2020 Urban Water Management Plan for United Water Conservation District

Public Draft

March 12, 2021

Prepared for:
United Water Conservation District

Prepared by:
Stantec Consulting Services Inc.

Notes:

This public draft was prepared based on Department of Water Resources Draft 2020 Urban Water Management Plan Guidelines and is subject to updates to comply with the final release of the Department of Water Resources Final 2020 Urban Water Management Plan Guidelines.

This is a public draft and all statements, characterizations, and values are subject to change due to public or further internal review.

The values presented in various projection tables are subject to change during the public Draft period due to potential additional information gathered from Fox Canyon Groundwater Management Agency for allocation implementation as well as potential modifications to allocation due to variances approved by Fox Canyon Groundwater Management Agency.

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Abbreviations

AB	Assembly Bill
AC	Acre
Act	Urban Water Management Planning Act
AF	Acre Feet
AFY	Acre Feet per Year
AMI	Area Median Income
ASR	Aquifer Storage and Recovery
AVEK	Antelope Valley-East Kern Water Agency
AWPF	Oxnard's Advanced Water Purification Facility
AWWA	American Water Works Association
Bay-Delta	Sacramento-San Joaquin Bay-Delta
BDCP	Bay Delta Conservation Plan
BMP	Best Management Practices
Calleguas	Calleguas Municipal Water District
CASGEM	California Statewide Groundwater Elevation Monitoring
CAWCD	Central Arizona Water Conservation District
CEQA	California Environmental Quality Act
CII	Commercial, Institutional, and Industrial
CIMIS	California Irrigation Management Information System
CRA	Colorado River Aqueduct
CUWCC	California Urban Water Conservation Council
CVP	Central Valley Project
CVWD	Coachella Valley Water District
CWD	California Water Code
CY	Calendar Year
Delta	San Joaquin River Delta
DMM	Demand Management Measure
DOF	Department of Finance
DU	Dwelling Unit
DWR	Department of Water Resources
DWCV	Desert Water Agency/Coachella Valley Water District
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPM	Emergency Procedures Manual
ESA	Endangered Species Act
ET	Evapotranspiration
Eto	Evapotranspiration from a Standardized Grass Surface
FCGMA	Fox Canyon Groundwater Management Agency
FY	Fiscal Year
GIS	Geographic Information System

Gpcd	Gallons Per Capita Per Day
GPM	Gallons Per Minute
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
HCD	Housing and Community Development
ICS	Intentionally Created Surplus
IID	Imperial Irrigation District
IRP	Integrated Resources Plan
KML	Keyhole Markup Language
LAS	Lower Aquifer System
MAF	Million Acre Feet
MCL	Maximum Contaminant Level
Metropolitan	Metropolitan Water District of Southern California
MGD	Million Gallons per Day
Mg/L	Milligrams per Liter
MOU	Memorandum of Understanding
MWELO	Model Water Efficient Landscape Ordinance
MWRF	Moorpark Water Reclamation Facility
MWD	Metropolitan Water District of Southern California
OH	Oxnard-Hueneme
OWDDF	Ocean Water Desalination Demonstration Facility
ppb	parts per billion
QMCP	Quagga Mussel Control Program
QSA	Quantification Settlement Agreement
RDM	Robust Decision-Making
RHNA	Regional Housing Needs Allocation
RTP	Regional Transportation Plan
RUWMP	Regional Urban Water Management Plan
SB	California Senate Bill
SCAG	Southern California Association of Governments
SDCWA	San Diego County Water Authority
SGMA	Sustainable Groundwater Management Act
SMP	Salinity Management Pipeline
SNWA	Southern Nevada Water Authority
Supplier	Urban Water Supplier
SWP	State Water Project
SWRCB	State Water Resources Control Board
TAF	Thousand Acre Feet
TDS	Total Dissolved Solids
UAS	Upper Aquifer System
USBR	U.S. Bureau of Reclamation
UWMP	Urban Water Management Plan
VCWPD	Ventura County Watershed Protection District
UWCD, United or District	United Water Conservation District
WQCP	Water Quality Control Plan

WSA	Water Service Area
WSAP	Water Supply Allocation Plan
WSCP	Water Shortage Contingency Plan
WSDM	Water Surplus and Drought Management
WUCA	Water Utility Climate Alliance

2020 URBAN WATER MANAGEMENT PLAN FOR UNITED WATER CONSERVATION DISTRICT

UWMP Introduction and Lay Description

March 12, 2021

Chapter 1: UWMP Introduction and Lay Description

1.1 Background and Purpose

United Water Conservation District (United or District or UWCD) located in Ventura County, California, is a public agency established in 1950 with the mission to better manage, protect, and enhance water supply in the Santa Clara River Valley and Oxnard Plain. United's operational area and key facilities are illustrated in Figure 1-1. As part of its mission, United operates the Oxnard-Hueneme (OH) System, a domestic water supply system. Through the OH System, United provides communities, schools, and agriculture with a local water source, allowing the region to be less dependent on water from the State Water Project (SWP).

The purpose of this 2020 Urban Water Management Plan (UWMP) is to provide United, its stakeholders, and the public with an updated status and long-term plan for the OH System including:

- Water deliveries and uses
- Water supply sources
- Efficient water use
- Demand management measures
- Water shortage contingency planning

This UWMP was prepared in compliance with the Water Conservation Act of 2009, also known as Senate Bill X7-7 (SB X7-7), under the authorization of United.

United actively participates in other regional planning efforts including: The Oxnard Plain and Pleasant Valley (OPV) Core Stakeholders Group, Projects Committee (moved to a Fox Canyon Groundwater Management Agency (FCGMA) committee as of January 2021); The 2020 Water Sustainability Summit that was hosted by United as a regional forum for water projects and sustainability, The Technical Advisory Committee (TAC) for the Groundwater Sustainability Plan (as required by the Sustainable Groundwater Management Act of 2014) formed by the FCGMA; the Lower Santa Clara River Salt and Nutrient Management Plan; and others. United also prepares monthly Hydrologic Conditions Reports and Annual Groundwater and Surface Water Conditions Reports.

Notification letters sent to agencies are provided in Appendix A.

Public notice for the 2020 UWMP public hearing is provided in Appendix B.

2020 URBAN WATER MANAGEMENT PLAN FOR UNITED WATER CONSERVATION DISTRICT

UWMP Introduction and Lay Description

March 12, 2021

The Adoption Resolution passed by the United Board of Directors on [intentionally left blank] is provided in Appendix C.

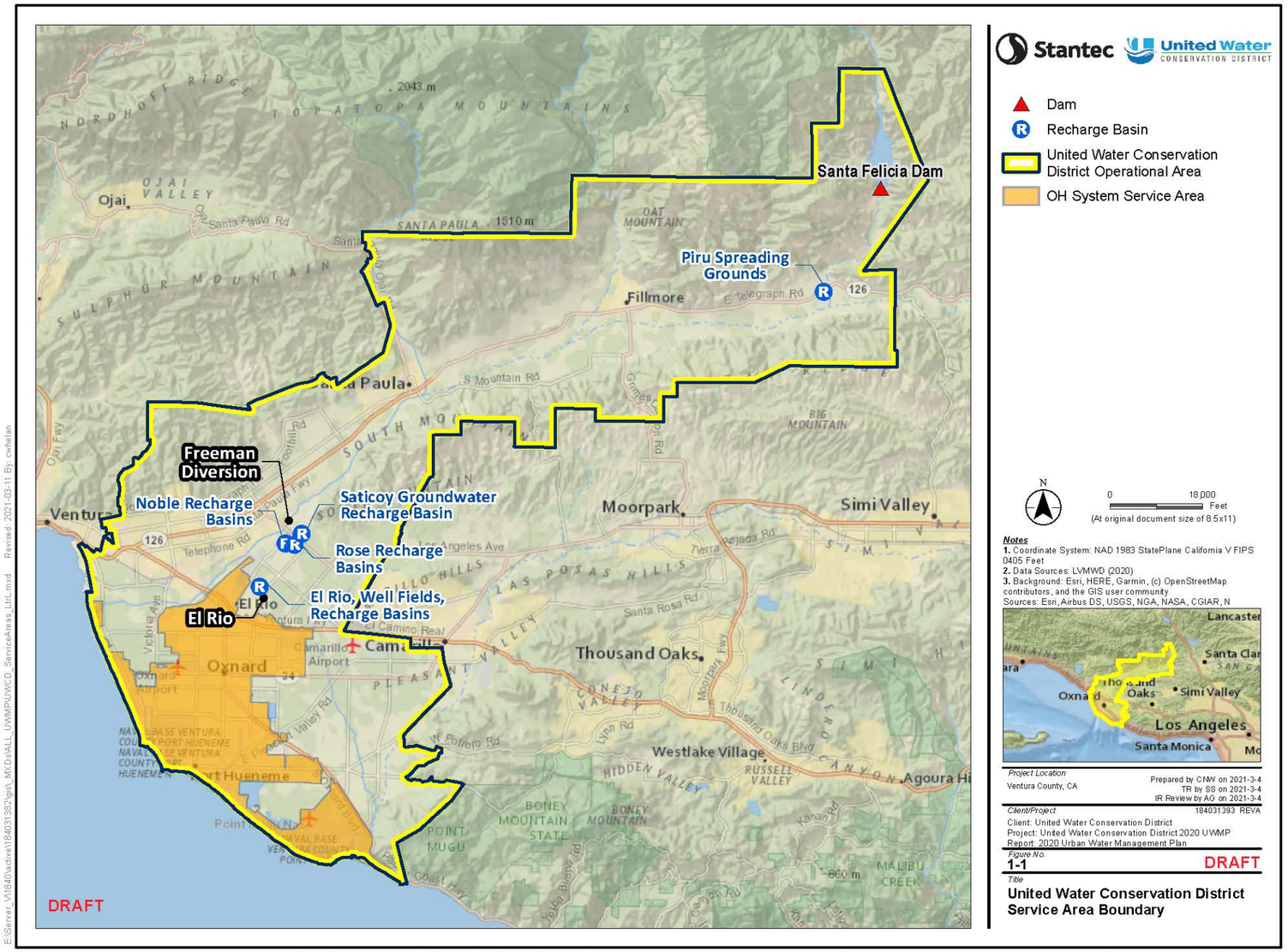

Figure 1-1: *United Service Area Boundary*

1.2 UWMP Update and The California Water Code

This report has been prepared in compliance with California Water Code (CWC or Water Code) Sections 10610 through 10656 and Section 10608 of the Urban Water Management Planning Act (Act), which were added by Statute 1983, Chapter 1009, and became effective on January 1, 1984. This Act requires that "every urban water supplier shall prepare and adopt an urban water management plan" (Water Code § 10620(a)). An "urban water supplier" is defined as a supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually (Water Code § 10617).

These plans must be filed with the California Department of Water Resources (DWR) every five years. The 2020 plans must be submitted to DWR by July 1, 2021. The focus of UWMPs include:

- Examining in detail current and future water use
- Analyzing potable and non-potable water supplies
- Analyzing water supply reliability
- Preparing a Drought Risk Assessment
- Developing a Water Shortage Contingency Plan

For 2020, the plans will also:

- Report progress toward meeting the targeted 20 percent reduction in per-capita (per-person) urban water consumption by the year 2020, and
- Discuss the use and planned use of recycled water

1.2.1 Changes in the Act Since 2015

Since 2015, several amendments have been made to the Act. The following is a summary of the significant changes in the Act that have occurred from 2015 to the present:

- Drought Risk Assessment and the Five Consecutive Dry-Year Water Reliability Assessment: suppliers are now required to assess water supply reliability over a five-year period from 2021 to 2025 to examine water supply reliability for five consecutive dry years (modified from a "multiyear" time period used in dry-year water reliability planning)
- Water Shortage Contingency Plan (WSCP): includes new prescriptive elements to enhance previous requirements of WSCPs, one of which is:
    - Seismic Risk Analysis: suppliers are now required to address the seismic risk to their water system facilities with an analysis of the risk as well as a mitigation plan should an event occur

- Consistency with Groundwater Sustainability Plans: suppliers are now required to be consistent with Groundwater Sustainability Plans completed by relevant Groundwater Sustainability Agencies
- Lay Description: suppliers are now required to include a lay description of the UWMP's conclusions regarding water service reliability, challenges ahead and strategies for managing reliability risks

1.3 Lay Description

United's 2020 UWMP has been prepared in compliance with the CWC as noted previously. Per CWC Section 10630.5, the UWMP must include a lay description to include the fundamental determination of the UWMP. This plan provides a detailed look at United's OH system current and future water use, water sources, demand management measures for wholesalers, evaluation of multiple consecutive drought years, as part of the Drought Risk Assessment, and the preparation of a Water Shortage Contingency Plan (WSCP).

