The application was publicly noticed by the SWRCB in 2001 and is still under consideration, as the City and the SWRCB attempt to resolve public protests received against the application. The most significant of the protest was from the National Marine Fisheries Service (NMFS) concerning the listing of Coho and Steelhead salmon under the Endangered Species Act. These issues may involve further modifications to the application. For planning purposes, the City assumes that the current diversion of 1.0 cfs from April 1 to –November 1 (424 AFY) will be expanded to a minimum of

1.0 cfs year-round (+304 AFY) which results in a total of 724 AFY available from Dry Creek. Future water supply calculations assume an increase of 304 AFY until the application is approved. This plan assumes the application will be approved by 2020. Table 4-2 summarizes the pending water rights and the diversion limits, and Table 4-3 presents the water rights that are assumed to be attained by 2030.

Table 4-2 - Pending Water Rights and Diversion Limits

Application Number	Location	Additional Water Right (AFY)	Total Diversion Rate Limit (cfs)	Diversion Season
A30663	Dry Creek Well Field	880	1.6 (from 1.0) 2.6 (from 0)	April 1 through Oct. 31 Nov 1 through March 31
Total of Water Rights from Table 4-1 (includes Diggers Bend, and 424 AFY maximum for Dry Creek)		4,254.5	NA	
Total of Water Rights with Assumed Rate of Pending Water Rights		**5,134.5 AFY**		

Note:

a = Currently, there is a limitation of 1 cfs diversion rate between April and October. The pending Dry Creek application, if approved in full, would be added to the current water right for a total of 420 + 880 = 1,300 AFY.

Table 4-3 - Pending Water Rights and Diversion Limits Assumption for Planning Purposes

Application Number	Location	Assumed Likely Approved Water Right (AFY)	Diversion Rate Limit (cfs)	Diversion Season
A30663	Dry Creek Well Field	304[a]	1.0	Year round
Total of Water Rights from Table 4-1		4,254.5	NA	Year round
Total of Water Rights by 2030 with Assumed Rate of Pending Water Rights		**4,558.5 AFY**		

Note:

a = Currently, there is a limitation of 1 cfs diversion rate between April and October. The pending Dry Creek application, if approved in full, would be added to the current water right for a total of 424 + 880 = 1,304 AFY. However, the City will assume a minimum of 1 cfs year round, which increases the current 424 AFY by 304 AFY for a total of 724 AFY.

The City's water rights on the Dry Creek Well Field are currently in legal review. In 2012, the California Department of Public Health (CDPH) wrote a letter to the City indicating that data collected in 1997 identified that the Dry Creek wells may be under the direct influence of surface water and required the City to conduct testing to further clarify the issue. The City completed Microscopic Particulate Analysis (MPA) on all of the Dry Creek wells, and the laboratory analyses indicated greater similarities to groundwater than to surface water. The data was submitted to DWR and the City is awaiting a response. For planning purposes, the City assumes the Dry Creek wells are groundwater sources and are not directly influenced by surface water.

4.1.3 Russian River and Dry Creek Flow

Three major reservoirs provide water supply for the Russian River watershed: Lake Pillsbury on the Eel River, Lake Mendocino on the East Fork of the Russian River and Lake Sonoma on Dry Creek. The Russian River and Dry Creek water flows are controlled by releases from two dams: Warm Springs Dam,

located on Dry Creek forming Lake Sonoma, and Coyote Valley Dam which is located on the Russian River to the north of Ukiah that forms Lake Mendocino. Both Lake Sonoma and Lake Mendocino have separate pools for water supply and flood control, determined by the elevation of the water surface. Above a specific elevation, the United States Army Corps of Engineers (Corps) controls releases for flood control; below that elevation the Water Agency controls releases for water supply.

Currently, the Water Agency must maintain sufficient water flow in the river to be protective of human health, fish and wildlife and for recreation in the Russian River. In 2008, the National Marine Fisheries Service (NMFS), through the determination of a Biological Opinion, concluded that the Water Agency should modify some of the flood control and water supply operations. The Biological Opinion requires that the summertime flows be permanently reduced to replicate natural summertime river flows, starting in 2010. The Biological Opinion conclusions differ from the water rights decision made by the State Water Resources Control Board in 1986, known as "Decision 1610." Decision 1610 set minimum summertime flow requirements for the Russian River. Since then, the Water Agency has annually petitioned the State Board for interim changes to Decision 1610 depending on what type of water year it is: normal or dry. During a normal year, the Water Agency is required to maintain minimum flow for the Russian River between the mouth of Dry Creek and the mouth of the Russian River from 125 cfs to 70 cfs. During dry years, for that same stretch, the minimum flow requirement is reduced to a range from 85 cfs to 70 cfs.[4]

Each year, the Water Agency has petitioned for, and has received, temporary urgency change orders to preserve water levels in Lake Mendocino to ensure an adequate supply in the fall for both human uses and for the fall Chinook salmon run.

The City's water rights are directly affected by the flow of these rivers, but with a minimum flow required, the City's supply reliability is good.

4.1.4 Dry Creek Well Field

The Dry Creek well field is located above the 100-year floodplain along the east bank of Dry Creek next to the City's corporation yard on Westside Road and southwest of the City. The geology of the Dry Creek well field consists of a uniform sequence of blue clay overlain by 30 to 50 feet of alluvial sand and gravel, which in turn is overlain by a surficial zone of sand, silt, or silty clay.

The Dry Creek well field has a total of five wells, which are permitted for use in the City's domestic water system (Permit 8594). The City's SWRCB-DDW permit allows the use of two of the wells only in conjunction with ortho-polyphosphate sequestration treatment for manganese. In practice, the City minimizes the use of these wells to avoid introducing manganese to the distribution system, even with the sequestration treatment. The City can legally pump up to 1.0 cfs seasonally (April 1 through October 31st) from these wells combined. This flow rate is equivalent to a maximum of delivery rate of 424 AFY.

The City applied to the SWRCB-DDW for an additional water right for Dry Creek in the amount of 1,033 AFY in December 1997, which would bring the total Dry Creek diversion to approximately 1,457 AFY. This application is still pending, as it has not yet been fully reviewed and approved by the SWRCB. For planning purposes, the City assumes that this pending water right would be granted by 2020 at a minimum of 1.0 cfs year-round, approximately equal to 724 AFY. See Section 4.1.2 for additional details regarding this pending water right for the Dry Creek Well Field.

[4] Sonoma County Water Agency. 2010 UWMP, page 4-3.

4.1.5 Russian River Well Fields

Studies performed by the City in 1998 and 1999 indicated that the Russian River alluvial deposits provided sufficient river bank filtration for the Gauntlett and Fitch well fields to be used between May and October, without additional treatment. The SWQCB-DDW concurred with these findings; however, the DDW also determined that during the rainy season, when turbidity levels of the Russian River increase, the well water turbidity levels would increase, and the alluvium does not provide a sufficient filtration barrier for turbidity. Subsequently, the SWQCB-DDW reissued the City's Domestic Water Supply Permit in June of 1999, placing a seasonal restriction on the use of the Gauntlett and Fitch well fields. This permit did not allow the Gauntlett and Fitch well fields to be operated between November 1st and April 30th. Until late 2005, this seasonal restriction on the Gauntlett and Fitch well fields prevented the City from fully utilizing its Russian River water rights. In 2004 and 2005, the City constructed a water treatment facility for the Gauntlett/Fitch well fields. In August 2005, the City submitted an application to modify the SWQCB-DDW permit to eliminate the seasonal restriction on the use of the Gauntlett well field. The SWQCB-DDW responded in October 2005, lifting the seasonal restrictions for those wells now being treated. This action allows the City to use of the Gauntlett wells year-round. Further descriptions of the Gauntlett and Fitch well fields are provided below.

4.1.5.1 Gauntlett Well Field

The Gauntlett well field is located along the west bank of the Russian River, and is situated within the 100-year flood plain at the north end of the City. The geology consists of a uniform stratigraphic sequence of gray-green massive shale from the Franciscan formation, overlain by alluvial stream channel and over-bank deposits of coarse-grained sand and gravel.

With no seasonal restrictions, the City's permit allows for a diversion of up to 4 cfs from the Gauntlett Well Field. These wells pump to the Iverson Reservoir where the raw water is gravity fed to the City's microfiltration plant to reduce the turbidity. From there the water goes to Panorama Reservoir, where it is distributed to customers. Most of the potable water used by the City in the winter months comes from these wells.

As mentioned in previous sections, there are four active potable use wells at the Gauntlett well field. The number of wells operating and the rate of production are based on demand and are controlled to maintain a minimum level in the Iverson Reservoir. When the well field is in use, the City typically operates 2 of the wells, and brings the other two on-line if needed to meet demand. Overlapping cones of depression and elevated turbidity levels have limited the simultaneous operation of all four wells in the past.

4.1.5.2 Fitch Well Field

The Fitch well field is located along the north bank of the Russian River, just south of Fitch Mountain Road and in the southeast part of the City. It is situated within the 100-year flood plain. The well field is characterized by a consistent stratigraphic blue clay overlain by 30 to 50 feet of alluvial sand and gravel, in turn overlain by brown sand, silt or silty clay with occasional gravels.

Because the Fitch Well Field is directly adjacent to the Russian River, it is affected by the river's flow. These wells are considered groundwater under the direct influence of surface water. The City is allowed to pump these wells up to 3 cfs year round with an annual maximum of 1,385 acre-feet.

Currently, the City's ability to supply drinking water from the Fitch well field is limited by the California Water Quality Control Board's Division of Drinking Water (CWQCB-DDW), due to water quality issues.

Only 3 of the 5 wells at the Fitch well field are active and permitted for use in the potable water system. The fifth well had a collapsed casing and was properly abandoned. The third well has been disconnected from the potable water system due to high manganese levels, but is used to irrigate Tayman Park,

Badger Park and the local Golf Course. Of the 3 active potable water wells, the number of those wells in use and the rate of production are varied to maintain minimum water levels in the Tayman Reservoirs.

The City was given water rights to divert flow from the Russian River at Diggers Bend by the CSA. One of the allowable diversion points for that water right is located in the Fitch Well Field. The City may pump a total of 578 AFY using this right, however, due to turbidity issues, there is a seasonal restriction on this well. This is illustrated above in Table 4-1.

4.1.6 Recycled Water

Wastewater is treated to Title 22 recycled water standards at the City of Healdsburg's Wastewater Treatment, Reclamation and Disposal Facility (WWTF). The City certified an Environmental Impact Report (EIR) on July 11, 2005 for the (WWTF) Upgrade Project, and the WWTF went into operation in May 2008. The project that was approved includes tertiary treated wastewater (recycled water standard) for use in agricultural and urban irrigation areas. The City's recycled water program is regulated by Order No. R1-2010-0034 and by an Executive Office letter issued by the North Coast Regional Water Quality Control Board.

All of the wastewater treated by the City is treated to Title 22 recycled water standards.

Currently, the City discharges the treated effluent year-round to a former gravel extraction pit (Basalt Pond) for percolation into the underlying groundwater basin, which is hydrologically connected to the Russian River. The Basalt Pond is owned by Syar Industries and was created by terrace mining operations that ended in 1985.

Though the data included in the analysis for this UWMP is through 2013, the following is an update to the recycled water use in the City.