1.3.1 United's Water system, Supply, and Demand

The OH system water source is the Oxnard Basin which is managed by Fox Canyon Groundwater Management Agency (FCGMA). FCGMA has established allocation cutbacks through 2040 where it is anticipated the groundwater basin will reach sustainable levels. United is pursuing alternatives sources and for groundwater recharge projects to reduce allocations cutbacks for future years. United's purveyors will be impacted as the region continues to work together to find solutions for sustainable water supply. In addition, United is constructing an Iron and Manganese treatment plan in 2022 to reduce impacts from water quality concerns within the OH system. See Chapters 3-6 for more details.

1.3.2 Water Service Reliability

As described in Chapter 6, *An Ordinance to Establish an Allocation System for the Oxnard and Pleasant Valley Groundwater Basins* was adopted pursuant to the GSP established by FCGMA meeting the requirements of the SGMA of 2014. The annual groundwater allocation cutbacks are assumed to begin October 1st, 2021 and come to an end by September 30th, 2040 after sustainability is reached. This information is captured in Chapter 7 in the water supply reliability with the comparison of the total projected water demand with the supply available for the following conditions: (1) normal/average water year, (2) single-dry water year, and (3) five-consecutive-year drought. The basis of the water supply and demand assessment is summarized Chapter 7.

1.3.3 Water Shortage Contingency Plan

As part of its UWMP, Water Code Section 10632 requires Suppliers to prepare and adopt a Water Shortage Contingency Plan (WSCP). The WSCP draws upon lessons learned from the 2012-2016 drought, California's driest period on record. Chapter 8 provides a summary of the WSCP and the detailed WSCP is included in Appendix E.

1.3.4 Demand Management Measures

Chapter 9 describes United's demand management measures: 1) metering, 2) public education and outreach, and 3) water conservation program coordination and staffing support. United provides support to purveyor's efforts for water conservation through education and outreach.

Chapter 2: Plan Preparation

2.1 Plan Preparation

This chapter provides insight on how the 2020 UWMP was developed, including the basis for preparing the plan, units of measure and year calculation used, and coordination and outreach.

2.2 Basis for Preparing A Plan

Urban water suppliers with 3,000 or more service connections or supplying more than 3,000 acre-feet of water per year (AFY) are required to prepare an UWMP every five years in compliance with the Water Code 10617. Though the OH System has fewer than 3,000 service connections, it exceeds the 3,000 AFY volume threshold requirement to prepare an UWMP.

Through the OH System, United acts primarily as a Wholesale Urban Water Supplier. Most of the water distributed by the OH System is provided to other water agencies such as the City of Oxnard, Port Hueneme Water Agency (PHWA), and several mutual water companies. A small portion of the water supplied by the system is distributed directly to retail customers.

To assist UWCD staff in preparation of their 2020 UWMP, Stantec attended the 2020 UWMP Workshop on the 10th of February 2021 for "Preparation, Adoption and Submittal" that was facilitated by DWR.

2.2.1 Public Water Systems

The OH System is a Public Water System (PWS) as it supplies drinking water for human consumption. As a PWS, Annual Reports for the OH System are filed with the State Water Resources Control Board (SWRCB) through the Drinking Water Program (eARDWP). Data included in this UWMP is consistent with the data filed in the 2020 Annual Report to the SWRCB.

Table 2-1 from the DWR Guidebook for Urban Water Suppliers (Guidebook) applies to Retail suppliers and is not applicable to United's OH System.

2.3 Regional Planning

The 2020 UWMP for the United OH System has been prepared as an individual reporting plan that only covers the service area of the OH System.

2.4 Individual or Regional Planning and Compliance

This document was prepared as an Individual UWMP and addresses all the requirements of the CWC. Coordination of this UWMP with other agencies and constituents is described in **Section 2.6** of this document. United is not a member of a Regional UWMP, nor is it a member of a Regional Alliance. See Table 2-2 for Plan Identification.

Table 2-2 Plan Identification			
Select Only One	**Type of Plan**		**Name of RUWMP or Regional Alliance** *if applicable*
☑	**Individual UWMP**		
	☐	Water Supplier is also a member of a RUWMP	
	☐	Water Supplier is also a member of a Regional Alliance	
☐	**Regional Urban Water Management Plan (RUWMP)**		

2.5 Fiscal or Calendar Year and Units of Measure

This section delineates the year in which all data is set, as well as the units of measure to be carried through the entirety of the plan.

2.5.1 Fiscal or Calendar Year

The 2020 UWMP for the OH System is prepared on a calendar year basis.

2.5.2 Reporting Complete 2020 Data

This 2020 UWMP includes complete water use and planning data for calendar year 2020.

2.5.3 Units of Measure

Volumes reported in this UWMP are in acre-feet (AF) and are consistent throughout the plan. Table 2-3 shows the parameters under which the 2020 UWMP for the United OH System was prepared.

Table 2-3 Supplier Identification	
Type of Supplier (select one or both)	
☑	Supplier is a wholesaler
☐	Supplier is a retailer
Fiscal or Calendar Year (select one)	

☑	UWMP Tables are in calendar years
☐	UWMP Tables are in fiscal years
If using fiscal years provide month and date that the fiscal year begins (mm/dd)	
Units of measure used in UWMP (select from drop down)	
Unit	AF
NOTES:	

2.6 Coordination and Outreach

This section summarizes coordination and outreach efforts related to the development of this UWMP. Table 2-4 summarizes organizations contacted in the development of this UWMP and their associated level of participation.

2.6.1 Wholesale and Retail Coordination

As a water wholesale agency for its OH System, United coordinates water supply and demand projections with their urban water suppliers, including the City of Oxnard, PHWA, and the mutual water companies. The preparation of Chapters 4 and 6 has considered the data received from these agencies. United has provided these agencies with the water supplies projected to be available in increments of five years, from 2020 through 2045, for normal, single-dry, and five-consecutive dry years. Copies of outreach correspondence can be found in Appendix A. See Table 2-4 for Water Supplier Information Exchange.

Table 2-4 Wholesale: Water Supplier Information Exchange	
☐	Supplier has informed more than 10 other water suppliers of water supplies available in accordance with Water Code Section 10631. Completion of the table below is optional. If not completed, include a list of the water suppliers that were informed.
	Provide page number for location of the list.
☐	Supplier has informed 10 or fewer other water suppliers of water supplies available in accordance with Water Code Section 10631.
Water Supplier Name	
City of Oxnard	
Port Hueneme Water Agency	
Dempsey Road Mutual Water Company	
Cypress Mutual Water Company	
Saviers Road Mutual Water Company	
Rio School District	
E & H Land Company	
Vineyard Avenue Estates	
Vineyard Avenue Acres Mutual Water Company[1]	
NOTES: [1]Water Supplier was supplied by OH System in 2019 for Emergency Connection *Box for "Supplier has informed 10 or fewer other water suppliers of water supplies available in accordance with Water Code Section 10631" to be checked following the Public Draft release and Public Hearing.*	

2.6.2 Coordination with Other Agencies and the Community

In addition to the water suppliers listed in Table 2-4, a written notice of this update to the UWMP for the United OH System was provided to the following agencies:

- Channel Islands Beach Community Services District (CIBCSD)
- Calleguas Municipal Water District (Calleguas)
- Ventura Local Agency Formation Commission (VLAFC)

- Casitas Municipal Water District (Casitas)
- Cloverdale Mutual
- Santa Clarita Valley (SCV) Water
- Fillmore and Piru Basins Groundwater Sustainability Agency
- Mound Basin Groundwater Sustainability Agency
- Camrosa Water District (Camrosa)
- US Naval Base Ventura County

2.6.3 Notice to Cities and Counties

In addition to the water suppliers listed in Table 2-4, a written notice of this update to the UWMP for the United OH System was provided to the following cities and counties:

- City of Port Hueneme – Public Works
- Fox Canyon Groundwater Management Agency/County of Ventura
- County of Ventura - Resource Management Agency
- City of Ventura (Ventura Water)
- City of Santa Paula
- City of Fillmore
- City of Camarillo

Chapter 3: System Description

3.1 General Description

United was formed in 1950 to conserve and enhance the water resources of the Santa Clara River while protecting the river's natural features. United is funded primarily through groundwater pumping charges, property taxes, and water delivery charges. The Board of Directors consists of seven members elected by division who govern District direction and policy regarding water resource management and environmental compliance.

Groundwater production from United's OH System wells falls under the jurisdiction of the FCGMA, an agency created in 1982 to manage and protect the Oxnard, Pleasant Valley and Las Posas Valley groundwater basins in southern Ventura County.

A graphical illustration of United's service area is provided in Section 3.2. United's facilities include:

- Lake Piru and Santa Felicia Dam. Santa Felicia Dam was the first dam built solely for the purpose of recharging groundwater and was constructed in 1955. The dam also provides hydroelectric power generation. The 2020 Bathymetric survey indicates Lake Piru currently has the capacity to store 82,067 AF of water. Lake Piru provides recreational opportunities for swimming, camping, boating and fishing
- Freeman Diversion. The Freeman Diversion, built in 1991, diverts water from the Santa Clara River and has replenished approximately 59,700 AFY (1991-2020) to the Oxnard Forebay Basin. A fish ladder allows for the annual migration of steelhead trout. The Freeman Diversion replaced temporary diversion structures operated by United and its predecessor agency in this vicinity since 1927.
- Groundwater recharge basins. United's groundwater recharge basins include the Saticoy, Noble, Rose and El Rio facilities. These "spreading grounds" facilitate United's artificial recharge activities by percolating surface water diverted from the Santa Clara River to replenish the aquifers of the Oxnard Forebay (that extend across the Oxnard basin)
- OH System. The OH System currently includes 12 groundwater wells, the El Rio Treatment Plant, and a transmission pipeline to serve the City of Oxnard, PHWA, and several mutual water companies. Retail customers include two schools in the El Rio School District and E&H Land Company. These agencies supplement their other sources of supply, which may include groundwater or imported water, with water from the OH System. The OH System infrastructure includes approximately eight miles of transmission line with an additional four miles added by the Mugu Lateral. The OH system serves an area of approximately 43 square miles. A detailed

description of the wellfield and groundwater basin supplying the OH System is included in Section 6.2.

- Pumping Trough Pipeline, Pleasant Valley Pipeline and Reservoir. This system provides non-potable surface water from the Santa Clara River directly to agricultural users in the Oxnard Plain and Pleasant Valley region to reduce pumping in this area, which is subject to overdraft and seawater intrusion.

3.2 Service Area Boundary Maps

The OH System service area and purveyors is presented in Figure 3-1.

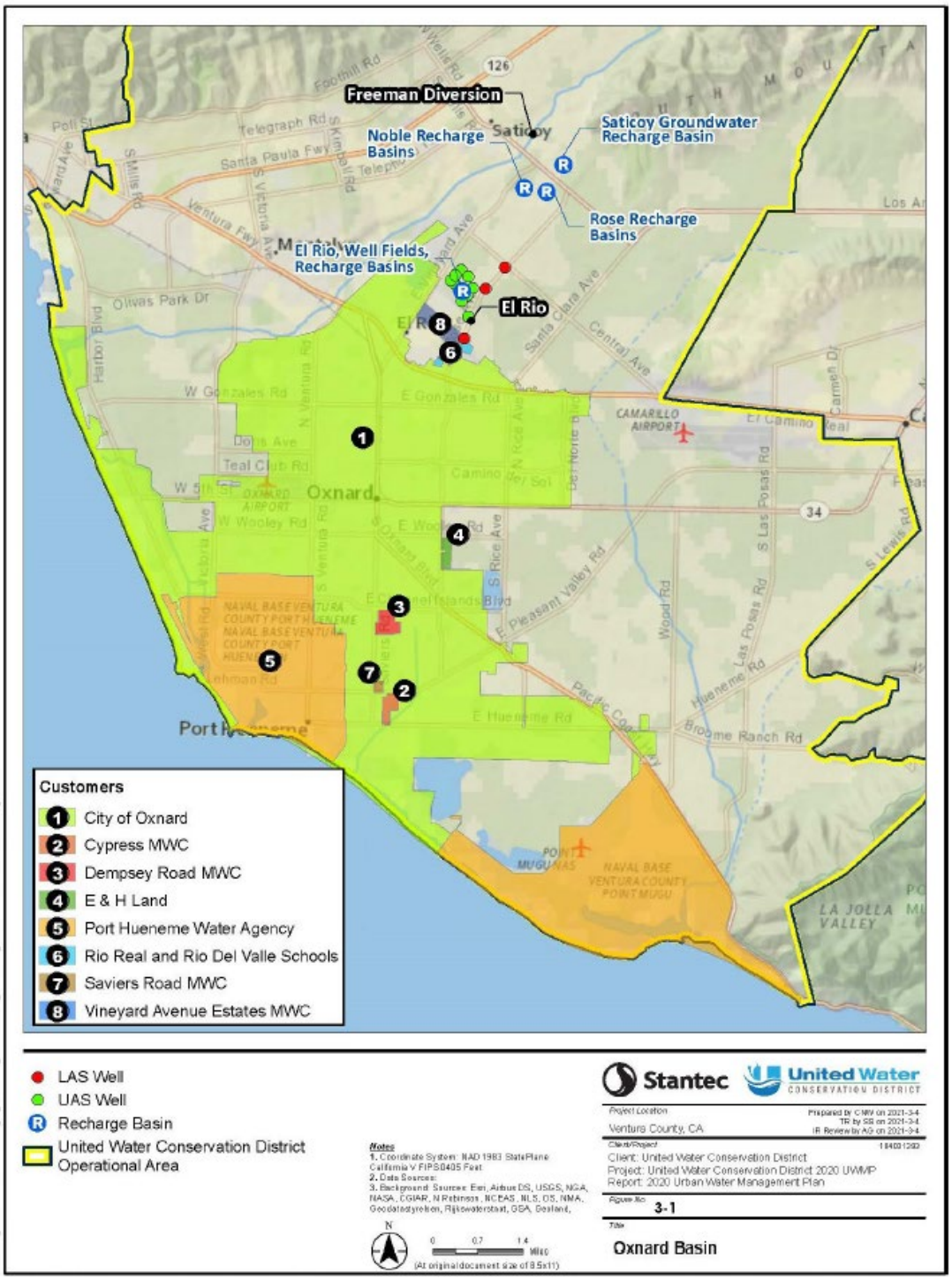

***Figure 3-1**: United OH System Service Area and Purveyors*

3.3 Service Area Climate

The OH System is geographically located on the Oxnard Plain, which has a mild Mediterranean style climate that is primarily controlled by its proximity to the Pacific Ocean. The average monthly climate data, including evapotranspiration (ETo), rainfall, and temperature, is shown in Table 3-0. Ocean breezes keep temperatures cool in the summer and warmer in the winter. The majority of the rainfall occurs in the winter months, with February having the highest average rainfall. The total yearly average rainfall is 15.64 inches.

Table 3-0 Monthly Average Climate Data Summary

Month	[1]Standard Monthly Average ETo (inches)	[2]Average Total Rainfall (inches)	[2]Average Temperature (degrees Fahrenheit)	
			Max	Min
January	2.67	3.43	66	46
February	2.96	3.90	66	47
March	4.17	3.03	65	48
April	5.03	0.71	67	50
May	5.81	0.20	68	53
June	5.95	0.04	70	56
July	6.1	0.04	73	59
August	5.93	0.08	74	60
September	4.82	0.35	74	59
October	4.07	0.35	73	55
November	2.96	1.38	70	49
December	2.37	2.13	66	45

NOTES:
[1]Evaporation Data obtained from California Irrigation Management Information System (CIMIS), Santa Paula Station 198. http://www.cimis .water.ca.gov. Note: This is the closest CIMIS station and is located between the City of Santa Paula and El Rio
[2]Temperature and Rainfall data obtained from U.S. Climate Data: http://www.usclimatedata.com/climate/oxnard/california/united-states/usca0819

Based on an analysis of the output from 32 Global Climate Models which were modified to examine projected changes in climate in Ventura County[1], the following potential impacts included:

[1] Projected Changes in Ventura County Climate, Western Regional Climate Center, 2019, https://wrcc.dri.edu/Docs/VenturaClimate2019_lores.pdf

- Changes in precipitation characteristics (intensification and concentration into winter season) may have implications for groundwater recharge and how surface water is conveyed, captured, and stored
- Increased potential for post-fire flash flooding and/or debris flows due to more frequent short-duration, high intensity rainfall
- Increased evaporative demand
- Increasing temperatures and more frequent extreme (hot) temperatures
- Increases in maximum temperatures and overnight minimum temperatures as well as frequency of extreme temperatures
- Wildfire season will likely extend earlier into the spring and early summer and later into the fall and early winter

Climate change will affect the water supplies and water supply reliability of United. Changes in weather resulting from increased average temperature will decrease the volume of precipitation falling as snow in California and an overall reduction in snowpack in the Sierra Nevada and other mountain ranges in the state. Snowpack and rainfall in the mountain ranges within Los Padres National Forest, which supplies watersheds in Ventura county, is projected to decrease by 17 percent, which could affect water supply to the Santa Clara River Watershed[2].

Further, as sea levels rise, seawater intrusion to groundwater supply occurs. Due to groundwater extractions, groundwater resources are vulnerable to the effects of rising sea levels. When groundwater extraction exceeds recharge in coastal areas, water levels in the aquifers decline and an onshore hydraulic gradient can develop that promotes intrusion of seawater into the underlying aquifers. Seawater intrusion has already been documented in the Lower Aquifer System of the South Oxnard Plain[3]. Rising sea levels combined with the potential for future overdraft associated with changes in precipitation patterns could exacerbate this effect and reduce the volume of groundwater resources available for United and other users in the region. Additional discussion on climate change impacts is discussed in Chapters 4, 6 and 7.

[2] Ventura, County of. 2012 (April). County of Ventura Climate Protection Plan for Government Operations: A Community Commitment. Available: Background Report County of Ventura Section 12.2: Climate Change Effects September 2020 12-36 https://www.ventura.org/sustain/downloads/climate_protection_plan.pdf.

[3] 2016. Coastal Resilience: Ventura County Challenges. Available: http://coastalresilience.org/project-areas/ventura-county-challenges/

3.4 Service Area Population and Demographics

3.4.1 Service Area Population

Current and projected population data from 2020-2045 is shown in Table 3-1. Projected population for the City of Oxnard was based on population data provided in the Southern California Association of Governments (SCAG) Demographics and Growth Forecast. Similarly, PHWA projected population was based on the population data provided in SCAG Demographics and Growth Forecast for the City of Port Hueneme.

Table 3-1 Wholesale: Population - Current and Projected

Population Served	2020	2025	2030	2035	2040	2045*(opt)*
[1]Oxnard	210,428	215,962	221,497	227,031	232,566	238,100
[2]PHWA	32,224	32,293	32,362	32,431	32,500	32,569
[3]Mutual Water Companies	500	500	500	500	500	500
Total	243,152	248,755	254,359	259,962	265,566	271,169

Notes
[1]Oxnard growth rate was determined from the Southern California Association of Governments Demographics and Growth Forecast. Population projection was assumed to be linear from 2020-2045.
[2]PHWA growth rate was determined from the Southern California Association of Governments Demographics and Growth Forecast for the City of Port Hueneme. Determined growth rate was applied to the 2020 PHWA population provided in the 2015 UWMP. Population projection was assumed to be linear from 2020-2045.
[3]The Mutual Water Companies' population was determined based on the 2015 Urban Water Management Plan.
KEY:
PHWA = Port Hueneme Water Agency

3.4.2 Other Social, Economic, and Demographic Factors

The OH System has an annual allocation of groundwater that can be drawn from wells which is determined by the FCGMA. Population and other demographic features do not directly affect the water management and planning of United's OH System. The groundwater allocation by the FCGMA will be further discussed in Chapter 6.

3.5 Land Uses within Service Area

The region served by the OH system is primarily developed land, including residential, commercial, and industrial purveyors of the urban water suppliers. The communities served by PHWA include the City of Port Hueneme, Channel Islands Beach Community Services District (CIBCSD), and Naval Base Ventura County (NBVC). The City of Port Hueneme and CIBCSD have little undeveloped land in their jurisdiction. The mutual water companies consist of residential customers in developed neighborhoods and these areas are considered fully developed. It is anticipated that land use will not change within the service area.

Based on the service area cover provided by the County of Ventura (Figure 3-2), the land use within the service area consists predominately of open space, agricultural and urban. Most of the urban land use centers around Oxnard, Paula, and Fillmore. Further information on land use of the retail purveyors United serves can be found in their individual UWMPs.