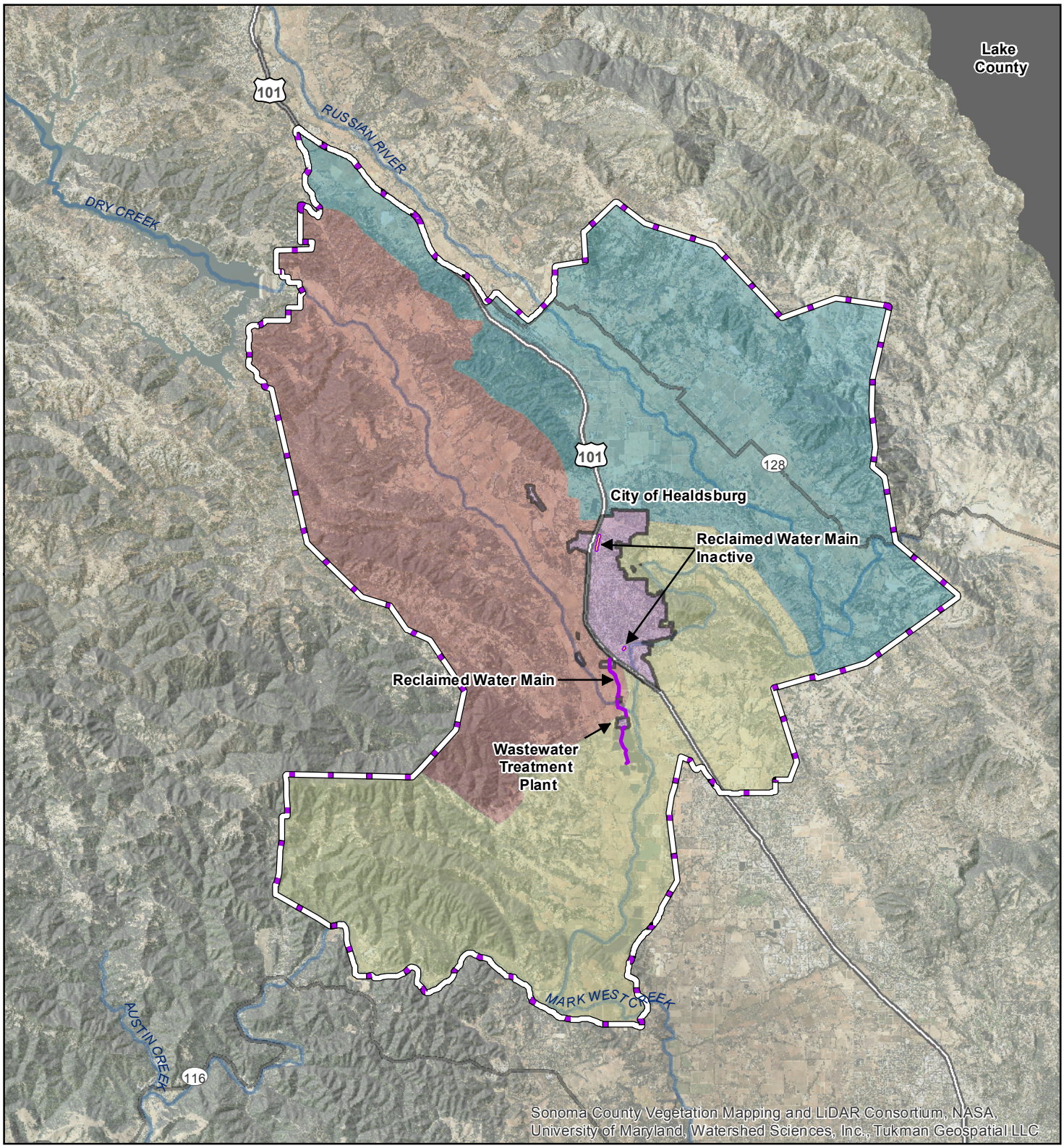
The City completed design of a recycled water pumping, storage and distribution system in 2011, and has been implementing elements of the project as funding allows. To date the City has completed installation of transmission / distribution mains extending from the 25 million gallon storage reservoir at the WWTF south to irrigate Syar owned vineyards and to Kinley Drive, including a pipe bridge across Dry Creek (Figure 2-3).

A small amount of recycled water is used during dry periods for dust control by Syar Industries, construction site operators and a few vineyards. A City-owned recycled water hydrant was installed for this purpose. This is a potable water offset. This hydrant is currently metered per state requirements.

A second recycled water hydrant was installed off the northern portion of the recycled water pipeline on Kinley Drive which is also accessible to water hauling trucks. Recycled water from this hydrant is also being used for dust control at construction sites and for several nearby vineyards. The dust control usage offsets potable water use for the City. Because the vineyards typically use their own privately owned wells for irrigation, the use of recycled water at those vineyards does not currently offset potable water use for the City. This hydrant is metered however, there is currently no differentiation between water collected for uses which do offset City potable water use versus uses which don't provide offset for City potable use.

Three vineyards located immediately north and south of the WWTF are connected to the City's recycled water pipeline. One of the three is currently utilizing the recycled water. As with the other vineyards which truck recycled water, the use of this recycled water by vineyards directly connected to the recycled water pipeline also does not offset the City's potable water use.

The areas that may receive hauled recycled water are located in the Dry Creek, Alexander, and Russian River Valleys. The extent of the potential recycled water hauling area is shown in Figure 4-1.



Inactive Reclaimed Water Main
Reclaimed Water Main
Extent of Reclaimed Water Hauling Area

Reclaimed Water Service Areas
Alexander Valley Service Area
Dry Creek Valley Service Area
Russian River Valley Service Area
City of Healdsburg Service Area

Limited Access Highway
State Highway
Healdsburg City Limits
Named Streams & Rivers

Paper Size 8.5" x 11" (ANSI A)
0 1 2 3 4
Miles
Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California II FIPS 0402 Feet

N

City of Healdsburg
Urban Water Management Plan Update 2015

Water Distribution
Reclaimed Water Distribution System

Job Number 8411468.10
Revision 1
Date 16 Jul 2015

Figure 4-1

G:\Projects\02072 - Healdsburg\02072-8411468 UWMP 2013-2015\08-GIS\Maps\Figures\F4-1 RW Distribution System.mxd 2235 Mercury Way Suite 150 Santa Rosa CA 95407 USA T 707 523 1010 F 707 527 8679 E santarosa@ghd.com W www.ghd.com

Data source: City of Healdsburg, Water Distribution, 2014; County of Sonoma, Imagery, 2013. Created by:afisher2

4.1.7 Summary of Current and Projected Water Supplies

A summary of the current and projected water supplies is provided in Table 4-4 (DWR Table 16).

Table 4-4 (DWR Table 16)

Water Supplies – Current and Projected – AFY

Water Supply Sources	2010	2013	2015	2020	2025	2030	2035
Supplier-produced groundwater (Dry Creek Well Field)	424	424	424	424	424	424	424
Supplier-produced surface water (Gauntlett and Fitch Well Fields)	3,250	3,250	3,250	3,250	3,250	3,250	3,250
Diggers Bend Diversion (Fitch Well Field)	-	578	578	578	578	578	578
Approval of year round Dry Creek Well Field Diversion [a]	-	-	-	304	304	304	304
Recycled Water		-	55	55	55	55	265
Total	**3,674**	**4,252**	**4,307**	**4,611**	**4,611**	**4,611**	**4,821**

Notes:

a) The City's request is for an additional 880 AFY from the Dry Creek Well. This table is assuming a conservative response to the water rights permit application.

4.2 Future Water Sources

4.2.1 Recycled Water

The original impetus for the City of Healdsburg to develop a recycled water system was to reduce effluent discharge into the Russian River. However, an added benefit of recycled water use can be offset of potable water use, as described briefly above. The City estimates that if all of the vineyards currently connected to the recycled water pipeline were to irrigate using recycled water rather than well water, and if nearby vineyards were to continue using trucked recycled water, approximately 50 AFY would be diverted from the Syar discharge pond to these uses. The City actively pursues users of the recycled water system by meeting with vineyard operators. While this use is not a direct offset of City potable water, it does contribute to the requirement of reducing effluent discharge to the Russian River.

As previously noted, the City has completed the design of a recycled water system which, if implemented, would extend recycled water mains to 11 public turf areas within the City. When combined, the available urban reuse area totals approximately 85 irrigable acres. These turf areas include

- Tayman Park Golf Course
- Badger Park
- Recreation Park
- The Healdsburg cemetery
- Healdsburg Elementary School
- Healdsburg Junior High School
- Healdsburg High School

If the plan were fully implemented, the City estimates an offset of approximately 210 AFY by irrigating these public properties with recycled water.

Full implementation of the recycled water plan would require constructing a pipeline under Highway 101 and constructing a new recycled water storage reservoir The City is currently evaluating options and funding alternatives to continue expansion of the system into urban areas.

Most of the economical recycled water use is for agricultural irrigation (vineyards), and is therefore not an offset to the City's potable water use. The use of recycled water by vineyards does offset groundwater extraction in the basin.

As described above, Syar Industries uses recycled water for dust control at their facility. They are also planning to switch to recycled water use for gravel washing in the near future.

As an incentive for the use of recycled water, the City does not charge a fee for recycled water use.

4.2.2 Groundwater

In order of preference, the City will complete the following two groundwater projects: (1) re-drill the Fitch wells, installing the wells deeper to enhance natural filtration through the formation; and (2) the City plans to add a small filtration plant at the Fitch Well field, if it is determined to be needed. For the planning purposes of this document, it is assumed that the projects may occur in the following approximate timeframe:

- Move the Diggers Bend diversion to the Fitch Well Field Water Right - The application will be submitted by 2016. It is assumed the change will be granted by 2020.
- Redrill and deepen the Fitch Well Field - Assume completion in 2020.
- Add filtration plant at Fitch Well Field - Assume completion in 2025.

4.2.3 Groundwater Management Plan(s)

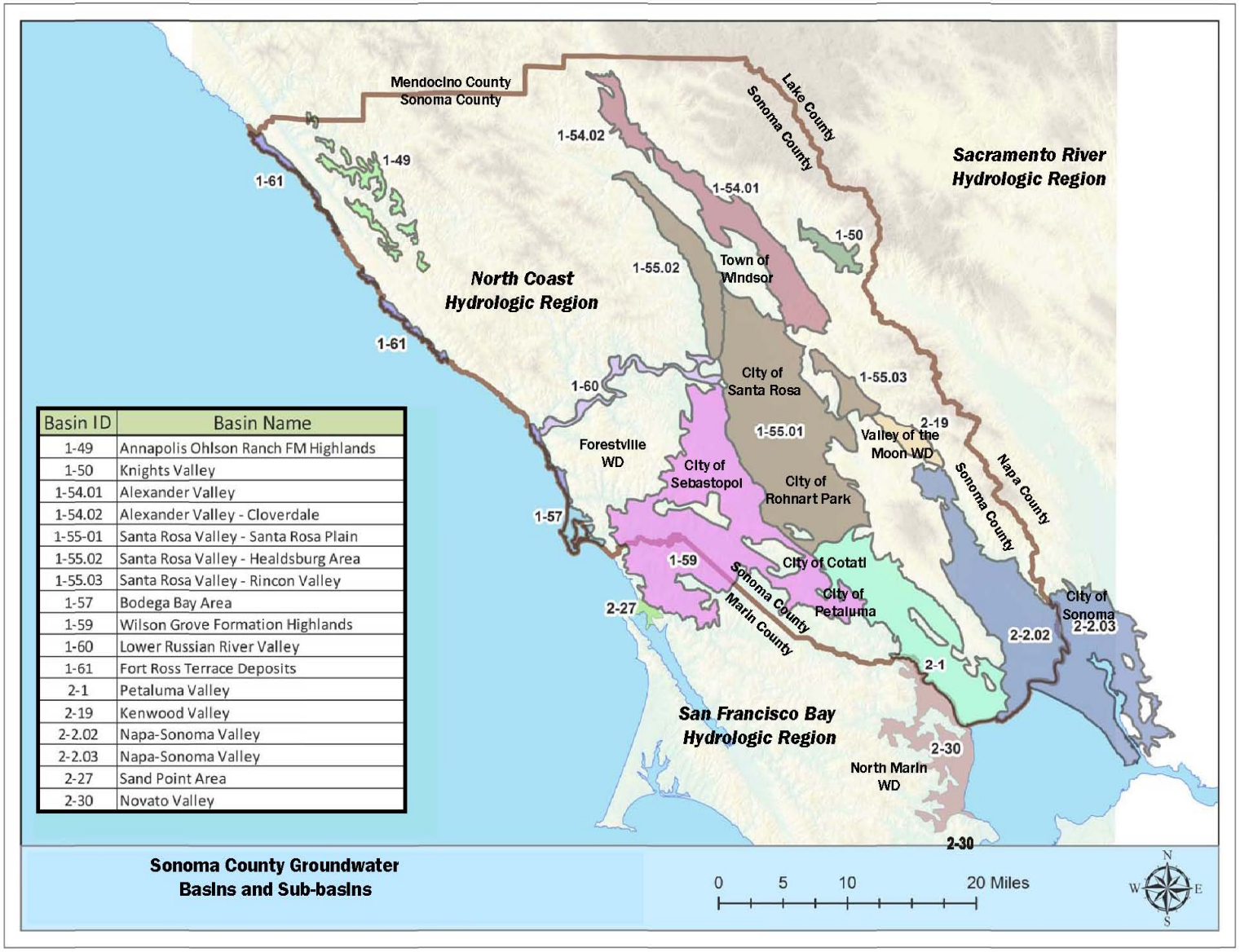
The City is not part of a Basin Groundwater Management Plan. The City of Healdsburg is located in a small sub-basin north of the Santa Rosa Valley Groundwater Basin. The Santa Rosa Valley Groundwater Basin has a Groundwater Management Plan, but the plan does not extend into the Healdsburg area due to the differing hydrogeology between the two basins.

4.2.4 Description of Groundwater Basin

The City is partially located in the North Coast Hydrologic Region, at the north end of the Santa Rosa Valley Groundwater Basin, partially in the long and very narrow Healdsburg Area Subbasin No. 1-55.02 (See Figure 4-2). Healdsburg also extends east of the Healdsburg Area Subbasin to an area west of the narrow Alexander Area Subbasin and it encompasses approximately 24 square miles. The Healdsburg Area subbasin includes the floodplain of the Russian River, where the City diverts their potable water from wells along the Russian River and Dry Creek. Many smaller communities rely on the local surface water and groundwater systems in the North Coast Region. Figure 4.2 shows the Healdsburg Area Subbasin.

Surface water and groundwater storage changes as precipitation varies from year to year. In wetter years, the volume of water stored is usually increased. In drier years, storage volumes may be reduced.

Figure 4-2 of this UWMP, which is Figure 4-1 taken from the 2010 Sonoma County Water Agency UWMP, outlines Sonoma County's subbasins.



Basin ID	Basin Name
1-49	Annapolis Ohlson Ranch FM Highlands
1-50	Knights Valley
1-54.01	Alexander Valley
1-54.02	Alexander Valley - Cloverdale
1-55-01	Santa Rosa Valley - Santa Rosa Plain
1-55.02	Santa Rosa Valley - Healdsburg Area
1-55.03	Santa Rosa Valley - Rincon Valley
1-57	Bodega Bay Area
1-59	Wilson Grove Formation Highlands
1-60	Lower Russian River Valley
1-61	Fort Ross Terrace Deposits
2-1	Petaluma Valley
2-19	Kenwood Valley
2-2.02	Napa-Sonoma Valley
2-2.03	Napa-Sonoma Valley
2-27	Sand Point Area
2-30	Novato Valley

Figure 4-1. Groundwater Basins

Figure 4-2 (Figure 4-1 taken from the 2010 Sonoma County Water Agency UWMP)

4.2.4.1 Hydrogeology of Basin

According to the 2004 description of the Healdsburg Area hydrogeology in DWR's Bulletin 118, the area is underlain by sedimentary units with inclusions of metamorphic, granitic, and volcanic rock. An excerpt from the Bulletin describes the hydrogeology of the area:

> *"There are both north-west and south-east trending faults and geologic structures largely defining the river system. The principal water source in the Healdsburg area is alluvium, with secondary sources being the Glen Ellen Formation, alluvial fan and terrace deposits, and the Merced Formation in the south. The Sonoma Volcanics contribute a very limited amount of water (DWR 1983).*
>
> ***Quaternary Alluvium.*** *Holocene-age Alluvium and River Channel deposits underlie the Russian River, Dry Creek, and other tributaries. The deposits are unconsolidated, permeable gravel and sand. Increasing amounts of silt and poorer sorting away from the river causes lower permeability. Alluvium produces high yields (volume or production), and provides most of the groundwater supply to the City of Healdsburg. The specific yield (The ratio of the volume of water that a given mass of saturated rock or soil will yield by gravity to the volume of that mass) is high -- between 8 to 20 percent --and near the river 25 to 50 foot wells can yield 200 to 500 gpm (DWR 1983).*
>
> ***Terrace Deposits.*** *Terrace deposits, Pleistocene in age, outcrop discontinuously along the Russian River and Dry Creek. The deposits are unconsolidated, cross-bedded sands with some silt and clay, with a thickness of up to 200 feet. These were originally alluvial fan, floodplain and stream deposits until the streams downgraded and left the terraces exposed. Yields from the Terrace Deposits are adequate for domestic use, stock watering, commercial, and limited industrial use. Yields range from 10 to 50 gpm, higher where the terraces are less dissected, and the specific yield is moderate (8 to 15 percent). The specific capacity (the rate of discharge of a water well per unit of drawdown) is about 5 gpm/ft (DWR 1983).*
>
> ***Glen Ellen Formation.*** *The Glen Ellen consists of partially cemented beds and lenses of poorly sorted gravel, sand, silt, and clay that vary widely in thickness and extent (Cardwell 1958; DWR 1983). This continental, alluvial fan and floodplain deposit is Pliocene (?) to Pleistocene age, and is about 1,500 feet thick east of the Russian River and along the east side of Dry Creek (DWR 1983). Water yield is highly variable because the unit is very heterogeneous, but permeability is generally low (DWR 1983). Average specific yield for the Glen Ellen Formation is 3 to 7 percent (DWR 1982; DWR 1983). It is tapped for domestic use, and wells yield from 1 to 140 gpm, with a specific capacity of about 2 gpm/ft (DWR 1983).*
>
> ***Merced Formation.*** *The Merced Formation occurs only in the extreme southern part of the basin. It is a marine deposit of fine sand and sandstone, but has thin interbeds of clay and silty clay, some lenses of gravel, and localized fossils (Cardwell 1958). It is Pliocene in age, and its thickness is estimated from 300 to greater than 1,500 feet. Further south in the Santa Rosa Plain, the Merced Formation is a major producer with high yielding water wells. Average specific yield for the Merced Formation is 10 to 20 percent (DWR 1982; DWR 1983). However, in the Healdsburg Area specific yields are only small to moderate (8 to 15 percent) with local exceptions (DWR 1983)."*

4.2.4.2 Groundwater Quality Issues

According to DWR's 2009 California Water Plan Update (Bulletin 160-09, Volume 3), the North Coast Hydrologic Region has several water quality challenges. In the Healdsburg Area, sediment, temperature and nutrients are the focus for the Regional Water Quality Control Board for the Russian River. Turbidity and manganese are two main water quality concerns for the City.

Turbidity

The Russian River is listed as a 303(d) impaired water body for sedimentation/siltation and temperature. The City also has turbidity issues with the water from some of their Gauntlett and Fitch groundwater well fields in the winter. It is for this reason that they have installed a water treatment unit on their Gauntlett wells, allowing the wells to be used year round. Treatment units may be installed on the Fitch wells in the future, if needed.

As indicated above, overlapping cones of depression and elevated turbidity levels have limited the simultaneous operation of all four wells in the past.

Manganese

The City has discovered manganese in concentrations above drinking water limits in the Dry Creek wells and therefore treats the groundwater with ortho-polyphosphate sequestration treatment, to lower the manganese levels to below allowable drinking water limits as described in Section 4.1.4.

4.2.4.3 Adjudicated Basins

The Healdsburg subbasin is not adjudicated.

4.2.5 Sufficiency of Groundwater

With the exception of seasonal restrictions previously described, there were no limitations placed on the City's groundwater pumping due to water quality issues or regulatory issues between 2005 and 2013.

4.2.5.1 Groundwater Pumped (2005-2013)

The following Table 4-5 (DWR Table 18) reports the recorded volumes of groundwater pumped from the City's wells from 2006 through 2013. All of the City's wells are metered.

Table 4-5 (DWR Table 18)

Groundwater – Volume Pumped – AFY

Basin Name(s)	Well Field	Metered or Unmetered [a]	2006	2007	2008	2009	2010	2011	2012	2013
Santa Rosa Valley Basin, Healdsburg Area Subbasin (1-55.02)	Dry Creek Well Field	Metered	195.4	321.6	266.3	225.4	229.4	262.9	246.9	271.3
Between Healdsburg Area Subbasin (1-55.02) and Alexander Area Subbasin (1-54.01)	Russian River-Fitch Well Field	Metered	500.4	560.6	586.3	504.2	521.2	491.6	474.0	483.9
	Russian River - Gauntlett Well Field	Metered	1,838	1,535	1,534	1,390	1,194	1,230	1,441	1,431
Total groundwater pumped			**2,533**	**2,417**	**2,387**	**2,120**	**1,944**	**1,984**	**2,162**	**2,186**
Total Supply			**2,533**	**2,417**	**2,387**	**2,120**	**1,944**	**1,984**	**2,162**	**2,186**
Groundwater as a percent of total water supply			**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

4.2.5.2 Limitations to Groundwater Pumping and Overdraft Conditions

There are no legal constraints on the City's use of its supply that relate to overdraft conditions. Because the supply obtained from Fitch and Gauntlett well fields are considered groundwater under the direct

influence of surface water, the issue of overdraft does not apply. Regardless, there are no legal constraints placed on the City due to overdraft conditions in the basin.

4.2.6 Projected Groundwater Pumping

Projections of the groundwater volume required from the City wells to satisfy water demand were made using the projected population in Table 2-2 and the water use target of 162 gpcd as defined in Section 3. The project water use target of 162 gpcd was applied to the gross water demand to projected population. These projections are summarized in Table 4-5. The volume of groundwater pumped is reported in five-year increments from 2015 to 2035, and the volume of groundwater pumped from each well field was determined based on the percentage of total water supply that the wells provided historically (Section 4.2.3.1). Because virtually all of the City's water demand is fulfilled by groundwater, projected groundwater pumping is roughly equivalent to projected water demand (Table 3-13, DWR Table 11). Table 4-6 (DWR Table 19) below does not include recycled water use, as potable offset of the City's system is likely to be small in the years ahead.

Table 4-6 (DWR Table 19)

Groundwater – Volume Projected to be Pumped – AFY

Basin Name(s)	Well Field	2015	2020	2025	2030	2035
Santa Rosa Valley Basin, Healdsburg Area Subbasin (1-55.02)	Dry Creek Well Field	287	301	317	329	343
Between Healdsburg Area Subbasin (1-55.02) and Alexander Area Subbasin (1-54.01)	Russian River- Fitch Well Field	549	577	607	631	657
	Russian River - Gauntlett Well Field	1,552	1,631	1,715	1,784	1,857
(from Table 11)	Total groundwater projected to be pumped	2,388	2,510	2,638	2,745	2,857
	Percent of total water supply	100	100	100	100	100

Note: for the purposes of completing this planning table, the City is not distinguishing between groundwater versus groundwater under the direct influence of surface water.

Based on this historical data from 2006 through 2013, the Dry Creek Well Field supplies approximately 12% of the City's water; the Fitch Well Field supplies approximately 23% of the City's water; and the Gauntlett Well Field provides the majority of the supply, at approximately 65%. For projected use it is assumed that the percentages of distribution between the three well fields will remain the same for future projections.

4.3 Transfer Opportunities

Under a November 17, 1992 Agreement between the Water Agency and the City of Healdsburg, if the water available to the City under their own appropriative water rights is inadequate to meet the City's needs, the City may divert water from Dry Creek and Russian River pursuant to the Water Agency's permits 12947A, 12949, 12950 and 16596. Those diversions cannot exceed 6.3 million gallons per day (average day, peak month) or 4,440 acre-feet per year (Table 4-7, DWR Table 20).

Table 4-7 (DWR Table 20)

Transfer and Exchange Opportunities – AFY

Transfer Agency	Transfer or Exchange	Short-Term or Long-Term	Proposed Volume
Sonoma County Water Agency	Transfer	Short-term	4,440
		Total	**4,440**

In a shortage of water, such as a drought, the Water Agency would determine the volume and rate the City could divert and would notify the City of those limits. The water under the Water Agency permits is only allowed to be used within the City and County Service Area No. 24 (Fitch Mountain) or to areas with failed domestic water systems that have been ordered to connect to the City water system. The Water Agency filed the necessary petitions to add the City's wells to Water Agency's water rights permits as new points of diversion on April 20, 1998. The agreement is not operational until the SWRCB acts on the petitions, which at this point are still pending.

4.4 Desalinated Water Opportunities

There are currently no plans for desalination, and no desalination for future water supply is anticipated.

4.5 Recycled Water Opportunities

This section describes the wastewater characteristics, flows, and treatment facilities that are proximate to the City's service area. The UWMP Act requires the following items to be addressed for recycled water:

- Information on the recycled water supply including coordination with dischargers;
- Description of the wastewater collection and treatment systems in the service area;
- Quantity of treated wastewater that meets recycled water standards;
- Recycled water currently being used in the service area;
- Potential for recycled water use in the service area;
- Actions to encourage recycled water use; and
- Plan for optimizing recycled water use.

Please refer to section 4.1.6 of this UWMP for a more detailed description of the City's recycled water use and opportunities and plans for future use.

4.5.1 Coordination with other Agencies

The City operates its own wastewater treatment facility, as described in previous sections. However, the City does coordinate with and comply with directives from the Water Agency, the North Coast Regional Water Quality Control Board, and the California Division of Drinking Water, as required.

4.5.2 Existing Wastewater Collection, Treatment, and Reuse Systems

The City recently completed a major upgrade to its WWTF, which began operation in April of 2008. The new upgraded WWTF produces highly treated wastewater using a state of the art membrane bioreactor (MBR) treatment process. The effluent meets "unrestricted disinfected tertiary effluent" requirements, as defined by Title 22 of the California Code of Regulations

The new WWTF was the first phase of the City's wastewater treatment upgrade project. The second component is a recycled water irrigation system, which is necessary to meet new seasonal discharge restrictions contained in the City's National Pollutant Discharge Elimination System (NPDES) permit. This comprehensive approach will allow the City to not only comply with its legal requirements to eliminate discharges during the summer months, but also to beneficially reuse highly treated wastewater on public parks, community schools and other community facilities, as well as agricultural irrigation.

Currently, the City's treated effluent is generally expected to be discharged to the Basalt Pond between the days of October 1 and May 15, and used for irrigation between the days of May 16 and September 30.

4.5.3 Quantification of Effluent and Recycled Water

The WWTF is designed to treat 1.4 mgd (million gallons per day), average dry weather flow, and 4.0 mgd (maximum peak flow) to obtain "disinfected tertiary recycled water" quality standards[5]. The treatment system consists of influent screening and grit removal; biological removal of biochemical oxygen demand (BOD) and nitrogen in aerobic, anoxic, and pre-anoxic basins; membrane bioreactor (MBR) filtration; and ultraviolet (UV) light disinfection. Filtered and UV disinfected effluent flows by gravity to a 25 million gallon storage pond or to the Basalt Pond. There is 5 million gallons of equalization storage available to modulate inflows during peak wet weather events or treatment process upsets. Influent can be diverted to the equalization basins at the headworks. There is also 15 million gallon of emergency storage available to hold inadequately treated wastewater. Effluent can be diverted to the emergency storage basins downstream of UV disinfection. The City prepared and submitted a CCR Title 22 Engineering Report in 2010 to the Regional Board.