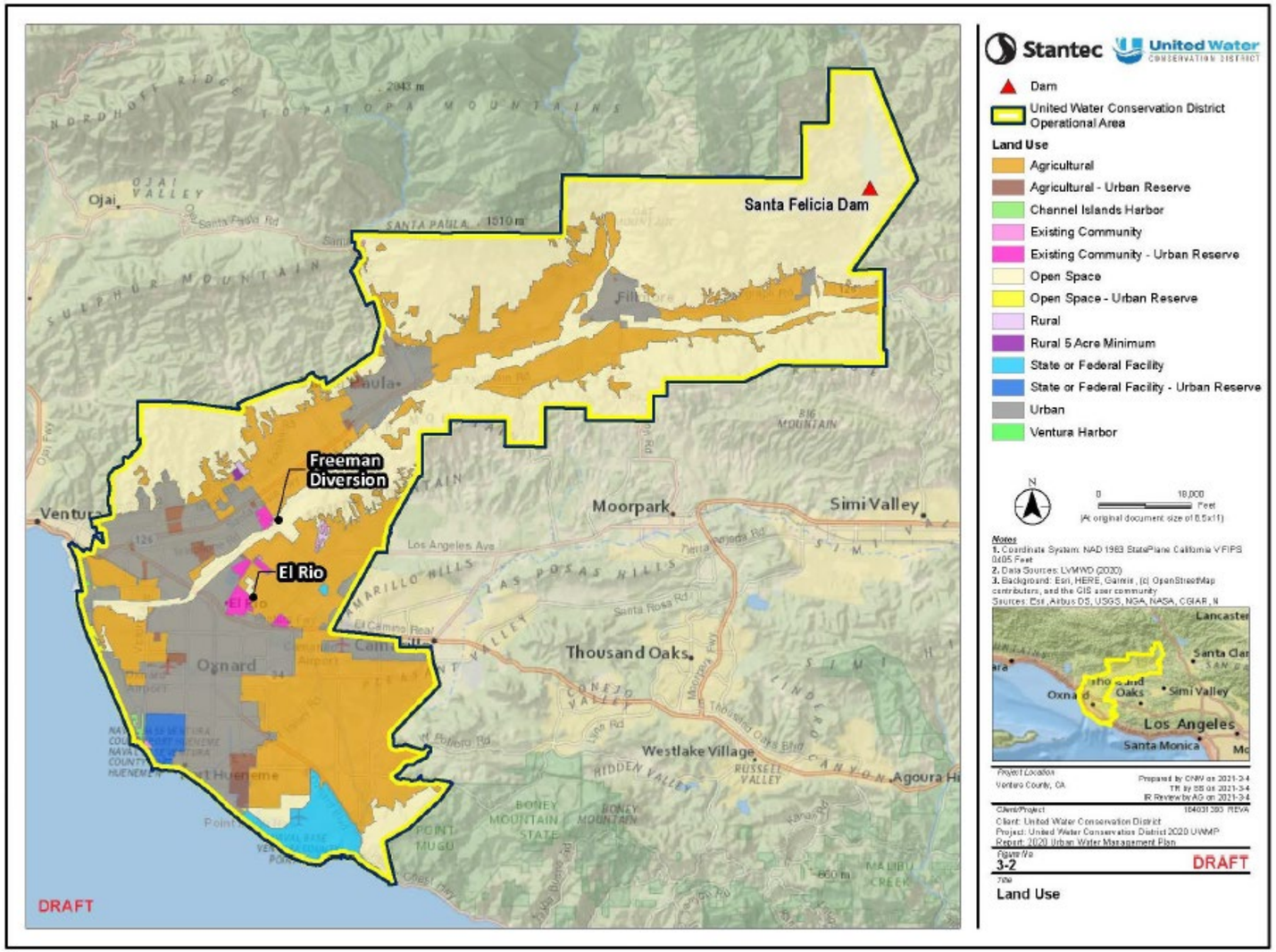

***Figure 3-2**: Land Use within OH System Service Area.*

Chapter 4: Water Use Characterization

This chapter describes and quantifies United's past, current, and future potable and non-potable water use projections through 2045 (to the extent that records are available) and are summarized in Table 4-3. Characterizing and analyzing records available provides a realistic prediction of future water use based upon United's past and current water use, combined with considerations of anticipated growth, new regulations, changing climate conditions, and trends in purveyor water use behaviors. Examining each water use sector for a variety of factors, then aggregating the information into a comprehensive projection of purveyor water use, becomes the foundation for integration with United's water supplies (Chapter 6) to assess long-term water system reliability (Chapter 7).

4.1 Non-potable Verses Potable Water Use

United does not currently have a recycled water demand, therefore all water discussed for water use characterization will be potable.

4.2 Past, Current, and Projected Water Use by Sector

Current system demands are summarized, by sector, in Table 4-1 and projected demands are summarized by sector in Table 4-2.

4.2.1 Water Use Sectors Listed in Water Code

To characterize United's water use, the following sections define the water sectors listed in the CWC 10631(d). The order of the sectors follows the order found in the Water Code. If a sector is not applicable or no information is available, it shall be excluded from the analyses. Additional sectors or subdivisions of these sectors shall be included in Section 4.2.2 to allow the analysis of unique conditions that may apply to certain sectors or subsectors not listed in the Water Code.

4.2.1.1 Sales to Other Agencies

These are water sales made to another agency (referred to here as water Supplier). Projected sales may be based on projected demand provided by the receiving water Supplier. There is inherent uncertainty in future projections, therefore, any projected sales reported in the UWMP are for planning purposes only and are not considered a commitment on the part of the seller. This is a wholesale demand. Water suppliers will determine whether their demands are considered sales, transfers, or exchanges; reporting in the UWMPs will reflect the Suppliers' determination of these water demands. Some Retail Suppliers also supply water to other Suppliers. This is also considered a wholesale demand.

4.2.1.2 Distribution System Losses

The reporting requirement of this section is not applicable to wholesale agencies.

4.2.2 Water Use Sectors in Addition to Those Listed in Water Code

For United's purposes, the additional water use sector is categorized as retail demand for use by suppliers that are primarily wholesalers with a small volume of retail sales. The suppliers using this additional sector are Rio Real and Rio Del Valle School, as well as the E&H Land Company.

4.2.3 Past Water Use

Wholesale suppliers are not required to quantify past water use. However, past water use is valuable in further calculations and will be discussed in more detail in Chapter 7.

4.2.4 Distribution System Water Loss

System water losses occur because of leaks and ruptures in the existing distribution network, system flushing and cleaning, and pump pressure relief at wells. For planning purposes, total 2020 system losses for the United OH System were calculated using the total pumping volume for 2020 (13,974 AF) and subtracting the metered sales to other agencies, and the retail sales to Rio Real and Rio Del Valle School, E&H Land Company (13,625 AF and 5 AF respectively). Total 2020 system losses for the United OH System were calculated based on the average losses from 2005-2014.

4.2.5 Current Water Use

Current system demands are summarized, by sector, in Table 4-1. Sales to other agencies account for 98 percent of all demands, followed by losses at 2 percent, and retail demand use by other suppliers is minor.

DRAFT Submittal Table 4-1 Wholesale: Demands for Potable and Non-Potable Water - Actual			
Use Type *(Add additional rows as needed)*	2020 Actual		
Drop down list *May select each use multiple times* *These are the only use types that will be recognized by the WUE data online submittal tool*	Additional Description *(as needed)*	Level of Treatment When Delivered *Drop down list*	Volume
Sales to other agencies	City of Oxnard, Port Hueneme Water Agency (PHWA), Cypress Mutual, Dempsey Road MWC, Saviers Road MWC, Vineyard Estates	Drinking Water	13,025
Transfers to other agencies	See note 1, below		600
Retail demand for use by suppliers that are primarily wholesalers with a small volume of retail sales	Rio Real and Rio Del Valle School, E&H Land Company	Drinking Water	5
Losses		Drinking Water	344
		TOTAL	13,974

NOTES:
1) Transfer of Temporary Extraction Allocation occurred (and approved by FCGMA) of 600 AF to the City of Oxnard between July 1 and September 30, 2020. The extraction allocation transfer was requested due to equipment issues that temporarily reduced the pumping capacity for City of Oxnard wells.
2) Losses are calculated using the AWWA Method.

4.2.6 Projected Water Use

Projected demands are provided in Table 4-2. For the year 2025, demands are based on the average pumped water from 2011 to 2020 of 11,851 AFY. For the projected water use starting in 2030, the estimates are based on the allocations discussed in Chapter 6. *An Ordinance to Establish an Allocation System for the Oxnard and Pleasant Valley Groundwater Basins* was adopted pursuant to the Groundwater Sustainability Plan (GSP) established by Fox Canyon Groundwater management Agency (FCGWMA) meeting the requirements of the SGMA of 2014. Chapter 6 provides more details regarding United's 2021 allocation which was established at 14,337 AFY for United's OH system with annual cutback volume of approximately 372 AFY (2.60% per year). After sustainability is reached in 2040,

cutbacks may come to an end. As such, these are not "demands" in the strictest sense, but are the estimates for groundwater allocation within the United's OH service area.

DRAFT Submittal Table 4-2 Wholesale: Use for Potable and Raw Water - Projected

Use Type *(Add additional rows as needed)*	Additional Description *(as needed)*	Projected Water Use *Report To the Extent that Records are Available*				
Drop down list *May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool.*		2025	2030	2035	2040	2045 (opt)
Sales to other agencies		12,397	10,588	8,778	7,060	7,060
Retail demand for use by suppliers that are primarily wholesalers with a small volume of retail sales	Rio Real and Rio Del Valle School, E&H Land Company	4	4	4	4	4
Losses		354	302	251	201	201
TOTAL		12,755	10,894	9,033	7,265	7,265

NOTES:
1) Projected water use shown is estimated to be equal to the set supply allocation established in ordinance (An Ordinance to Establish an Allocation System for the Oxnard and Pleasant Valley Groundwater Basins) that was adopted pursuant to the GSP established by FCGMA meeting the requirements of the SGMA of 2014. FCGMA defined allocation the OH System from 2005 – 2014 based on pumping and water deliveries. The entire OH System was allocated 14,337 AFY based on 2005 – 2014 average annual pumping. Retail demand allocation was estimated as 4 AFY based on 2005 – 2014 average annual deliveries. Losses over this 2005 – 2014 allocation period were estimated as 398 AFY based on annual average pumping and deliveries. The remaining allocation is available as supply to the other agencies. From October 2021 forward, water use was projected to have equal annual cutback rate (2.60%) until the end of September 2040 as presented in FCGMA's current GSP and allocation ordinance for the Oxnard basin to meet sustainable yield estimates. Water losses were projected to reduce proportionally with water use reductions. As the OH System demand is limited to the supply allowed to be extracted as regulated by FCGMA, supporting background for projected water use is further detailed in Section 6 (Water Supply Characterization).

2) Project planning is currently underway in the Oxnard groundwater basin area that is anticipated to relieve the overdraft conditions in the Oxnard basin. Future water projects are discussed in more detail in 6.2.8. With additional supplies or optimization of use in the basin, the projected sustainable yield is anticipated to increase and allocations from FCGMA and/or cutback implementation are anticipated to allow for more groundwater extraction for the OH System and other Oxnard basin users.

4.2.7 Characteristic Five-Year Water Use

Water Code Section 10635(b) is a new requirement for the 2020 UWMPs. A critical component of this new statutory language is the requirement to prepare a five-year drought risk assessment (DRA), discussed in Chapter 7. This five-year DRA can also be used to provide the water service reliability assessment for a drought lasting five years.

DWR recommends that, as a first step, suppliers estimate expected gross water use for the next five years without drought conditions (also known as unconstrained demand). These numbers can then be adjusted to estimate the five-years' cumulative drought effects, as summarized in Section 7.3.

4.3 Worksheets and Reporting Tables

4.3.1 Optional Planning Tool Use Analysis Worksheet

The planning tool will be used for input in Chapter 7.

4.3.2 DWR 2020 UWMP Submittal Tables

As indicated in Table 4-1, only a small portion of the total demand – less than one percent – is sold as retail. The total water demand is summarized in Table 4-3. Though raw water would be considered in this calculation, United's only water use is potable water.

DRAFT Submittal Table 4-3 Wholesale: Total Water Use (Potable and Non-Potable)

	2020	2025	2030	2035	2040	2045 (opt)
Potable and Raw Water *From Tables 4-1W and 4-2W*	13,374	12,755	10,894	9,033	7,265	7,265
Recycled Water Demand* *From Table 6-4W*	0	0	0	0	0	0
TOTAL WATER DEMAND	13,374	12,755	10,894	9,033	7,265	7,265

**Recycled water demand fields will be blank until Table 6-4 is complete.*

NOTES:
1) Please see Table 4-1 and 4-2 Notes
2) Transfer of Temporary Extraction Allocation occurred (and approved by FCGMA) of 600 AF to the City of Oxnard between July 1 and September 30, 2020. The extraction allocation transfer was requested due to equipment issues that temporarily reduced the pumping capacity for City of Oxnard wells. This is not included in total water use for 2020.
3) Losses are projected based on the average losses from 2005-2014 and are assumed to be reduced as supplies are reduced

4.4 Water Use for Lower Income Households

This section is not applicable to wholesale agencies.

4.5 Climate Change Considerations

Weather patterns can shift dramatically and unpredictably, significantly affecting water supply planning. Although there are uncertainties of the exact timing, magnitude, and regional impacts of temperature and precipitation changes, researchers have identified several areas of concern for California water planners including:

- Reduction in Sierra Nevada snowpack;
- Increasing intensity and frequency of extreme weather events;
- Increased frequency and duration of extreme heat, impacting health and evapotranspiration; and
- Rising sea levels resulting in
    - Impacts to coastal groundwater basins due to seawater intrusion;
    - Increased risk of damage from storms, high-tide events, and the erosion of levees; and
    - Potential pumping cutbacks on the SWP and Central Valley Project (CVP).