Table 4-8 (DWR Table 21) summarizes the volume of wastewater collected and treated to Title 22 reuse standards. Data from year 2004 was used, but the projected volumes of wastewater treated in the years 2010 through 2020 were calculated by a straight line projection from 2005 to 2035, as reported by the 2005 UWMP. The same extrapolation method was used to project the wastewater volume for 2030 and 2035.

Table 4-8 (DWR Table 21)

Recycled Water – Wastewater Collection and Treatment – AFY

Type of Wastewater	2005	2010	2015	2020	2025	2030	2035
Wastewater collected & treated in service area	1,439	1,422	1,690	1,816	1,941	2,066	2,191
Volume that meets recycled water standard	0	1,422	1,690	1,816	1,941	2,066	2,191

All of the City's wastewater is treated to tertiary levels, and therefore available as recycled water. Currently a small portion of that is being used as a water source. The remainder of that recycled water is being discharged into the Syar ponds, as previously discussed.

Table 4-9 (DWR Table 22) summarizes the existing and planned use of the City's recycled water supply. Subtracting the planned uses from the total projected wastewater to be treated provides the amount projected to be discharged to the Syar ponds.

[5] Data from Programmatic Operations and Management Technical Report for Micro-Irrigation of Vineyards in Healdsburg Area, May 2014

Table 4-9 (DWR Table 22)

Non-Recycled Wastewater Disposal – AFY

Method of Disposal	Treatment Level	2010	2015	2020	2025	2030	2035
Agricultural Irrigation (not potable offset)	Tertiary	5	50	150	150	150	150
Dust Control	Tertiary	5	5	5	5	5	5
Urban Landscape Irrigation	Tertiary	0	0	0	0	0	210
Syar ponds	Tertiary	**1,412**	**1,635**	**1,661**	**1,676**	**1,801**	**1,926**
	Total	**1,422**	**1,690**	**1,816**	**1,831**	**1,956**	**2,291**

Note:

210 AFY is the original full RW plan urban reuse amount. At this time, it is not expected that will occur in the planning time frame of this report.

Table 4-10 (DWR Table 23) below provides a summary of uses of recycled water likely in the planning horizon of this UWMP.

Table 4-10 (DWR Table 23)

Recycled Water – Potential Future Use – AFY

User Type	Description	Feasibility[a]	2015	2020	2025	2030	2035-opt
Agricultural irrigation		high	50	150	150	150	150
Landscape irrigation[b]		low					210
Commercial irrigation[c]							
Golf course irrigation							
Wildlife habitat							
Wetlands							
Industrial reuse		high	5	5	5	5	5
Groundwater recharge		medium		150	150	150	150
Seawater barrier							
Geothermal/Energy							
Indirect potable reuse		medium		150	150	150	150
Other (type of use)							
	Total	**0**	**55**	**455**	**455**	**455**	**665**

Notes:

a = Technical and economic feasibility

b = Includes parks, schools, cemeteries, churches, residential, or other public facilities

c = Includes commercial building use such as landscaping, toilets, HVAC, etc. and commercial uses (car washes, laundries, nurseries, etc)

4.5.4 Comparison of Previously Projected Use and Actual Use

Table 4.11 (DWR Table 24) compares the projected use of recycled water (for potable offset), which was presented in the 2005 UWMP, with actual use. Because the City's Recycled Water Plan has not been fully implemented, recycled water used for potable offset has been limited.

Table 4-11 (DWR Table 24)

Recycled water — 2005 UWMP Use Projection Compared to 2010 Actual – AFY

User Type	2010 Actual Use	2005 Projection for 2010 [a]
Landscape irrigation	0	210
Dust Control/Construction Use[b]	1	0
Total	**0**	**210**

[a] This table addresses recycled water use for potable offset within the City's service area only and includes parks, schools, cemeteries, churches, residential, or other public facilities.

[b] The city has not metered recycled water used specifically for dust control for construction sites or Syar.

4.5.5 Actions to encourage recycled water use

The City actively pursues customers who will receive recycled water and does not charge recycled water customers a fee for the recycled water. The City actively pursues vineyard operators, construction site operators and industrial users as recycled water users. Please see section 4.1.6 for more details.

4.6 Wholesale Water Suppliers

The City currently supplies its own water and does not purchase water from other wholesalers. The City does have a wholesale agreement with the Sonoma County Water Agency (SCWA) to purchase water if needed.

4.7 Future Water Projects

Currently the City has no other planned water supply projects other than the requested additional water supply via increased water rights, as described previously in this section, to accommodate the potential for increased water use.

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SECTION 5 - WATER SUPPLY RELIABILITY AND WATER SHORTAGE CONTINGENCY PLANNING

The Act requires that each UWMP include an assessment of its water supply reliability in normal, dry, and multiple dry water years. Factors influencing the City's water supply reliability are discussed below.

The City of Healdsburg has a water supply with a high level of reliability. Several factors affect the reliability of the City's supply, as described below.

- The reliability of the City's supply is insured by the Water Agency's diversion requirement to maintain the flow of the Russian River at minimum levels at specific points in the Russian River. As described in previous sections, the Water Agency has the responsibility for maintaining these minimum flows with releases from Warm Springs Dam, which insures adequate flows at the Dry Creek well field, located below the dam.
- As described in Section 3.0 of this UWMP, the flow of the Russian River has been augmented by diversions from the Eel River since 1908 for operation of the Potter Valley hydroelectric power project. This water diversion has been controversial for many years due to concerns over impairment of Eel River salmonid populations over the life of the project. In January 2004, the Federal Energy Regulatory Commission issued a decision that amended the plant's operational license, currently held by Pacific Gas & Electric (PG&E). The amended plan generally reduced the allowable annual diversion from the Eel River by 15%. This license expires in the year 2022.[6] Because it is believed that the endangered salmonid species in the Russian River are reliant on these diversions, it is anticipated by the Water Agency that these diversions will continue during the planning horizon of the 2010 UWMP.[7]
- As described in Section 3.0, the Water Agency must maintain sufficient water flow in the river to be protective of human health, fish and wildlife and for recreation in the Russian River. In 2008, the National Marine Fisheries Service (NMFS), through the determination of a Biological Opinion, concluded that the Water Agency should modify some of the flood control and water supply operations. The Biological Opinion requires that the summertime flows be permanently reduced to replicate natural summertime river flows, starting in 2010. [Since then, the Water Agency has annually petitioned the State Board for interim changes to Decision 1610 depending on what type of water year it is: normal, dry or critically dry. During a normal year, the Water Agency is required to maintain 185 cfs for the upper Russian River (between the confluence of the East and West Forks of the Russian River and the confluence of the Russian River and Dry Creek) and 125 cfs for the lower Russian River (between its confluence with Dry Creek and the Pacific Ocean).]
- The City has an agreement with the Water Agency dated November 17, 1992, that would allow the City's water diversions to be reported under Water Agency water rights permits for the Russian River and Dry Creek when appropriated water is not available under the City's own water rights. The Water Agency filed the necessary petitions to add the City's wells to Water Agency's water rights permits as new points of diversion on April 20, 1998.

5.1 Hydrologic Reliability

This section pertains to curtailments of *supply due to hydrologic shortages*. It does not preclude possible requirements imposed by the state to reduce *demand*.

In the City of Healdsburg 2005 UWMP, the City used the Sonoma County Water Agency's data for average, single-dry and multiple-dry years. In reviewing precipitation data for recent years for the development of the 2010 UWMP, it is evident that Healdsburg's precipitation varies greatly from the data used by SCWA. However, because the flows in Dry Creek and the Russian River are controlled by the

[6] Sonoma County Water Agency, 2010 Urban Water Management Plan, June 2011. Note that the SCWA 2005 UWMP reported that the permit would expire in 2033.

[7] Sonoma County Water Agency, 2010 Urban Water Management Plan, June 2011.

requirements placed on the Water Agency, and Dry Creek and Russian River flows affect the City's well fields, this UWMP uses the single-dry and multi-dry year scenarios as modeled by the Water Agency in their 2010 UWMP.

Table 5-1 below (DWR Table 27) provides the base years for average, single-dry and multiple-dry water years. These base years may change in future UWMPs, if it is determined that the current drought is a worse scenario than the years listed in Table 5-1.

Table 5-1 (DWR Table 27)

Basis of Water Year Data

Water Year Type	Base Year(s)
Average Water Year	1962
Single-Dry Water Year	1977
Multiple-Dry Water Years	1988-1991

Table 5.2 (DWR Table 28) below summarizes the reliability of the City's water supply when compared to historical drought conditions, as related to potential supply curtailments. Because of the City's seniority as a water rights holder compared to many users on the Upper Russian River, based on historical curtailments and conditions, the City likely would not receive supply related curtailments to its water rights supply in drought scenarios mimicking those of the years listed above.

The below table illustrates single-year and multi-year drought scenarios based on actual historical droughts. Seasonal restrictions are not included, as the purpose of the table is to illustrate that the City's water supply will not be restricted during drought conditions comparable to the historical droughts of 1976/1977 and 1990 to 1992.

Table 5.2 (DWR Table 28)

Supply Reliability – Historical Conditions – AFY

Water Rights	Average/Normal Water Year	Single-Dry Water Year	Multiple-Dry Water Years			
			Year 1	Year 2	Year 3	Year 4
Existing	4,252	4,252	4,252	4,252	4,252	4,252
Existing and Pending	5,134	5,134	5,134	5,134	5,134	5,134
	Percent of Average/Normal Year	**100%**	**100%**	**100%**	**100%**	**100%**

Applying the multiple-dry year scenario to the next three years, the result is unchanged, as illustrated in Table 5-3 (DWR Table 31 below).

Table 5-3 (DWR Table 29)

Factors Resulting in Inconsistency of Supply

Water Supply Sources [a]	Limitation Quantification	Legal	Environmental	Water Quality	Additional Information
Gauntlett		x		x	Pending extension
Fitch		x		x	water rights application pending
Dry Creek		x		x	water rights application pending

Notes: a = From Table 16

5.2 Legal & Environmental Constraints

There are factors other than drought or emergency that cause or have the potential to cause inconsistent supply to meet demands and are due to legal, environmental, or climatic issues. These factors that affect the reliability of the City's water supply are described in this section and are summarized in Table 5-4 (DWR Table 29) below.

Table 5-4 (DWR Table 29)

Factors Resulting in Inconsistency of Supply

Water Supply Sources [a]	Limitation Quantification	Legal	Environmental	Water Quality	Additional Information
Gauntlett		x		**x**	pending extension
Fitch		**x**		**x**	water rights application pending
Dry Creek		**x**		**x**	water rights application pending

5.2.1 Water Rights

The City presently holds three existing water rights permits for diversion from Dry Creek and the Russian River. In addition, the City has one application pending with the SWRCB for additional water rights on Dry Creek. Summaries of each existing and pending water rights permit are provided in Tables 4.1 and 4.2.

In September 2008, a final Biological Opinion (BO) was released by the National Marine Fisheries Service (NMFS) and issued to the SCWA, the U.S. Army Corps of Engineers (Corps), the California Department of Fish and Game, and the Mendocino County Russian River Flood Control and Water Conservation Improvement District. The BO is a federal mandate on Russian River operations of the receiving agencies listed above that affect salmonids on state and federal endangered species lists (steelhead, Coho, and Chinook) which affects the SCWA's water supply operations and subsequent delivery to its water customers, including the City.

The BO calls for the elimination or reduction of impacts to salmonids due to water supply and flood control activities in the Russian River watershed through measures deemed to be "reasonable and prudent alternatives," including:

- Extensive monitoring of both habitat and fish in Dry Creek, the estuary and the Russian River;
- Eliminating impediments to fish migration and improving habitat on several streams;
- Restoring up to six miles of habitat in Dry Creek and studying a bypass project;
- Requesting the SWRCB to reduce summertime flows in the Russian River; and
- Creating a freshwater lagoon in the estuary at the mouth of the Russian River during the summer months.

NMFS concluded that lower flows in Dry Creek and Russian River create a better environment for juvenile salmon and steelhead and the BO identified habitat restoration projects in Dry Creek to reduce water velocities in the stream/river. Current minimum summer flows are based on weather conditions, and range from 125 cfs (during a normal year, as measured at Hacienda Bridge in Guerneville) to 85 cfs (as measured during a dry year). Under the terms of the BO, minimum flows would be dropped to 70 cfs with an additional 15 cfs to maintain system flexibility for a total flow of 85 cfs. The BO acknowledged a need for balance and flexibility and noted that SCWA may find alternative minimum flow requirements that meet the goals of restoring functional salmonid-rearing habitat while promoting water conservation and limited adverse effects on other in-stream resources.

5.3 Water Quality Constraints

The quality of the City's water deliveries is regulated by the California State Water Quality Control Board, Division of Drinking Water (SWQCB), which requires regular collection and testing of water samples to ensure that the quality meets regulatory standards and does not exceed MCLs. The City performs water quality testing, which has consistently yielded results within the acceptable regulatory limits (2013 Healdsburg Consumer Confidence Report).

The quality of existing surface water, groundwater, and recycled water supply sources over the next 25 years is expected to be adequate. Groundwater and surface water will continue to be treated to drinking water standards, and no surface water, groundwater, or recycled water quality deficiencies are foreseen to occur in the next 25 years. Table 5.5 (DWR Table 30) summarizes the current and projected water supply constraints due to water quality.

Various City-owned wells have or have had water quality issues and use restrictions due to manganese and/or elevated turbidity. These concerns are managed with water treatment facilities and use management, as discussed in detail in previous sections. Currently, the seasonal use restrictions affecting the City due to water quality concerns are the seasonal restrictions on the Guantlett and Fitch Well Fields. The City currently treats water obtained from the Guantlett Well Field in order to utilize this water source year-round. The City is exploring options for the Fitch Well Field to extend the availability of this water source year-round. The City anticipates completing improvements to allow the year-round use of the Fitch Well Field water source by 2020. The City is not constrained in its access to its total water right due to water quality constraints; but rather limited in when it can use water pumped from these sources *without treatment* seasonally as illustrated below in Table 5-5 (DWR Table 30).

Table 5-5 (DWR Table 30)

Water Quality – Current and Projected Water Supply Impacts

Water source/ Right	Description of condition	2010	2015	2020	2025	2030	2035 - opt
Fitch Well Field	turbidity	0	0	0	0	0	0
Diggers Bend (Fitch Well Field)	turbidity	0	0	0	0	0	0
Gauntlett	turbidity	0	0	0	0	0	0

5.4 Supply and Demand Comparisons

Table 5.5 (DWR Table 31), presented in Section 5.1 compares the normal water year supply with the current multiple-dry water year supplies. The following compares projected supplies to projected demands.

Comparisons of supply and demand under normal, single-dry, and multiple-dry years are summarized in Tables 5-6 through 5-8 below. Any surplus or deficit is also noted. Because of the City's water rights seniority, and based on historical drought conditions, the City of Healdsburg is not expected to have supplies curtailed in conditions mimicking historical droughts. Therefore, Healdsburg maintains a projected surplus sufficient to meet projected demands when comparing projected supplies to projected demands.

Table 5-6 (DWR Table 32)

Supply and Demand Comparison – Normal Year – AFY

	2015	2020	2025	2030	2035-opt
Supply Totals (from Table 16)	4,307	4,611	4,611	4,611	4,821
Demand Totals (from Table 11)	2,388	2,510	2,638	2,745	2,857
Difference (supply minus demand) (surplus)	**1,919**	**2,101**	**1,973**	**1,866**	**1,964**
Difference as % of Supply	45%	46%	43%	40%	41%
Difference as % of Demand	80%	84%	75%	68%	69%

Table 5-7 (DWR Table 33)

Supply and Demand Comparison – Single Dry Year – AFY

	2015	2020	2025	2030	2035-opt
Supply Totals (from Table 16)	4,307	4,611	4,611	4,611	4,821
Demand Totals (from Table 11)	2,388	2,510	2,638	2,745	2,857
Difference (supply minus demand)	**1,919**	**2,101**	**1,973**	**1,866**	**1,964**
Difference as % of Supply	45%	46%	43%	40%	41%
Difference as % of Demand	80%	84%	75%	68%	69%

Table 5-8 (DWR Table 34)

Projected Supply & Demand Comparison during Multiple Dry Year Period (AFY)

		2015	2020	2025	2030	2035-opt
Multiple Dry Year - First Year Supply	**Supply Totals**	4,307	4,611	4,611	4,611	4,821
	Demand Totals	2,388	2,510	2,638	2,745	2,857
	Difference (supply minus demand)	**1,919**	**2,101**	**1,973**	**1,866**	**1,964**
	Difference as % of Supply	45%	46%	43%	40%	41%
	Difference as % of Demand	80%	84%	75%	68%	69%
Multiple Dry Year - Second Year Supply	**Supply Totals**	4,307	4,611	4,611	4,611	4,821
	Demand Totals	2,388	2,510	2,638	2,745	2,857
	Difference (supply minus demand)	**1,919**	**2,101**	**1,973**	**1,866**	**1,964**
	Difference as % of Supply	45%	46%	43%	40%	41%
	Difference as % of Demand	80%	84%	75%	68%	69%
Multiple Dry Year - Third Year Supply	**Supply Totals**	4,307	4,611	4,611	4,611	4,821
	Demand Totals	2,388	2,510	2,638	2,745	2,857
	Difference (supply minus demand)	**1,919**	**2,101**	**1,973**	**1,866**	**1,964**
	Difference as % of Supply	45%	46%	43%	40%	41%
	Difference as % of Demand	80%	84%	75%	68%	69%

5.5 Summary of Supply and Demand Analysis

The City's combined projected water supplies are sufficient to meet projected demands during normal, single-dry and multiple dry year conditions under the drought conditions described in previous sections. Currently there is a surplus of supply compared to anticipated demand projections. This is also the case when comparing projected demand to water supply without the anticipated increases in accessible supply from approved water permit applications. As the table illustrates above, based on population projections as described in Section 2.0, the City is projected to use approximately half of its total projected water supply. This suggests that a greater increase in population and commercial use could be accommodated in terms of water supply.

5.6 Water Shortage Contingency and Drought Planning

5.6.1 Actions in Response to Water Supply Shortages

Water Code Section 10632(a) requires a description of the actions to be undertaken by the urban water supplier in response to water supply shortages of up to 50 percent. However, the City's first priority in developing water conservation and an emergency shortage ordinance was to comply with the state's mandatory drought requirements, which require specific water use prohibitions and specific reductions in water usage. The drought mandates override other existing regulatory codes, and require City's throughout the state to modify their existing water shortage contingency ordinances to comply with the mandates.

When the City is no longer under the mandatory (and temporary) drought restrictions, an evaluation of the need to modify the existing water waste and emergency shortage ordinances will be completed.

5.6.2 Catastrophic Supply Interruption Plan

In accordance with the Emergency Services Act, the City has developed an Emergency Operation Plan (EOP). This EOP guides response to unpredicted catastrophic events that might impact water delivery including regional power outages, earthquakes, or other disasters.

The City's Emergency Operations Plan (EOP) identifies the City's emergency planning, organization, and response policies. The EOP includes a concept of recovery operations, a hazard analysis, responsibilities, and departmentalized standard operating procedures for emergency response. Because several of the hazards identified in the EOP could result in a catastrophic interruption of water supplies, the EOP provides the actions that the City would implement to minimize the impacts of supply interruption. A general summary of the hazards and response protocols identified in the City's EOP related to the water system is provided below.

5.6.3 Hazard Analysis

The City's water system is vulnerable to a wide range of threats. There are three broad categories of hazards: natural, technological, and domestic security threats.

- Natural Hazards
  - Earthquakes
  - Floods
  - Wildland fires
  - Landslides
  - Extreme weather/storms
- Technological/Man-made Hazards
  - Dam failure
  - Hazardous materials spills or contamination
  - Major vehicle accident
  - Airplane crash
- Domestic Security Threats
  - Civil unrest
  - Terrorism

5.6.4 Concept of Operations

The City's response to disasters is based on four phases:

1. Increased readiness;
2. Initial response operations;
3. Extended response operations; and
4. Recovery operations.

During each phase, specific actions are taken to reduce and/or eliminate the threat of disaster situations. Recovery operations occur in two phases: short-term and long-term. The major objectives of short-term recovery operations include an orderly and coordinated restoration of essential utility services, including water and electricity.

Utility restoration will involve all of the agencies participating in the City's disaster response; however, the main responsibility will be assumed by the Utility Department. This will include checking critical City facilities and equipment, testing systems, mobilizing personnel, resources, and equipment, performing damage assessments, and repairing/restoring damaged utility systems. The Utility Department is currently developing standard operating procedures that will contain the detailed actions that are necessary to fulfill these responsibilities in a timely and prudent way should such disasters be realized.

5.6.5 Prohibitions, Penalties, and Consumption Reduction

In response to the continuing drought conditions in the state and the Governor's proclamations for stateside conservation in response to that drought, in 2014 the City updated an ordinance implemented in 2009 declaring mandatory stage 2 conservation measures. While Stage 1 measures are voluntary, when a City declares Stage 2, water conservation measures are mandatory. The Stages increase to reflect increasing severity of drought. These conservation measures include water waste prohibitions. An outline of the water shortage stages and corresponding reduction are outlined in Table 5.9 (DWR Table 35). These measures are outlined in Table 5.10 (DWR Table 36). They are meant to be temporary, and in response to drought conditions. A water waste prohibition ordinance will be adopted as an element of the City's developing water conservation program.

Table 5-9 (DWR Table 35)

Water Shortage Contingency – Rationing Stages to Address Water Supply Shortages

Stage No.	Water Supply Conditions	% Reduction
1	Voluntary Conservation	10%
2	Water Alert	20%
3	Mandatory Compliance	40%

Table 5-10 (DWR Table 36)

Water Shortage Contingency – Mandatory Prohibitions

Examples of Prohibitions	Stage When Prohibition Becomes Mandatory
Application of irrigation water between 7:00 a.m. and 8:00 p.m.	2
Outdoor irrigation is restricted to every other day	2
Eliminate irrigation over-spray	2
Prevent irrigation water from pooling or running off to gutters	2
No washing of sidewalks, driveways, etc. except for public health purposes	2
Repair water breaks or leaks within 72 hours	2
Wash privately owned vehicles only with bucket and hose equipped with an automatic shut-off	2
Use of water from a fire hydrant for uses other than fire fighting and line flushing	2
Use of potable water from the City's system to fill a new swimming pool	2
Refilling of a swimming pool except to top off to prevent damage to pump and filter	2
Use of potable water for dust control (use of recycled water only)	2
Vehicle washing facilities will limit water use to 80 of water used by the customer during the corresponding billing period in the previous year unless wash water is treated and recycled.	2
Commercial use of water for nonresidential use shall be limited to 80 percent of the water used by the customer during the corresponding billing period in the previous year	2
Irrigation of any lawn with potable water at any time of day or night	3
Planting any new landscaping except for designated drought resistant landscaping	3
Irrigation sprinkling is allowable only by hand-held nozzle. (Drip irrigation systems for established perennials and trees is allowable.)	3
Planting of new annual plants, vegetables, flowers or vines	3

Violations of the provisions of the water shortage ordinance are enforced according to the City's code enforcement ordinance (Municipal Chapter 1.12). Enforcement response is progressive, beginning with warning notices and escalating to penalties. If warning letters and penalties are not sufficient to cause the violations to cease, the City engineer has the authority to direct the installation of a flow-restricting device on the service line of the property where the violations are occurring, with cost recovery of expenses incurred by the City.

Section 1.12.010 through 1.12.080 of the Municipal Code outlines the City's enforcement process.

5.6.6 Effect on Revenues and Expenditures

Reductions in water use will reduce the revenue that the City receives from its commodity charges. The anticipated revenue from commodity charges can be calculated by subtracting the revenue generated from monthly service charges from the total budgeted revenue.

Should the City experience a drop in revenues as a result of a water shortage emergency, it would incur some lower costs pumping, though most expenses to the City remain constant regardless of volume sold, such as staffing, billing, facilities maintenance, etc.

Should revenue drops become a concern to the City, capital projects could be deferred as necessary and use available reserves to cover operational expenses. Additionally, drought rates or drought contingency fees could be implemented.

5.6.7 Water Shortage Contingency Ordinance

As noted earlier, the City has adopted a Water Shortage Emergency Plan which was codified by Ordinance No. 1134, amending Section 13.12 of the Municipal Code. This Ordinance is attached in Appendix B.

5.6.8 Mechanisms for Determining Actual Reductions

The City's wells are all equipped with water meters. In addition, each potable water customer is metered. Non-residential landscape irrigation is metered separately from indoor use at some non-residential sites. The City reads meters on a monthly basis and is able to document both demand reductions and atypically high water use. The City contacts individual customers to resolve issues related to a-typically high water use.

SECTION 6 - DEMAND MANAGEMENT MEASURES

Demand management measures (DMMs) are water conservation measures. The DMMs listed in the UWMP Act correlate to the California Urban Water Conservation Council's (CUWCC's) original Best Management Practices (BMPs) for water conservation. The 2010 Urban Water Management Plan (UWMP) Guidebook uses the terms DMMs and BMPs interchangeably. The purpose of this section is to provide a comprehensive description of the City's water conservation programs that are currently implemented and those that are planned to be implemented and how they correspond to the water use reduction plan meant to achieve the SBx7-7 2015 and 2020 water use targets.

Governor Brown approved Assembly Bill 2067 (AB 2067) on September 19, 2014. This bill streamlined the requirements for reporting the DMMs in UWMPs. This was done in response to statewide comments to the state regarding the burdensome nature of the requirements for reporting DMMs as required in SBx7-7.