Other areas of concern due to climate change include:

- Effects on local supplies such as groundwater;
- Changes in urban and agricultural demand levels and patterns;
- Impacts to human health from water-borne pathogens and water quality degradation;
- Declines in ecosystem health and function; and
- Alterations to power generation and pumping regimes

Future climate conditions were modeled for the Oxnard Subbasin using climate change factors provided by DWR. FCGMA has included climate factors as part of their study and are incorporated into revised allocations as discussed in Chapter 6.

Based on an analysis of the output from 32 Global Climate Models which were modified to examine projected changes in climate in Ventura County[4], the following potential impacts included:

- Changes in precipitation characteristics (intensification and concentration into winter season) may have implications for groundwater recharge and how surface water is conveyed, captured, and stored.

[4] Projected Changes in Ventura County Climate, Western Regional Climate Center, 2019, https://wrcc.dri.edu/Docs/VenturaClimate2019_lores.pdf

- Increased potential for post-fire flash flooding and/or debris flows due to more frequent short-duration, high intensity rainfall.
- Increased evaporative demand
- Increasing temperatures and more frequent extreme (hot) temperatures
- Increases in maximum temperatures and overnight minimum temperatures as well as frequency of extreme temperatures
- Wildfire season will likely extend earlier into the spring and early summer and later into the fall and early winter

Climate change will affect the water supplies and water supply reliability of United. Changes in weather resulting from increased average temperature will decrease the volume of precipitation falling as snow in California and an overall a reduction in snowpack in the Sierra Nevada and other mountain ranges in the state. Snowpack and rainfall in the mountain ranges within Los Padres National Forest, which supplies watersheds in Ventura county, is projected to decrease by 17 percent, which could affect water supply to the Santa Clara River Watershed[5].

[5] Ventura, County of. 2012 (April). County of Ventura Climate Protection Plan for Government Operations: A Community Commitment. Available: Background Report County of Ventura Section 12.2: Climate Change Effects September 2020 12-36 https://www.ventura.org/sustain/downloads/climate_protection_plan.pdf.

Chapter 5: Conservation Target Compliance

This chapter is used by retail agencies to establish and track daily per capita water use targets in accordance with the Water Conservation Act of 2009, also known as SB X7-7. United operates its OH System primarily as a wholesale agency. Wholesale agencies are not required to establish or meet baseline and targets for daily per capita water use as wholesale agencies supply other water agencies and not a specific population. Though wholesale agencies do not set per capita water use targets, wholesale agencies do play a role in water conservation and support retail agencies in achieving their demand targets.

5.1 Guidance for Wholesale Agencies

Wholesale agencies are guided by the California Water Code, *CWC 10608.36*, to document the programs and means by which they support retail agencies and the State in meeting water use reduction targets. United assists local retail agencies in meeting their demand reduction goals through public outreach and education programs that include:

- Hosting guided tours of United facilities
- Presentations to local, state, and national organizations
- School educational programs at elementary school, middle school, and college levels

5.2 Updating Calculations from 2015 UWMP to the 2020 UWMP

This section is not applicable to wholesale agencies.

5.3 General Requirements for Baseline and Targets

This section is not applicable to wholesale agencies.

5.4 Service Area Population

This section is not applicable to wholesale agencies.

5.5 Gross Water Use

This section is not applicable to wholesale agencies.

5.6 Baselines and Targets Summary

This section is not applicable to wholesale agencies.

5.7 2020 Compliance Daily Per-Capita Water Use (GPCD)

This section is not applicable to wholesale agencies.

5.8 Regional Alliance

This section is not applicable to wholesale agencies.

Chapter 6: Water Supply Characterization

This chapter focuses on characterizing each water source available to United's OH system in order to provide the information needed for reliability and risk assessments to supply.

6.1 Water Supply Analysis Overview

United's source of water supply for the Oxnard-Hueneme system (OH) includes groundwater production from twelve (12) wells within the Oxnard Basin. This is the primary source for potable water. Figure 6-1 shows the relationship and location of these wells within the Oxnard Basin.

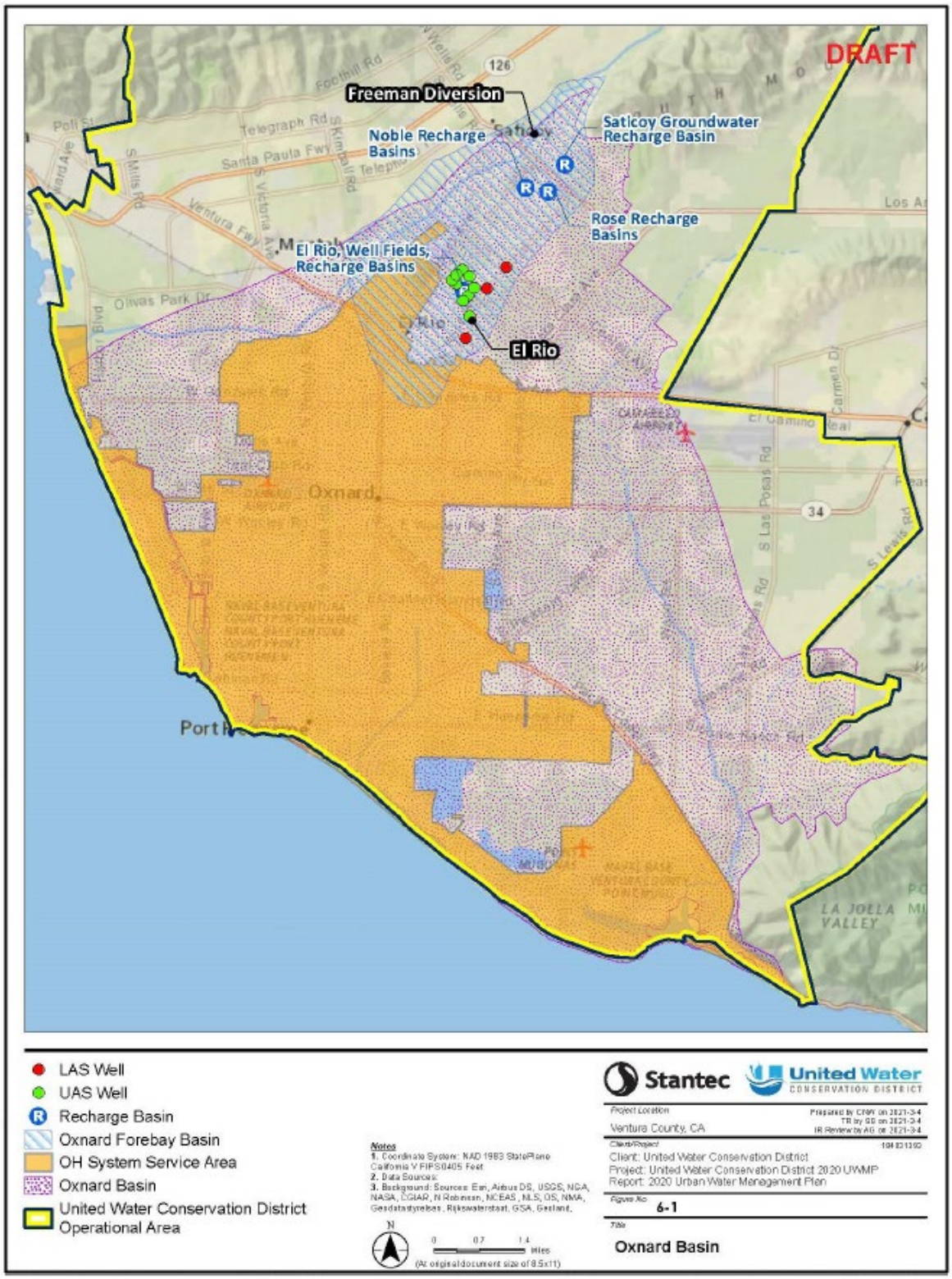

***Figure 6-1**: UWCD Facilities in the Oxnard Basin*

6.1.1 Specific Analysis Applicable to all Water Supply Sources

6.1.1.1 Existing sources of water

The existing supply for the OH system is groundwater production within the Oxnard Basin via twelve (12) groundwater production wells. Sources of water are described in more detail in Section 6.2.

Other District sources are discussed below, but do not directly supply water to the OH system at this time.

The 1963 *Contract Between the State of California Department of Water Resources and Ventura County Flood Control District for a Water Supply* provides a *Table A Contract* which allocates 5,000 AFY of the contracted 20,000 AFY of water to the District. Of the 5,000 AFY, 1,850 AFY of this water is leased to Port Hueneme Water Agency (PHWA) by permanent agreement between UWCD and PHWA leaving 3,150 AFY available. This available Table A water is diverted from the Santa Clara River at Freeman Diversion and used for groundwater recharge at the El Rio recharge basins. Historically, groundwater recharged has far exceeded pumped groundwater from the El Rio well field.

6.1.1.2 Planned sources of water

United plans to continue groundwater production in the Oxnard Basin for supply to the OH system. For groundwater recharge, the District intends to continue leasing water to PHWA and utilize the 3,150 AFY available of its Table A contract from DWR. At this moment, there are no local project plans finalized to include as planned water sources. However, United is playing a role in regional coordination and project planning that is currently underway through the *Oxnard Plain and Pleasant Valley (OPV) Core Stakeholders Group, Projects Committee,* which was moved over to a FCGMA committee in January 2021. Details on projects within the region that are under discussion by stakeholders are discussed in more detail in Section 6.2.8. In recent years, United considered the Alternative Supply Assurance Pipeline (ASAP) project to address regional water supply challenges within the underlying basins. This pipeline would allow continuous deliveries from Lake Piru via 27 miles of new pipeline and existing delivery systems to meet demands on the Oxnard Plain. United currently has no plans to proceed with this project.

For agricultural users, United will continue supplementing groundwater by diverting Santa Clara River surface water and delivery via the Pumping Trough Pipeline and Pleasant Valley Pipeline systems. The District is preparing to distribute recycled water from the City of Oxnard's Advanced Water Purification Facility (AWPF) via the Pumping Trough Pipeline to agricultural users on that system. The project was conditionally approved in October 2017 pending the system and areas where it will be used comply with Title 22 requirements. United remains interested in this project, but there are no current plans for a pipeline connection to bring AWPF water to the PTP system.

Supply availability under normal, single dry, 5-year drought is discussed in section 7.2.2. As described, the percentage of supply is based on the current allocation value of an average year. The single dry year is the highest pumping level in the past 10 years, and the multiple consecutive dry years also represent the lowest pumping levels. These values do not reflect future allocation reductions.

6.1.2 Other Characterization Considerations

The OH System demand is limited to the supply allowed to be extracted as allocated by FCGMA. As noted in Table 4-2, project planning is currently underway in the Oxnard groundwater basin area that is anticipated to relieve the overdraft conditions in the Oxnard basin. With additional supplies or optimization of use in the basin, the projected sustainable yield is anticipated to increase and allocations from FCGMA and/or cutback implementation are anticipated to allow for more groundwater extraction for the OH System and other Oxnard basin users. Description of ongoing project planning is further detailed in Section 6.2.8, below. Supporting background information for projected water supply (and therefore use) is further detailed in Sections 6.2.2.3 and 6.2.9, below.

6.1.3 Optional Planning Tool

The OH system's only source of water is the groundwater basin and is subject to allocation limits previously mentioned. This section is not applicable.