AB 2067 requires urban water suppliers to provide narratives describing the supplier's water demand management measures. The bill requires *"the narrative to address the nature and extent of each water demand management measure implemented over the past 5 years and describe the water demand management measures that the supplier plans to implement to achieve its water use targets."*

6.1 Description of Demand Management Measures

The 2010 UWMP Guidebook lists 14 conservation measures to be addressed. These are:

- Water Survey Programs for single-family and multi-family residential
- Residential Plumbing retrofit
- System water audit, leak detection, and repair
- Metering with commodity rates
- Large landscape conservation programs
- High efficiency washing machine rebates
- Public information programs
- School education programs
- Conservation programs for commercial, industrial, and institutional
- Wholesale agency programs
- Conservation pricing
- Water Conservation coordinator
- Water waste prohibition
- Residential ultra-low-flow toilet replacement

From 2005 to 2013, the City of Healdsburg focused its water conservation efforts on City operations to bring the level of unaccounted-for water down from its 2005 level. Specifically, the City put its efforts into seeking and repairing leaks in the water distribution system and recalibrating and replacing meters which have not been accurately measuring water consumption. The City has been successful in reducing water losses, unaccounted for water, and its per capita water use.

In 2014, the City Council approved the addition of one staff position. This position was developed to include water conservation coordinator tasks. In 2015 the City has been in the process of developing and implementing a robust water conservation program. The primary driver for this program development is the current drought and the drought proclamations issued by the state. The water conservation program also addresses programs for long-term water efficiency.

This new water conservation program will be discussed in detail in the 2015 UWMP. The 2015 UWMP will include data up to December 31, 2015 and will be completed in the first half of 2016.

6.2 Demand Management Measures Implemented or Scheduled for Implementation

- **Residential Plumbing retrofit**

  In the time period covering this UWMP, there were no direct toilet installation programs in place in the City of Healdsburg.

  Note that a direct high-efficiency toilet installation program was begun in 2014 which aims to replace pre-1992 toilets designed to flush at 3.5 gallons per flush. It is uncertain whether this program will continue past the period of emergency drought conditions. Plans for this program will be further detailed in the 2015 UWMP.

  The City has also initiated a toilet rebate program which provides rebates for replacement of pre-1992 toilets.

- **Water Survey Programs for single-family and multi-family residential**

  In the time period covering this UWMP, there was no water survey program for residential dwellings. However, this program was added to the suite of water conservation programs available to City residents in 2014. Plans for this program will be further detailed in the 2015 UWMP.

- **System water audit, leak detection, and repair**

  To meet this DMM, water suppliers should annually calculate the percentage of water lost from the water distribution system and determine whether that loss is less than 10%. Additionally, the water supplier is to evaluate “real water loss” via system leaks versus “apparent water loss” which is water consumed by customers, but is accurately metered or accounted for in the supplier’s water billing system. In the years that water loss is greater than 10%, water suppliers are to conduct a water system leak audit and repair the leaks found, as feasible. Conducting a water system leak test may also reveal a low level of leaks which in turn signals inaccurate metering or accounting.

  Historically the City’s unaccounted water levels have been as high as 23% and in 2013 production figures compared to billing figures indicated water loss at only 2%. The real water loss may be slightly higher due to billing and production tracking being on slightly offset schedules.

  Starting in 2005, the City has implemented a $2 million meter and pipe replacement program. The City’s loss reduction program has been highly successful and has fulfilled the primary goal the City had set in 2005, which was to significantly reduce its water losses. As mentioned above, industry standard is that water losses (including unaccounted for water) at a level of less than 10% is considered acceptable. The City will continue its efforts in leak detection, leak repair, and meter replacement to maintain a water loss level less than 10%.

- **Metering with commodity rates**

  This DMM suggests that all new connections be metered and that all metered accounts be billed by volume of use. Metering is essential for water conservation as it allows for water customers to be billed for the volume of water consumed rather than a flat rate, as this incentivizes water

efficiency. Metering also allows for tracking of water use by sector as well as individual accounts, which allows for better evaluation of water conservation programs.

All of the City's water accounts are metered and all water is billed by volume (versus a flat fee). As mentioned above, starting in 2005, the City has implemented a $2 million meter and pipe replacement program. This effort for meter replacement was initiated because many of the City's meters were old and no longer measuring water use accurately. Because failing meters tend to err on the side of under-measuring water consumed, inaccurate meters contribute to the volume of water perceived as water loss. Inaccurate metering also causes lost revenue to the City.

The City reviews individual accounts for water use to search for accounts that have unusually low water use characteristic for the type of account. The meters on those accounts are prioritized for meter inspection, and replacement if appropriate.

The cost-effectiveness of implementation of this DMM will be evaluated by comparing the volume of water billed immediately prior to and after the installation of the upgraded meter. The revenue gained by accurate meter reading will be compared to the cost of meter replacement; however, the City completes these replacements of aging infrastructure as required according to its capital improvement program.

The effectiveness of meter replacement on conserving water will be evaluated by observing whether water consumption for that water customer declines after their water bills increase with more accurate readings. The City's loss reduction program has been highly successful and has fulfilled the primary goal the City had set in 2005, which was to significantly reduce its real and apparent water losses, as mentioned above.

- **Large landscape conservation programs**

  This DMM calls for water suppliers to provide support to non-residential customers with large landscapes to improve the efficiency of their irrigation. Some voluntary elements of this DMM include installing dedicated irrigation meters at non-residential accounts and installing climate-appropriate landscaping at agency owned properties.

  The City offers dedicated irrigation meters to commercial customers.

  The City Council adopted the Water Efficient Landscape Ordinance (No. 1091) in December 2009. The ordinance promotes the efficient design and installation of water-efficient landscapes in Healdsburg associated with new construction and substantial alterations of existing development where landscapes are proposed. The ordinance applies standards and guidelines for irrigation system efficiency as well as encouraging climate appropriate plantings. The implementation of this ordinance will reduce water use on new and substantially renovated landscapes on a per square-foot basis for the following categories of development:

  - All new residential, commercial, office, industrial, public or quasi-public projects with landscaping.
  - All additions/remodels to existing residential, commercial, office, industrial, public or quasi-public projects with new or replaced contractor-installed landscapes of 2,500 square feet or more.

- All additions/remodels to existing residential, commercial, office, industrial, public or quasi-public projects with new or replaced property owner-installed landscapes of 5,000 square feet or more.

Lawn Conversion

The City provides a $1.00 per square foot rebate of lawn replaced with climate appropriate landscape. The lawn conversion program applies to commercial and residential customers.

At this time, the City does not provide irrigation system audits for customers with large landscapes. A large landscape survey program may be added to the City's water conservation program in future years.

- **High efficiency washing machine rebates**

  In the time period covering this UWMP, there was no high efficiency clothes washer rebate program provided in the City of Healdsburg. However, the City does currently provide a $50 rebate to qualifying customers for qualifying high efficiency clothes washers.[8] More details about the extent and future plans of this program will be provided in the 2015 UWMP.

- **Public information programs**

  The City has a water conservation section on the Public Works Department's web page of the official City website. The water conservation section provides background information about water supply and water use on a global scale and provides suggestions for reducing indoor and outdoor water use.

  The City also periodically includes water conservation messages with utility bills. The City will continue to provide information to its water customers through the web page and utility bill stuffers.

- **School education programs**

  In the time period covering this UWMP, there were no school programs related to water conservation programs conducted in Healdsburg schools by City staff.

  The City is currently evaluating developing an outreach program for school aged children.

- **Conservation programs for commercial, industrial, and institutional**

  In the time period covering this UWMP, there was no water conservation program directed at the commercial sector provided in the City of Healdsburg.

  However, the City has sense initiated a lawn conversion rebate program, which provides $1.00 per square foot of lawn replaced with climate appropriate landscape.

- **Wholesale agency programs**

  The City provides potable water on a wholesale basis to Fitch Mountain County Service Area (CSA) #41, however the City has not extended its water conservation programs to this service area.

[8] The City also provides a $75 energy conservation rebate for qualifying high efficiency clothes washers.

- **Conservation pricing**

  Conservation pricing and consists of implementing water and sewer rates designed to recover the cost of providing service and based on volume of use rather than a flat rate charged regardless of volume used.

  The City's water rate structure does meet the requirements of this DMM. The City's rate structure includes a flat fee per account, charged each billing cycle regardless of volume of water used. In addition to the monthly flat rate, there is an additional "commodity charge" per billing unit of water used for that billing cycle.

- **Water Conservation coordinator**

  This DMM requires a conservation coordinator be assigned at least 25% of his or her time to implement the water conservation program. Through 2013, the City's Senior Civil Engineer has been assigned the duties of Water Conservation Coordinator. The staff person in that position has typically spent less than 25% of his time on water conservation.

  However, in 2014 the City Council approved the addition of a staff position whose duties would include being the water conservation coordinator.

- **Water Waste prohibition**

  As noted in Section 5 of this UWMP, in response to the continuing drought conditions in the state and the Governor's proclamations for stateside conservation in response to that drought, in 2014 the City updated an ordinance implemented in 2009 declaring mandatory stage 2 conservation measures. These conservation measures include water waste prohibitions.

  These measures are meant to be temporary, and in response to drought conditions. A water waste prohibition ordinance may be put in place in future years as an element of the City's long-term water efficiency goals.

6.3 Water Demand Reduction Goals and Programs

The City's intent is to, at a minimum, meet and maintain the City's 2020 water use target. The twenty percent reduction is equivalent to a savings of 610 acre-feet per year by 2020.[9]

As described above, the City is in the process of developing and implementing a robust water conservation program, in part, as a response to the current temporary demand restrictions placed on water suppliers by the State. The City plans to further develop its program and will be evaluating the extent to which that program will remain in effect over the long-term, and more importantly, the extent to which emergency water conservation savings realized can be maintained over the long-term.

More detailed analysis will be available in the 2015 UWMP.

[9] This savings compares the projected 2020 population of 13,284 at a water use rate of 203 gpcd versus 162 gpcd.

References

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California Department of Water Resources, “California Water Plan Update 2009, North Coast Integrated Water Management”, Bulletin 160-09, Volume 3.

Annual Consumer Confidence Reports

2010 Urban Water Management Plan, Sonoma County Water Agency, June 2011

2013 Healdsburg Consumer Confidence Report

Appendices

Appendix A - Public Involvement Documents

CITY OF HEALDSBURG COMMUNITY DEVELOPMENT CENTER

Public Works Department
401 Grove Street
Healdsburg, CA 95448-4723
Phone: (707) 431-3346 Fax: (707) 431-2710
Visit us at *www.ci.healdsburg.ca.us*

November 6, 2014

Jay Jasperse
Sonoma County Water Agency
404 Aviation Boulevard
Santa Rosa, CA 95403

Toni Bertolero
Town of Windsor
P.O. Box 100
Windsor, CA 95492

Craig Scott
City of Cloverdale
124 N. Cloverdale Blvd.
Cloverdale, CA 95425

RE: Notice of Review and Update of the City of Healdsburg Urban Water Management Plan

To: Interested Parties

The City of Healdsburg is currently reviewing and updating the City's Urban Water Management Plan (UWMP). The UWMP will provide an analysis of projected water demand and supply over the next 20 years as well as an updated water conservation plan.

If you are interested in providing input during the preparation of the UWMP, please contact me at (707) 431-3344 or scarter@ci.healdsburg.ca.us.

Sincerely,

Scott Carter, P.E.
Public Works Department

Distribution List:
Jay Jasperse, Sonoma County Water Agency
Toni Bertolero, Town of Windsor
Craig Scott, City of Cloverdale

PROOF OF PUBLICATION
(2015.5 C.C.P.)

STATE OF CALIFORNIA,

County of Sonoma

I am a citizen of the United States and a resident of the County aforesaid; I am over the age of eighteen years, and not a party to or interested in the above entitled manner. I am a principal clerk of the printer of the **Healdsburg Tribune Enterprise and Scimitar** a newspaper of general circulation, printed and published **Weekly** in the City of Healdsburg, County of Sonoma, and which newspaper has been adjudged a newspaper of general circulation by the Superior Court of the County of Sonoma, State of California, under the date of **June 12, 1953**, Case **Number 36989**; that the notice, of which the annexed is a printed copy (set in type not smaller than nonpareil), has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates; to-wit:

July 9, 16

all in the year **2015.**

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

Dated at **Healdsburg,**

California, this 16 day of July, 2015

Ellen Mateo

This space is for County Clerk's Filing Stamp

Proof of Publication of

No. 19986
CITY OF HEALDSBURG
OFFICE OF THE CITY CLERK
NOTICE OF PUBLIC HEARING

NOTICE IS HEREBY GIVEN that the City Council of the City of Healdsburg, at a special meeting on Wednesday, July 29, 2015, at or after 6:00 P.M. to be held in the City Hall Council Chamber, 401 Grove Street, Healdsburg, California, will hear public comment prior to the consideration of adoption of the Draft Urban Water Management Plan (UWMP). In review and consideration of the UWMP, the City Council will hear comments regarding water reduction targets in compliance with the Water Conservation Act of 2009 (SBx7-7).