6.2 Narrative Sections for Supplier's UWMP Water Supply Characterization

6.2.1 Purchase or Imported Water

United does not purchase or import water for the OH System on a regular basis for its direct supply to purveyors. However, United does purchase imported water most years to recharge the groundwater basins (including the Oxnard Basin) beyond what water is naturally available within the Santa Clara River watershed.

As mentioned above, in 1963, the Ventura County Flood Control District (VCFCD) contracted with the State of California for 20,000 AFY of water from the SWP on behalf of three participating agencies: United, the City of Ventura and Casitas MWD. In 1971, the VCFCD assigned the administration of the Water Supply Contract to Casitas for the three agencies. United's contractual share is 5,000 AFY with 3,150 AFY available based on an agreement to lease 1,850 AFY to PHWA. United can access SWP through Lake Piru or Castaic Lake, and release stored SWP for recharge to downstream groundwater basins. This added recharge, paid through a voter-approved property tax special assessment, benefits all groundwater basins District-wide. United also purchases surplus State Water, known as Article 21 water, when it is available and able to provide a benefit to the District. In 2017 and 2019, United purchased 10,000 AF and 15,000 AF of Article 21 water, respectively. The volume Article 21 water acquired in 2019 was all diverted at the Freeman Diversion and the purchase was reimbursed by FCGMA.

United coordinates with partners across the region to strategically transfer and exchange SWP supplies for mutual benefit.

Although United is not currently involved in any long-term water supply exchanges and transfers, it has executed agreements intended to optimize the utilization of its existing water supplies. In May 2012, United entered into an Agreement for Purchase of 2012 Table A State Water Project Water (2012 Agreement) with Casitas Municipal Water District to purchase 1,260 AF of Casitas' Table A allocation. The 2012 Agreement was valid for 2012 only. In February 2013, United entered into an Agreement for

Purchase of 2013 Table A State Water Project Water (2013 Agreement) with the City of Ventura. The Agreement allowed United to purchase 1,890 AF for the calendar year 2013 only.

In 2019 United entered into a Water Exchange Agreement with Santa Clarita Valley Water Agency (SCVWA) for exchange of up to 2,000 AF of its 2019 Table A Water to United. In 2019, 1,000 AF of water was delivered to United under this agreement. Also, in 2019, United entered into an agreement with the City of Ventura to transfer 4,625 AF of its 2019 Table A allocation to United. In 2020 United entered into an agreement with the City of Ventura to transfer 1,000 AF of its 2020 Carryover Water to United. These 2019 and 2020 water purchases were delivered at Lake Piru and released to the Santa Clara River. Some of the released water percolated in the river channel to the groundwater basins upstream of the Freeman Diversion and the remaining water was diverted at the Freeman Diversion for recharge to Oxnard basin and surface water deliveries. The purchase of SWP water will be considered by United annually on an as-needed basis.

6.2.2 Groundwater

United supplies the OH system via 12 wells that draw from the Oxnard Groundwater Basin (Wells 2A, 5, 6, 8, 11, 12, 13, 14, 15, 16, 17, and 18). Wells 12, 13 and 14 produce from the Lower Aquifer System (LAS) and the remainder produce from the Upper Aquifer System (UAS).

6.2.2.1 Basin Description

Groundwater for the United OH system is drawn from the Oxnard Basin, a subbasin of the Santa Clara River Valley Groundwater Basin (DWR Groundwater Basin Number 4-004.02). The Oxnard Basin is a coastal alluvial subbasin of the Santa Clara River Valley Groundwater Basin (4-004). It is bounded to the east by the LPVB (4-008), the Camarillo Hills, and the PVB (4-006); to the southeast by the Santa Monica Mountains; to the west and southwest by the Pacific Ocean; and to the north by the Mound (4-004.03) and Santa Paula (4-004.04) Subbasins of the Santa Clara River Valley Groundwater Basin.[6] The Oxnard Groundwater Basin contains a collection of interconnected aquifers separated by low-permeability clay beds[6]. Figure 6-1 shows the boundary of the Oxnard Basin, and Figure 6-2 provides conceptual cross section profiles of the Oxnard Basin. The primary aquifers of the Oxnard Basin are commonly characterized as belonging to either the UAS or the LAS. The OH well field and United's recharge facilities are located in the Forebay area of the basin, an area of approximately 10 square miles in the northeastern portion of the basin where confining clays between the aquifers are generally absent or discontinuous.

[6] GSP 2019; Groundwater Sustainability Plan for the Oxnard Subbasin December 2019

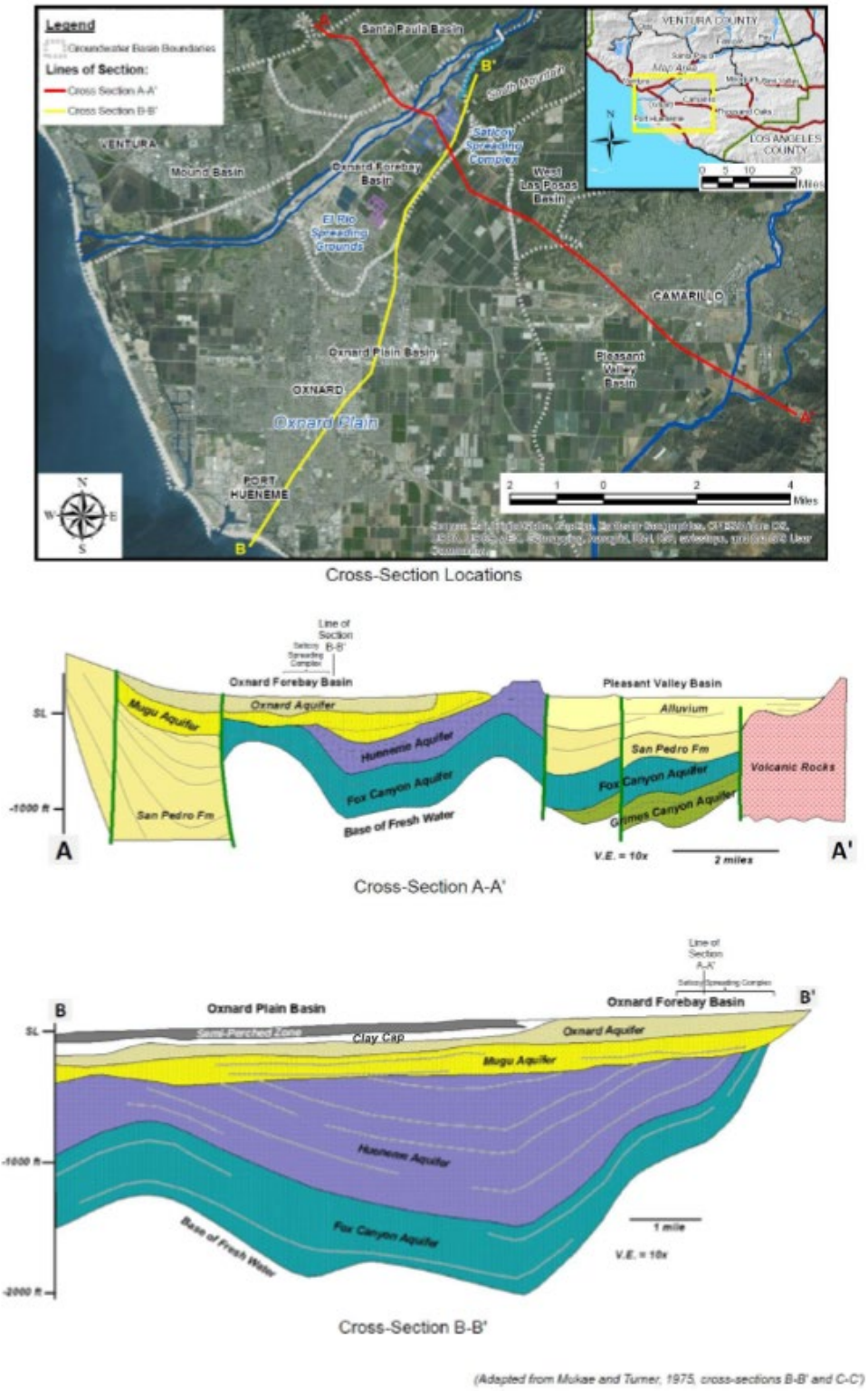

***Figure 6-2**: Oxnard Basin Aquifer Profile*[7]

The Oxnard Forebay is the unconfined portion of the Oxnard Basin and is generally located along the Santa Clara River northeast of the intersection of Pacific Coast Highway and U.S. Highway 101 in the City of Oxnard. The Oxnard Forebay is where the majority of the groundwater recharge to the principal aquifers used for water supply in the Oxnard Basin occurs. The Oxnard Forebay is recharged by infiltration from the riverbed of the Santa Clara River and the four (4) groundwater recharge facilities as discussed in Section 6.2.1. The Oxnard Forebay is located in the up-gradient portion of the Oxnard Basin. Surface water applied to these basins seeps down to the regional water table and serves to recharge the aquifers of the upper aquifer system (UAS) and the lower aquifer system (LAS). The UAS and LAS are hydraulically connected to the Pacific Ocean, allowing seawater intrusion in the Oxnard Basin when groundwater elevations are below sea level.

Per the 2016 Saline Intrusion Update[8], the Upper Aquifer System consists of the Oxnard and Mugu aquifers. These aquifers are characterized by relatively young alluvium (Oxnard aquifer) of Holocene age and older alluvium (Mugu aquifer) of late Pleistocene age. Both these aquifers are relatively flat-lying, and the Oxnard aquifer rests on the Mugu aquifer. A clay layer commonly occurs between the two aquifers, but in some areas there is no aquitard separating these two aquifer units. Some researchers apply the Oxnard and Mugu aquifer nomenclature to time-equivalent alluvial deposits in the Santa Clara River valley, but these deposits are more commonly termed Recent Alluvium and Older Alluvium, respectively, in the upstream groundwater basins of the Santa Clara River Valley.[8] The confined Oxnard aquifer is overlain by a shallow perched aquifer, commonly called the Semi-perched aquifer.

The Lower Aquifer System consists of the Hueneme, Fox Canyon, and Grimes Canyon which occur within the Saugus, San Pedro, and Santa Barbara Formations of Pliocene to Pleistocene age[9]. These aquifers may be isolated from each other vertically by low-permeability units and horizontally by regional fault systems. The LAS is folded and tilted in many areas and has been eroded along its upper contact with the UAS. In many areas an aquitard exists between the Mugu and Hueneme aquifers, which constrains vertical flow between the UAS and the LAS[8]. United has three groundwater wells that draw from the LAS, one of which is currently on standby status.

United's primary strategy for groundwater recharge is to recharge diverted surface water from the Santa Clara River and convey to the Saticoy and El Rio Groundwater Recharge Basins, as well as the Noble and Rose Basins, which are former gravel pits. These are all located in the Oxnard Forebay. United delivers surface water to farms in the southeastern Oxnard and Pleasant Valley basins. These deliveries reduce groundwater pumping in over drafted areas of the Oxnard Basin.

Groundwater extracted by the District to supply the OH System is primarily recharged by the El Rio recharge basins. Shallow UAS wells (Nos. 2A, 5, 6, 8, 11, 15, 16, 17, and 18) are located in the areas surrounding the recharge basins at El Rio. All of the UAS wells (except Well No. 11) are under the direct

[7] UWCD OFR 2018-02; Ventura Regional Groundwater Flow Model and Updated Hydrogeologic Conceptual Model: Oxnard Plain, Oxnard Forebay, Pleasant Valley, West Las Posas, and Mound Groundwater Basins

[8] UWCD OFR 2016-04; Saline Intrusion Update, Oxnard Plain and Pleasant Valley Basins

[9] Mukae, M. and Turner, J.M., 1975, Ventura County Water Resources Management Study-Geologic Formations, Structures and History in the Santa Clara Calleguas Area, January.

influence of surface water (i.e., less than 150 feet from incoming surface water) and are therefore subject to the Surface Water Treatment Rule and require an additional step of disinfection. The deep LAS wells (Nos. 12, 13 and 14) are not physically located within the boundaries of the El Rio Spreading Grounds.