A draft of the Urban Water Management Plan is available for review in the City Clerk's Office, 401 Grove Street, Healdsburg, California. Monday through Friday between the hours of 8:00 A.M. and 5:00 P.M., holidays excepted. Details on this matter and any comments received to date are available for review by contacting Terry Crowley, Healdsburg Utility Director, 401 Grove Street, Healdsburg, California 95448, (707) 431-3346 or email to tcrowley@ci.healdsburg.ca.us,

All interested persons are invited to send written comments to the City Clerk's Office, 401 Grove Street, Healdsburg, CA 95448 no later than the hearing date and/or be present to comment orally on this issue.

Dated: July 2, 2015

Maria Curiel, City Clerk

PUBLISH: July 9, 16, 2015
The Healdsburg Tribune

CITY OF HEALDSBURG

RESOLUTION NO. 94-2015

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF HEALDSBURG ADOPTING THE CITY OF HEALDSBURG'S 2010 URBAN WATER MANAGEMENT PLAN (UWMP)

WHEREAS, California's Urban Water Management Planning Act (Act) requires urban water suppliers with more than 3,000 customers to prepare and submit an Urban Water Management Plan (UWMP) to the Department of Water Resources every five years; and

WHEREAS, the Water Conservation Bill of 2009 (SBx7-7) requires urban water suppliers to set water conservation targets to meet an overall water conservation of 20% by the year 2020; and

WHEREAS, the general purpose of the UWMP is to demonstrate that the urban water supplier has adequate water supplies to meet future needs; and

WHEREAS, the City has consulted with GHD to develop and prepare the 2010 UWMP and water conservation targets; and

WHEREAS, a public workshop was held on May 13, 2015 to gain public input on the setting of the water conservation targets, which are incorporated into the 2010 UWMP; and

WHEREAS, pursuant to California Water Code section 10642, the City has made the draft 2010 UWMP available for public inspection and held a public hearing on July 29, 2015; and

WHEREAS, the final 2010 UWMP meets the requirements of the Act and SBx7-7; and

WHEREAS, under section 15378(b)(2) of the California Environmental Quality Act, continued administrative actions do not qualify as a "Project". Therefore, no further CEQA or environmental review is required.

NOW, THEREFORE BE IT RESOLVED, that the City Council of the City of Healdsburg hereby adopts the City of Healdsburg's 2010 Urban Water Management Plan.

PASSED, APPROVED AND ADOPTED, this 29th day of July 2015, by the following vote:

AYES: Councilmembers: (4) Chambers, Mansell, Plass, and Mayor McCaffery

NOES: Councilmembers: (0) None

ABSENT: Councilmembers: (1) Ziedrich

ABSTAINING: Councilmembers: (0) None

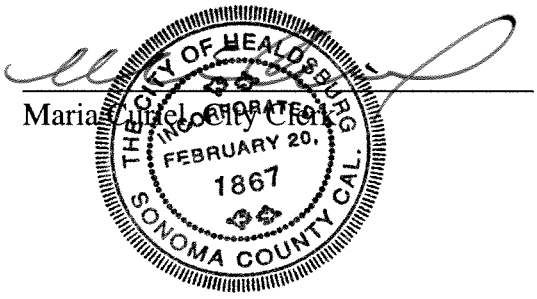
SO ORDERED:

Shaun F. McCaffery, Mayor

ATTEST:

Maria Curiel, City Clerk

I, MARIA CURIEL, City Clerk of the City of Healdsburg, do hereby certify that the foregoing is a full, true, and correct copy of Resolution No. 94-2015 adopted by the City Council of the City of Healdsburg on the 29th day of July, 2015.



Maria Curiel, City Clerk

CITY OF HEALDSBURG

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NOES: Councilmembers: (0) None

ABSENT: Councilmembers: (1) Ziedrich

ABSTAINING: Councilmembers: (0) None

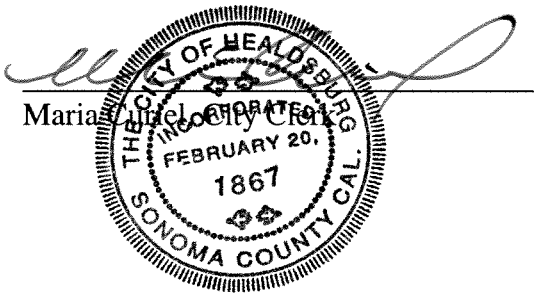
SO ORDERED:

Shaun F. McCaffery, Mayor

ATTEST:

Maria Curiel, City Clerk

I, MARIA CURIEL, City Clerk of the City of Healdsburg, do hereby certify that the foregoing is a full, true, and correct copy of Resolution No. 94-2015 adopted by the City Council of the City of Healdsburg on the 29th day of July, 2015.



Maria Curiel, City Clerk

Appendix B - Water Shortage Emergency Ordinance, Ord. No. 1134

CITY OF HEALDSBURG

ORDINANCE NO. 1134

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF HEALDSBURG AMENDING CHAPTER 13.12, WATER SYSTEM, OF THE HEALDSBURG MUNICIPAL CODE

WHEREAS, due to the continuing drought the City Council of the City of Healdsburg enacted Stage 2 Water Conservation measures on January 21, 2014; and

WHEREAS, Chapter 13.12 of the Healdsburg's Municipal Code defines uses of water waste for each Stage of water conservation; and

WHEREAS, the existing Stages of conservation and definitions of water waste require additional clarity and broader scope; and

WHEREAS, various other administrative changes were required of Chapter 13.12;

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF HEALDSBURG DOES HEREBY ORDAIN AS FOLLOWS:

Section 1. Chapter 13.12, Water System, of the Healdsburg Municipal Code is hereby deleted in its entirety and replaced as follows:

Chapter 13.12

WATER SYSTEM

Sections:

Article I. General Provisions

Article I. General Provisions

13.12.010 Definitions.

For the purposes of this Chapter, the following words and phrases shall have the following definitions:

"Apartment house" means a single building under one roof containing three or more dwelling units complete with kitchen facilities.

"Boardinghouse" means a dwelling other than a hotel where lodging or lodging and meals for three or more persons is provided for compensation.

"Business occupancy" means any building or portion thereof or a room or rooms used or occupied by a person to carry on a business, profession, trade or occupation for gain or profit.

"Charge" or "Rate" means the amount of money to be paid by consumers to the City for water services or materials; "minimum charge" shall mean the charge to be paid by a consumer for each and every connection to the City water system irrespective of whether or not water is delivered through such connection to a consumer during the period for which such charge is made.

"City" means the City of Healdsburg acting by and through the City of Healdsburg public works department as operator of the City of Healdsburg Water System.

"City Engineer" is the City employee qualified through experience and professional licensure assigned the title of City Engineer or a designee of the incumbent City Engineer.

"City Manager" or "Manager" is the City Manager of the City of Healdsburg or a designee of the incumbent City Manager.

"Customer" means any person, firm, partnership, association, corporation, company, organization, or governmental entity, whether within or without the geographic boundaries of the City of Healdsburg, who uses water supplied by the City.

"Cross-connection" means any physical connection between the piping system from the City water service and that of any other water supply that is not, or cannot be, approved as safe and potable for human consumption, whereby water from the unapproved source may be forced or drawn into the City distribution mains.

"Dwelling group" means a group of two or more detached or semidetached dwelling units occupying a parcel of land in one ownership, and having any yard or court in common but not including motels or auto courts.

"Dwelling unit" means one or more rooms under one roof used for living purposes by one family and containing one kitchen.

"Duplex" means a single building under one roof containing only two dwelling units complete with kitchen facilities.

"Fluoridation" means the process and result of adding fluoride or similar ingredients or compounds to water for the prevention or reduction of tooth decay.

"Fluoride" means a chemical compound (sodium fluoride or sodium silicofluoride) commonly approved and added to water in such amounts as will produce benefits in reducing dental decay.

"Guest house" means detached living quarters of a permanent type of construction and without kitchen or cooking facilities and not to be leased or rented separately from the main dwelling.

"GPD" means gallons per day.

"Hotel" means any building or portion thereof containing six or more guest rooms used or intended to be used, let or hired out, whether the compensation for hire be paid directly or indirectly.

"Mobile home" means a portable structure having no foundation other than wheels, jacks or skirtings and so designed or constructed as to permit occupancy as a dwelling.

"Mobile home Park" means a site or portion of a site, which is used or intended to be used by persons living in mobile homes.

"Motel" means a group of two or more detached or semidetached buildings each containing a guest room with automobile storage space provided in connection therewith, which group is used primarily for the accommodation of transient automobile travelers and in which there are no kitchen facilities.

"Outside rates," "outside users," "outside consumers" and "surplus water" as used herein relate to City water delivered or distributed outside the corporate limits of the City.

"Recycled Water" shall have the same definition as provided by the State Water Code, Section 13050, as amended.

"Service" or "water service" means one or more connections through which water is supplied or is available to a consumer from and out of the water system owned and operated by the City.

"Travel trailer park" means a site or portion of a site, which is used or intended to be used by persons with travel trailers or vans on a transient basis.

"Water" means potable water supplied by the City Water Department.

"Water Department" means the City Council, performing functions related to the City water services, together with the City Engineer, Water Superintendent or other duly authorized representatives.

13.12.020 Adoption of rules and regulations authorized.

The City Council may from time to time by resolution adopt and amend rules and regulations for the purpose of administering and enforcing the provisions of this chapter and for the purpose of regulating and operating the municipal water system; provided, however, that no change or amendment of rates for the sale of water to consumers within the corporate limits shall be made or established except by ordinance regularly adopted.

13.12.030 Application for water service – Generally.

Any person making application for water shall do so by signing an application for service provided by the City.

13.12.040 Application for water service – By past delinquent.

When an application for water service is made by a former consumer who was responsible for and failed to pay all bills for service previously rendered, regardless of location or time when incurred, the City shall refuse to furnish service to such applicant until the outstanding bills are paid. He may also require, as a guarantee for the payment of future bills, a regular deposit as prescribed in HMC 13.04.030.

13.12.050 Certain premises to be separately metered.

Each dwelling unit and each unit of a duplex, whether inside or outside of the City, shall be separately metered. Where business premises are located in separate buildings on the same lot or parcel, each such separate premises shall be separately metered. No consumer of a City utility service shall convey any part of such service from his property to a separate lot or parcel of property, whether or not the other lot or parcel of property is owned by the same consumer. Notwithstanding the foregoing, a multi-unit condominium or planned development project may be served by a single meter where service is applied and paid for by a homeowner or condominium association organized and operating as approved in the final subdivision public report issued for the project by the State Department of Real Estate.

13.12.060 Exceptions from separate meter requirements.

Separate meters are not required for guesthouses, dwelling groups, boardinghouses, apartment houses, hotels, motels, auto courts, trailer courts or multiple business occupancies in a single commercial building.

13.12.070 Meters required for water service outside City.

All water services outside the City shall be metered.

13.12.080 Location of meters – Additional meters.

All water meters shall be located in the sidewalk area or at a point on the premises nearest the road or street on which the property faces. Charges for a single lateral and meter service shall be as set forth in HMC 13.12.180. Additional meters manifolded from a single lateral shall be installed by the owner at no expense to the City and such installation shall be inspected and approved by the City Engineer.

13.12.090 Meter failure.

If a meter fails to register due to any cause except the nonuse of water, the charge for water will be made on the basis of the average charge per month covering the period of the preceding months, first ascertaining whether the meter has properly functioned during such period and whether normal conditions prevailed in regard to the use of the water at the premises supplied. In the preparation of such averaged bills due consideration will be given to fluctuations caused by seasonal changes or any interruption to the service known to have occurred.

13.12.100 Meter readers.

The meter reader shall have the authority to enter any premises for the purpose of reading water meters and for inspecting, testing, replacing or removing water meters and meter boxes. The

meter reader shall seal off all meters so ordered by proper application of the consumer and shall restore such services upon the proper application of a new consumer. All connections and disconnections shall be properly recorded in the meter books and records of the meter reader. The meter reader shall make, when required, any other disconnections provided by this chapter.

13.12.110 Shutdowns.

The water of any consumer may be shut off from the main at any time for repairs, alterations or other purposes and the office of the City shall inform such consumers, in advance, of the time such shutdown will occur and although notice is not received by the consumer due to his absence, the City will not be responsible nor liable for any consequent damage resulting from such shutdown.

In the event of an emergency necessitating immediate action, the service of any consumer may be shut off without prior notice and the City will not be liable for any consequent damages resulting from such shutdown.

13.12.120 Maintenance of water service connections generally.

All water service pipes and connections to water mains within the City shall be installed and maintained by the City to a point inside the curb line or sidewalk where an approved shutoff valve shall be installed as near the water meter location as possible. Existing galvanized service connections shall, if damaged or leaking, be replaced by the City upon application and payment by the owner or consumer for a new service. Any service pipe, fittings, or water meter damaged as a result of negligence, malicious acts or intent shall be repaired by the City and the actual cost of the repair shall be charged to the owner or consumer.

13.12.130 Water service outside City generally.

The City may furnish and provide surplus water to persons outside the corporate limits of the City upon application to the City on forms so provided. Meters shall be of a type approved by the City Engineer. The meters shall be installed at the expense of the owner or consumer at a point on the premises nearest the road or street on which the property faces; the location and installation to be approved by the City Engineer.

Any water pipe or main to be used to carry water to a consumer outside the City shall be of a type and quality approved by the City Engineer and a map showing its location shall be furnished to the City superintendent upon completion of installation of the pipe. The City shall not be liable for any expense incurred in the installation or maintenance of water pipes, mains, or services outside the corporate limits of the City and the time and material cost of the connection made by the City to the City water main shall be charged to the applicant.

13.12.140 Tank truck water.

No person shall draw or consume water from any standpipe or fire hydrant for the purpose of filling a tank truck or for any other purpose without first making an application for such service with the City. The rate for water consumed under this section shall be set by a resolution of the City Council.

No person shall draw or consume water from any standpipe or fire hydrant for purposes set forth in this section without first presenting a copy of his application to the City Engineer. Upon consideration of the time, in days or weeks, in which withdrawals will be made, the City Engineer shall designate the standpipe or hydrant to be used and connect a water-metering device to the hydrant. The City Engineer shall also provide the applicant with a hydrant wrench, such wrench to be returned to the City superintendent before settlement of all charges. The applicant shall be charged full replacement cost for loss of, damage to or failure to return hydrant wrench to the City Engineer.

13.12.150 Funds for maintenance of fluoridating process.

The mayor and City Council, out of surplus revenues received from the sale of municipal water, shall appropriate and make available sufficient money for the purpose of maintaining a fluoridating process in the City water system

13.12.160 Purchase of equipment and supplies for maintenance of fluoridation.

The mayor and City Council shall purchase appropriate apparatus including machinery, appliances, equipment, fluoride, ingredients, compounds, and materials required for the maintenance of fluoride in the City water supply.

13.12.170 Failure to obey provisions of chapter.

In addition to the enforcement remedies provided in Chapter 1.12 HMC, if an owner or consumer fails to comply with any of the provisions of this chapter, the City shall have the right to refuse or discontinue service.

Article II. Rates

13.12.180 Schedule of rates for water service.

The City Council shall fix the rates to be charged for water service by the City, by resolution, and in so doing shall distinguish the different classes of service made available and fix rates appropriate to each class of service. Rates shall be fixed and revised from time to time with the objective that the City water distribution system shall be operated on a sound economic basis as a revenue-producing enterprise.

Article III. Bills

13.12.190 To be rendered monthly – Computation.

The City shall render bills monthly, to be received by the consumer on the first day of each month, which bills shall include a charge for the water consumed for a 30-day period ending approximately on the fifteenth day of the month prior to the bill date and to include any charges for water unpaid at that time. Opening bills covering new consumers for less than two weeks' service may, at the discretion of the City, be included in the next regular billing. Closing bills covering service of less than two weeks may be determined by the meter reading or by proration of the minimum charge, whichever is greater.

13.12.200 Payment – Delinquent notice.

Bills for water service shall be due and payable on the first day of each month at the office of the City and if not paid on or before the twentieth day of each month a notice may be sent to the consumer setting forth the amount due and the date on which service will be disconnected.

13.12.210 Disconnection of service for nonpayment.

A consumer's water service may be disconnected for the nonpayment of a bill for water service rendered if the bill is not paid by the twentieth day of the month in which the bill is due as provided in HMC 13.12.200. A consumer's water service may be discontinued at his present location for nonpayment of a bill that was rendered him by the City at a previous location, provided such bill is not paid within 20 days after presentation or mailing at his new location.

Article IV. Water Shortage Emergency Plan

13.12.220 Water Shortage Emergency Plan.

A. Title. This section shall be known as the "Water Shortage Emergency Plan" of the City of Healdsburg and may be so cited.

B. Purpose and Intent. The purpose of this water shortage emergency plan (plan) is to establish different levels of water conservation during a water shortage emergency resulting from a reduced supply of water such as may result from drought, water supply shortages, or limitations of water delivery conditions.

Nothing in this section will preclude the City Council from passing an emergency resolution for the immediate curtailment of water use by its customers due to water supply shortages and delivery limitations caused by catastrophic events and conditions, either natural or unnatural.

C. Authorization. The City Manager or his or her designee is authorized and directed to implement the applicable provisions of this section upon adoption of a City Council resolution determining that such implementation is necessary to protect the public health, safety, and welfare.

D. Application. The provisions of this plan shall apply to all customers and property served by the City's potable water and recycled water systems.

E. Water Conservation Stages. No customer shall make, cause, use, or permit the use of water for residential, commercial, industrial, agricultural, governmental, or any other purpose in a manner contrary to any provision of this plan, or in an amount in excess of that use permitted by either conservation stage 2 or 3 when in effect as declared by resolution of the City Council. While in effect, the requirements of Stage 2 or 3 will supersede any conflicting sections of the Healdsburg Municipal Code.

1. Stage 1 – Voluntary Conservation. In order to achieve an overall system-wide reduction goal of 10 percent, all customers of the City shall be requested to:

    a. Utilize City and other sources of information regarding water efficiency, reading water meters, repairing ordinary leaks, and water efficient landscape.

    b. Apply outdoor irrigation water only during the evening and early morning hours to reduce evaporation losses (8:00 p.m. to 7:00 a.m.).

    c. For property with an even-numbered street address, irrigate outdoors only on even days of the Month.

    d. For property with an odd-numbered street address, irrigate outdoors only on odd days of the Month.

    e. Routinely inspect, and repair as required, all irrigation systems for leaks, and adjust spray heads to provide optimum coverage and eliminate avoidable over-spray and run-off.

    f. For irrigation valves controlling water applied to lawns, vary the minutes of run-time consistent with fluctuations in weather. Reduce minutes of run-time for each irrigation cycle if water begins to pool or run off to gutters and/or ditches before the irrigation cycle is completed.

    g. Utilize water conservation incentives, as available, to replace inefficient plumbing fixtures and appliances with water efficient models.

h. Stop the washing of sidewalks, walkways, driveways, parking lots and other hard-surfaced areas by direct hosing, except as may be necessary to prevent or eliminate materials that present a danger to public health and safety.

i. Correct and repair the escape of water through breaks or leaks within the customer's plumbing or private distribution system. It shall be presumed that a period of seventy-two (72) hours after the customer discovers such a break or leak, or receives notice from the City, is a reasonable time within which to correct such break or leak or, at a minimum, to stop the flow of water from such break or leak.

j. Stop the noncommercial washing of privately owned motor vehicles, trailers or boats excepting when utilizing a bucket and hose equipped with an automatic shut-off;

k. Not use water from a fire hydrant, except for fighting fires and line flushing as required by regulatory agencies.

2. Stage 2 – Mandatory Compliance – Water Alert. The City Council may by resolution declare a conservation stage 2 based on water supply and delivery projections by the City Manager or City engineer that an overall system-wide reduction of twenty (20) percent is necessary. Following a declaration of conservation Stage 2 status, and in order to achieve an overall system-wide reduction of 20 percent, in addition to Stage 1 activities being mandatory, the following restrictions shall be implemented:

   a. Nonessential uses of water, including the following, are prohibited:

      i. The City will not accept or approve building permits for new swimming pools unless the owner agrees to obtain pool water from a source other than the City's potable water system.

      ii. Refilling of a swimming pool except when topping off to prevent damage to pump and filter equipment is not allowed. Owners of pools should use a cover to minimize evaporation.

      iii. Use of potable water for dust control, compaction, and other construction purposes. Only Recycled Water may be used for dust control, compaction, and other construction purposes as allowed by the Regional Water Quality Control Board or other governing bodies.

   b. Water use by a vehicle washing facility shall be limited to 80 percent of the water used by the facility from corresponding billing period in the prior year, unless such washing facility treats and recycles wash water, in which case this provision shall not apply.

c. Water use for any nonresidential use shall be limited to 80 percent of the water used by the customer during the corresponding billing period in the prior year.

d. The City Council may, by resolution, prohibit other activities and water uses upon the recommendation of the City Manager or City Engineer that such additional measures are necessary to achieve an overall system-wide reduction of twenty (20) percent in water usage.

3. Stage 3 – Mandatory Compliance – Water Emergency. The City Council may, by resolution, declare a conservation stage 3, based on water supply and delivery projections by the City Manager or City Engineer that an overall system-wide reduction of forty (40) percent is necessary. Following a declaration of conservation stage 3 status, and in order to achieve an overall system-wide reduction of 40 percent, the following activities shall be prohibited:

a. Any activities prohibited during conservation stages 1 and 2.

b. Irrigation of any lawn (residential, commercial, or industrial) with water, at any time of day or night.

c. Planting any new landscaping, except for designated drought resistant landscaping prescribed by the City Manager or designated representative.

d. All day and night-time irrigation sprinkling unless only a hand-held nozzle is used. This prohibition shall not apply to drip irrigation systems for established perennial plants and trees using manual or automatic time-controlled water application.

e. Planting of new annual plants, vegetables, flowers, or vines.

E. Exceptions and Application Procedures for Exceptions. Any customer may make written application for an exception to the regulations and prohibitions described in this section. Said application shall describe in detail why applicant believes an exception is justified.

1. The City engineer may grant exceptions for use of water otherwise prohibited by this section upon finding and determining that failure to do so would cause an emergency condition affecting the health, sanitation, fire protection or safety of the applicant or public; or cause an unnecessary and undue hardship on applicant or the public, including, but not limited to, adverse economic impacts, such as loss of production or jobs.

2. Decisions of the City engineer may be appealed to the City Manager or his or her designee by submitting a written appeal to the City Clerk within seven calendar days of the date of the decision by the City engineer. Upon granting any appeal the City Manager, or his or her designee, may impose any conditions determined to be just and proper. Exceptions granted shall be prepared in writing and filed with the City Clerk.

F. Violation/Enforcement.

1. Any violation of any provision of this plan is hereby declared to be a public nuisance and shall be enforced in accordance with the provisions of the code enforcement ordinance (Chapter 1.12 HMC), including without limitation the imposition of administrative penalties, notice and hearing requirements and appeals procedures.

2. Any violation of the provisions of this section shall be deemed an infraction.

3. In addition to the enforcement remedies provided in Chapter 1.12 HMC, upon a violation of any provision of this section, the City engineer may authorize the installation of a flow-restricting device on the services line to the property(ies) in violation, and the cost of installation of such a device shall be charged to the person(s) or entity(ies) responsible for payment of water service charges or a lien against the affected property(ies).

4. In addition to the enforcement remedies provided in Chapter 1.12 HMC, upon a continued violation of any provision of this section, the City engineer may authorize the termination of water service to the property(ies) in violation. The cost of terminating and restoring service shall be charged to the person(s) or entity(ies) responsible for payment of water service charges or a lien against the affected property(ies).

G. Additional Enforcement Remedy. Before either installing a water restrictor or terminating water service, the City shall give written notice to the person responsible for the service connection to be either restricted or terminated of its intention to do so. The person or persons to whom notice is given shall have five business days from the date of service of the notice to request a hearing before the City Manager or his or her designee in order to present any and all evidence they may have as to why a restrictor should not be installed or service terminated.

If a hearing is requested, the City Manager, or his or her designee, shall schedule a date and time for said hearing as soon as possible after the request is filed, but not later than five business days after the filing of such request for hearing. At the hearing, the person whose service connections are to be restricted or terminated and the utilities personnel may offer evidence. The City Manager, or his or her designee, shall make a final determination as to whether service should be restricted or terminated and under what conditions.

Section 2. Compliance with California Environmental Quality Act

The City Council finds that this ordinance is not a project for the purposes of the California Environmental Quality Act because it does not have a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment.

Section 3. Severability: If any section, subsection, sentence, clause or phrase or word of this Ordinance is for any reason held to be unconstitutional, unlawful or otherwise invalid by a court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this ordinance. The City Council of the City of Healdsburg hereby declares that it would have passed and adopted this Ordinance and each and all provisions thereof irrespective of the fact that any one or more of said provisions may be declared invalid or unconstitutional without regard to any such decision or preemptive legislation.

Section 4. Effective Date: This Ordinance of the City of Healdsburg shall be effective thirty (30) days after the date of its passage, this ordinance or a summary thereof, as provided in Government Code Section 36933, shall be published at least once in a newspaper of general circulation published and circulated in the City of Healdsburg, along with the names of the City Council voting for and against its passage.

INTRODUCED by the City Council of the City of Healdsburg on the 7th day of April 2014, and PASSED and APPROVED on the 21st day of April 2014 by the following roll call vote:

AYES:	Councilmembers:	(5)	Chambers, Jones, McCaffery, Plass and Mayor Wood
NOES:	Councilmembers:	(0)	None
ABSENT:	Councilmembers:	(0)	None
ABSTAINING:	Councilmembers:	(0)	None

SO ORDERED:

James D. Wood, Mayor

ATTEST:

Maria Curiel, City Clerk

Dated: April 22, 2014