United diverts surface water from the Santa Clara River at the Freeman Diversion and conveys the water to the recharge basins. During significant recharge operations, the water quality of the groundwater is similar to the water quality of the Santa Clara River, which is generally less mineralized than that of the ambient groundwater. After recharge operations have ceased water quality changes in the produced well water is often observed. Without dilution from recharge operations, nitrate concentrations in UAS wells gradually increase. During this time, the deep LAS wells, which have low nitrate concentrations, are operated to supplement and blend with water from the UAS wells. The water from the LAS contains higher concentrations of iron and manganese which, when blended with the UAS wells, generally remains below secondary MCLs. Higher iron and manganese concentrations are known to affect taste and color and can affect reverse osmosis water treatment operations. This effect is apparent during an ongoing drought. Table 6-1 summarizes groundwater production from 2016 to 2020.

Table 6-1 Wholesale: Groundwater Volume Pumped

☐	Supplier does not pump groundwater. The supplier will not complete the table below.
☐	All or part of the groundwater described below is desalinated.

Groundwater Type	Location or Basin Name	2016	2017	2018	2019	2020
Alluvial Basin	Oxnard Basin, Oxnard Forebay Area	10,832	10,917	11,622	11,601	13,374
	TOTAL	10,832	10,917	11,622	11,601	13,374

NOTES:
1) Transfer of Temporary Extraction Allocation occurred (and approved by FCGMA) of 600 AF to the City of Oxnard between July 1 and September 30, 2020. The extraction was due to maintenance issues related for Oxnard's groundwater pumping. This is not included in total water use for 2020.
2) Transfer of Temporary Extraction Allocation occurred (and approved by FCGMA) of 56.45 AF to the Vineyard Ave. Acres Mutual in 2019. This is not included in total water use for 2019.
3) Losses are calculated using the AWWA Method.

6.2.2.2 Multiple Groundwater Basins

The District does not utilize multiple groundwater basins to supply the Oxnard-Hueneme system.

6.2.2.3 Other Considerations

On a District-wide basis, per the 2020 Annual Engineering Investigation and GW Conditions Report the average annual overdraft over the past 10 years was estimated to be 79,200 AFY, with an estimated 45,000 AF of overdraft in 2020. The report is available on United's website: https://www.unitedwater.org/wp-content/uploads/2020/10/2020-Annual-Engineering-Investigation-and-GW-Conditions-Report-1.pdf

Specifically, the Oxnard Basin has been classified as a critically over drafted basin by DWR[10].

Overdraft Conditions

Evidence of groundwater overdraft in the Oxnard Basin was first recognized in the 1930s[6, pg. 6.5] when water levels were recorded below sea level and elevated chloride was observed in Oxnard aquifer wells along the coast near Port Hueneme. By the late 1950s, groundwater levels in the LAS also had dropped below sea level. Saline intrusion primarily occurs at the Hueneme Submarine Canyon and Mugu Submarine Canyon. In 2010, United conducted a geophysical survey to delineate areas of saline intrusion into the Oxnard Basin. Another report detailing coastal conditions and saline intrusion was published by United in 2016, showing broad areas of the Oxnard basin with UAS groundwater levels more than 20 feet below sea level, as measured in fall of 2015.

Groundwater levels below sea level allow the intrusion of saline water by various mechanisms. Seawater intrusion in the aquifers of the LAS near Port Hueneme appears to impact a limited area, but concentrations in one Hueneme aquifer (part of the LAS) well near Hueneme Canyon exceeds 10,000 mg/l. Saline impacts in the LAS are more extensive and severe in the area surrounding Mugu Lagoon, with much of the saline water is interpreted to source from brines rather than seawater. The updated report can be found on United's website: https://www.unitedwater.org/wp-content/uploads/2020/10/UWCD-OFR-2016-04-Saline-Intrusion-update-OP-and-PV-basins_v2.pdf . The OH water system was designed in the early 1950s to move groundwater pumping away from coastal areas to minimize seawater intrusion.

See Figure 6-3 for a map showing saline intrusion in the Oxnard Plan Basin.

[10] DWR 2016; Bulletin 118 Interim Update 2016 California's Groundwater

***Figure 6-3**: Saline Intrusion in the Oxnard Plain Basin*

Groundwater Management

The FCGMA was established in Ventura County by State Assembly Bill No. 2995 of the State Legislature in 1982 to control groundwater overdraft and minimize the threat of seawater intrusion in the Upper and Lower Aquifer Systems of the Oxnard Plain. After completing the FCGMA Planning Study that analyzed the condition of the LAS and UAS, the FCGMA adopted a plan of management of the LAS and UAS within the FCGMA boundaries in 1985. The objective of that plan and other policies adopted by the FCGMA is to eliminate overdraft in its service area, which also includes the Las Posas Valley Basin, and bring these basins to a "safe yield" condition by 2010. A "safe yield" condition is achieved when groundwater extractions from a basin are approximately equal to annual replenishments of water into the groundwater basin. Historically, the safe yield estimate for the FCGMA area has been approximately 120,000 AFY.

The 2007 Groundwater Management Plan established the need for the annual pumping from the Oxnard Basin to be no more than 100,000 AFY. The average extraction between 2003 and 2012 was 124,586 AFY. Following the onset of drought conditions in 2012 the FCGMA adopted Emergency Ordinance E in 2014 to force additional reduction in groundwater extractions. Since then, there have been additional ordinances and resolutions with applicable state laws being enacted and the evaluation of groundwater sustainability in the region.

Groundwater Sustainability

With the passage of California's Sustainable Groundwater Management Act (SGMA) in 2014, prudent management of all of the state's groundwater basins is now a primary water resource concern and mandated by state law. SGMA requires adoption of Groundwater Sustainability Plans (GSPs) by January 31, 2020 for all basins defined by the state as either a high or medium priority and subject to critical overdraft, and by January 31, 2022 for all other high or medium priority basins. The Oxnard and Pleasant Valley basins are designated high-priority basins and subject to critical overdraft, and the FCGMA submitted GSPs for these basins in January 2020. For more information on SGMA, see http://www.water.ca.gov/cagroundwater/index.cfm. The Oxnard Basin remains in a state of overdraft. DWR has not yet provided comments on the Groundwater Sustainability Plan (GSP) for the Oxnard basin, but efforts are underway to achieve the sustainable conditions detailed in the GSP.

Per the GSP, historical over pumping of the aquifer systems has led to seawater intrusion of the subbasins in the Oxnard Plain. Between 2015 and 2017, average rate of groundwater production from the UAS and LAS was approximately 40,000 acre-feet per year (AFY) and 29,000 AFY, respectively. Groundwater simulations indicated that seawater intrusion would continue at these pumping rates. The sustainable yield of the Upper Aquifer System was calculated to be approximately 32,000 AFY, with an uncertainty of ± 4,100 to 6,000 AFY. The sustainable yield of the Lower Aquifer System was calculated to be approximately 7,000 AFY, with an uncertainty of ± 2,300 to3,600 AFY [6, pg. 6.5]. To achieve sustainable management of the subbasins, pumping reductions will be required.

To minimize the pumping reductions necessary to achieve sustainable management of the Oxnard and Pleasant Valley basins, investment in large-scale projects to increase water supply, provide the infrastructure to redistribute pumping, and/or directly control seawater intrusion are being investigated.

Five-year evaluations are required by SGMA and will involve basin optimization studies, groundwater modeling, and project feasibility studies to explore practicable processes and approaches to increasing the sustainable yield of these basins.

The FCGMA adopted *An Ordinance to Establish an Allocation System for The Oxnard And Pleasant Valley Groundwater Basins, October 23, 2019.* This ordinance set an initial groundwater allocation of 14,337 AFY for United OH system. This allocation is based on groundwater production for calendar years 2004 through 2015. As of 2020, this volume was approximately 18.6% of the total (76,957 AF) allocation of the Oxnard basin. To reach future sustainable yield in both the combined UAS and LAS, an annual cutback volume for the OH system of approximately 372 AFY (2.60% per year) was proposed as part of a linear ramp down toward sustainability. Active engagement with basin pumpers is ongoing and the FCGMA board has not yet determined how and when cutbacks will be implemented.

Past Five Years

Over the past five years, the OH wells have produced 11,669 AFY, on average, of groundwater for distribution to the OH system. This does not include any pumping involved in temporary allocation transfers in 2019 and 2020 as mentioned previously. It should be noted that the OH wells extracted a total of 13,974 AF from the Oxnard Plain in 2020. This total includes 600 AF being transferred to the City of Oxnard for emergency purposes. See Table 6-1 for groundwater volumes over the past five years.

6.2.3 Surface Water

Surface water is not directly used for supply in the OH system but is used for groundwater replenishment on the recharge basins adjacent the OH wells. Additional water diverted from the Santa Clara River is used for recharge in the Saticoy facilities or distributed to the Pumping Trough Pipeline (PTP) and Pleasant Valley (PV) irrigation systems.

6.2.4 Stormwater

Stormwater collection systems do not currently contribute to water supply for the OH system.

6.2.5 Wastewater and Recycled Water

Wastewater generated within the OH System service area is treated at the wastewater treatment facility owned and operated by the City of Oxnard (Oxnard), which provides secondary treatment. Oxnard completed an Advanced Water Purification Facility (AWPF) study in 2009, which has a current capacity to produce approximately 7,000 AFY of advanced treated recycled water.

United is interested in distributing recycled water from the City of Oxnard's AWPF to agricultural users on the PTP. The project was conditionally approved in October 2017 pending the system and areas where it will be used comply with Title 22 requirements. However, there are no active projects to connect the PTP to AWPF distribution lines. Utilizing recycled water will reduce reliance on groundwater pumping which will have positive influence and reliability for groundwater produced for the OH system.

Recycled Water Conditions

United is one of the signatories to the Full Advanced Treatment (FAT) Recycled Water Management and Use Agreement between Oxnard and several other agricultural entities in the Oxnard Plain. The Agreement provides for the delivery of recycled water from Oxnard's AWPF when it is available, with Oxnard uses having the highest priority. The FAT Recycled Water Management and Use Agreement would make use of United's Pumping Trough Pipeline to deliver advanced treated recycled water from Oxnard's AWPF to agricultural users in the Oxnard Plain. On a temporary basis, Oxnard's recycled water was being delivered to the PV pipeline under a special use permit via Calleguas' existing Salinity Management Pipeline. That special use permit expired in 2020 and Oxnard intends to build additional distribution pipeline for the AWPF water. United has no immediate plans to implement recycled water for groundwater recharge.

6.2.5.1 Wastewater Collection, Treatment and Disposal

This Section is not applicable to this UWMP.

DRAFT Submittal Table 6-2 Retail: Wastewater Collected Within Service Area in 2020						
☒	There is no wastewater collection system. The supplier will not complete the table below.					
Wastewater Collection			Recipient of Collected Wastewater			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated?	Volume of Wastewater Collected from UWMP Service Area 2020	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area?	Is WWTP Operation Contracted to a Third Party? *(optional)*
Total Wastewater Collected from Service Area in 2020:		0				

DRAFT Submittal Table 6-3 Wholesale: Wastewater Treatment and Discharge Within Service Area in 2020											
☒	Wholesale Supplier neither distributes nor provides supplemental treatment to recycled water. The Supplier will not complete the table below.										
Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Wastewater Discharge ID Number *(optional)*	Method of Disposal	Does This Plant Treat Wastewater Generated Outside the Service Area?	Treatment Level	2020 volumes				
							Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area	Instream Flow Permit Requirement
						Total	0	0	0	0	0

6.2.5.2 Potential, Current, and Projected Recycled Water Uses

Recycled water is not used in the OH system and there is no proposal to do so.

United and Oxnard have previously discussed utilizing recycled water to recharge storage in the Rose Basin, but currently, there are no plans to implement recycled water recharge in United's basins.

In the OH System service area, the City of Oxnard uses recycled water for landscape and agricultural irrigation. In recent years, Oxnard has also embarked on a pilot program for groundwater recharge with recycled water using an aquifer storage and recovery (ASR) groundwater well. In 2020, the City of Oxnard had begun construction on ASR Well #1.

Regarding the purveyors served by the OH system, with the exception of the City of Oxnard, there are no other agencies with plans to implement a recycled water system.

6.2.5.3 Actions to Encourage and Optimize Future Recycled Water Use

This Section is not applicable to this UWMP.

DRAFT Submittal Table 6-4 Wholesale: Current and Projected Retailers Provided Recycled Water Within Service Area

☒	Recycled water is not directly treated or distributed by the Supplier. The Supplier will not complete the table below.

Name of Receiving Supplier or Direct Use by Wholesaler	Level of Treatment	2020	2025	2030	2035	2040	2045 *(opt)*
Total		0	0	0	0	0	0

DRAFT Submittal Table 6-5 Wholesale: 2015 UWMP Recycled Water Use Projection Compared to 2020 Actual

☒	Recycled water was not used or distributed by the supplier in 2015, nor projected for use or distribution in 2020. The wholesale supplier will not complete the table below.

Name of Receiving Supplier or Direct Use by Wholesaler	2015 Projection for 2020	2020 Actual Use
Add additional rows as needed		
Total	0	0

6.2.6 Desalinated Water

United does not currently supply desalinated water to the OH System. The South Oxnard Plain Brackish Water Treatment Feasibility Study (Carollo, August 2014) for development of a desalination facility. The

study indicated a reverse osmosis (RO) desalination facility could be constructed on the South Oxnard Plain and supply water for agricultural use at a cost competitive rate with imported SWP water with superior quality. While providing a regional source of water for agricultural use, this system would not contribute to supply of the OH System.

6.2.7 Water Exchanges and Transfers

In December 2005, a Memorandum of Understanding (MOU) for a pilot program was implemented between the Castaic Lake Water Agency (CLWA) and Casitas Municipal Water District, the City of Ventura, and United. The MOU allowed the Castaic Lake Water Agency (CLWA) to utilize the flexible storage allocations for State Water entitlements of United, the City of Ventura, and Casitas Municipal Water District in Castaic Lake, which is the terminal reservoir of the SWP. Based on the pilot program, CLWA can purchase 1,376 AF of SWP water annually from the flexible storage accounts.

The MOU expires in 2025 by an extension was approved by United's Board in 2015. As noted in Section 6.2.1, currently SWP exchanges and transfers arrive to United through surface water deliveries in the upper basins of the District. Some of the released water percolates in the river channel to the groundwater basins upstream of the Freeman Diversion, and the remaining water is diverted at the Freeman Diversion for recharge to the Oxnard basin and for surface water deliveries.

6.2.7.1 Exchanges

United is contemplating the initiation of a master planning process to identify additional water supply opportunities. This process may include water supply exchanges.

United's most recent agreement to acquire supplemental water through an exchange of SWP water was in 2019, as described in Section 6.2.1. Exchanges of SWP water, including single and multi-year exchanges, will continue to be considered by United annually based on need and availability. At this time no long-term agreements for exchanges are in place. The SWP Water Supply Amendments for Water Management that are anticipated to be implemented in 2021 will likely increase exchange activity between State Water Contractors.

6.2.7.2 Transfers

United's most recent agreement to purchase supplemental water through a transfer of SWP water was in 2019, as described in Section 6.2.1. Transfers of SWP water, including single and multi-year transfers, will continue to be considered by United annually based on need and availability. At this time no long-term agreements for transfers are in place. The SWP Water Supply Amendments for Water Management that are anticipated to be implemented in 2021 will likely increase transfer activity between State Water Contractors.

6.2.7.3 Emergency Interties

Currently, United's OH system does not have any emergency intertie with other agencies. Under the development of the SWP interconnection (see 6.2.8.8 for details), United will have a turnout dedicated to

SWP supply in addition to one turnout for pipeline discharge into recharge basins. The dedicated SWP turnout for supply to the OH system will be located on Rose Avenue for emergency supply situations.

6.2.8 Future Water Projects

As of 2020, United does not have any future projects that would directly benefit water supply for the OH system. Some of the future projects listed below have the potential to improve groundwater reliability for the OH system through groundwater replenishment and reduced reliance of the basin. These projects are expected to reduce overdraft from the Oxnard Basin making more water available in the local aquifers for sustainable extraction.

6.2.8.1 Iron and Manganese Treatment Plan

Construction is planned to commence in the 2020-2021 Fiscal Year for the Iron and Manganese Treatment for the OH Pipeline, the largest project planned of the FY. The Iron and Manganese Treatment Plant is designed to reduce iron and manganese considerably and allow for reliable source of groundwater, in both terms of water quality and water quantity, from the LAS to blend with UAS water during periods of drought. Once operational, the proposed project would require electricity to operate various water treatment equipment, including the pumps and air scour blowers. In normal (non-drought) years, the proposed project would not be operational and would not demand energy. In drought conditions, the facility would begin pumping and treating groundwater supplies from the Lower Aquifer System to offset increasing nitrate levels in pumped Upper Aquifer System groundwater supplies. Under these conditions, the combined El Rio Well Field energy efficiency would be approximately 525 kilowatt hours (kWh) per acre-foot of water pumped and treated. The energy demand increases with increased depth of pumping, however the energy use for deeper pumping is estimated to be considerably less than the energy required for consumers in the service area to acquire water from the SWP[11].

6.2.8.2 Alternative Supply Assurance Pipeline Project (ASAPP)

During the 2016-2020 period, United performed a feasibility study (OFR 2019-01) relating to a proposed the Alternative Supply Assurance Pipeline Project (ASAPP) to address regional water supply challenges within the underlying basins. To reduce overdraft of the Oxnard Basin and the resulting seawater intrusion, United considered acquisition of alternative water supplies (AWS) to supplement local water sources.

The ASAPP investigated several alternatives for maximizing surface water deliveries from Lake Piru to the Oxnard Plain. These alternatives included an interim recharge and storage in Piru or Fillmore basins then extraction and pipeline delivery of the stored water to the Oxnard basin or direct delivery of water from Lake Piru to the Oxnard basin via pipeline. The ASAPP would increase SWP water deliveries by 6,000 AFY and increase surface water deliveries by 14,000 AFY as well as allow full control of water deliveries to the Oxnard Basin, maximize surface water deliveries during drought periods, and reduce

[11] Iron and Manganese Treatment Plant EIR

seawater intrusion by increasing water levels in the coastal aquifers[12]. The district currently does not plan to proceed with this project as originally conceived, but some elements, including expanding SWP water purchases and conjunctive use of groundwater and surface water in the south-central Oxnard Basin and Pleasant Valley basins, are currently being evaluated for potential inclusion in the Basin Optimization approach to increasing sustainable yield, as discussed below.

6.2.8.3 Pumping Trough Pipeline

The District is preparing to distribute recycled water from the City of Oxnard's AWPF via the PTP to agricultural users on the system as mentioned in Section 6.2.5.

6.2.8.4 Coastal Brackish Water Treatment Project

Seawater intrusion in the southern Oxnard Plain has long been a problem due to agricultural, industrial, and residential land uses that rely on groundwater. When pumping exceeds recharge, water levels in the groundwater basin can fall below sea level, drawing seawater into the aquifers and impacting water quality.

Unlike coastal Los Angeles and Orange County, Ventura County does not have a seawater intrusion barrier in place, and saline intrusion impairs groundwater quality for agricultural or municipal uses.

To protect groundwater supplies, United Water is evaluating a project in collaboration with Navy Base Ventura County (NBVC) that will provide seawater intrusion barrier using extraction wells for hydraulic control and reverse osmosis to treat the brackish groundwater for potable use by the Navy and for agricultural use on nearby farms. The project will create 3,500 to 14,000 AFY of potable water, depending on final design parameters.

The project will reduce groundwater pumping near the coastline, mitigate saline intrusion into coastal areas of the aquifers, create an additional irrigation and emergency supply, and is estimated to increase sustainable yield of the Oxnard and Pleasant Valley basins by 10,000 to 20,000 AFY. This is a long-term project as it is currently in the earlier stages of evaluation.

6.2.8.5 Anacapa Project Report, July 2019

United finalized a feasibility study in July 2019 that investigated using groundwater from the UAS in the coastal northwest Oxnard Basin to recharge and benefit other parts of the basin. This project would only operate during years of normal or above normal precipitation when groundwater elevations are above normal and groundwater that would normally not be pumped would otherwise flow past the coastline and lost to the offshore portion of the aquifer system. The project would involve a well field in the study area of the coastal Oxnard Basin and a pipeline to convey extracted water to inland areas of the basin for beneficial use. Following preliminary evaluation, the District determined that this potential project would be unlikely to provide substantial benefits to sustainable yield of the Oxnard basin under current

[12] Alternative Supply Assurance Pipeline Project, OFR 2019-01

groundwater conditions and placed it on hold until additional information became available that suggested this project may produce a significant benefit.

The District is currently working with FCGMA and stakeholders in the Oxnard and Pleasant Valley basins to evaluate the potential benefits and costs of "optimizing" groundwater pumping and conjunctive use to increase sustainable yield of these basins. Because saline intrusion is the primary driver for the reduced pumping allocations contemplated in the FCGMA's (2019) GSPs for the Oxnard and Pleasant Valley basins, shifting pumping away from the coast and up from the LAS to the UAS has shown potential for mitigating saline intrusion and thereby increase sustainable yield of the basin (requiring smaller cutbacks in pumping). Three phases of optimization are currently being evaluated by the District and FCGMA, including:

- Phase 1—Reduce pumping in the "seawater intrusion management area" generally south of Hueneme Road in the Oxnard and Pleasant Valley basins.
- Phase 2—Shift United's groundwater pumping from the LAS to the UAS by replacing its existing PTP wells.
- Phase 3—Shift most of the remaining pumping in the LAS in Oxnard basin to the UAS by constructing new UAS wells in the northern and western portions of Oxnard basin and building new conveyance systems to replace the water currently pumped from existing LAS wells.

However, it should be noted that if the Coastal Brackish Water Treatment Project (described above) is as successful at mitigating saline intrusion as preliminary modeling suggests, then Optimization Phases 2 and 3 may not provide a significant net benefit to sustainable yield. The District and FCGMA are currently evaluating the potential effects and synergies of each of these projects to determine their optimal configuration, considering benefits and costs.

6.2.8.6 Freeman Expansion Project

The District has prepared plans and designs to increase capacity of its existing diversion and groundwater recharge system at Freeman Diversion by taking advantage of the reclaimed Rose and Ferro aggregate mining pits. The project aims to benefit the Oxnard and Pleasant Valley basins by expanding and extending water conveyance and recharge capacity. The potential increase in sustainable yield is currently estimated at 6,000 to 9,000 AFY, as a long-term average. The Freeman Expansion Project will be constructed in two phases, with Phase 1 to be completed in 2028 and Phase 2 to be completed in 2036. Yields and costs are contingent on some factors outside of United's control, such as permitting and fish passage.

6.2.8.7 Expanded SWP Purchases (Article 21 and Table A Exchanges/Transfers)

As noted above (see Sections 6.2.1 and 6.2.7), the District has recently begun purchasing, exchanging, and/or transferring additional SWP water for artificial recharge and surface-water delivery in its service area. The District is currently working under the assumption that 6,000 AFY could be purchased (when Article 21 water is available from SWP), transferred, or exchanged for use within its service area. The

District is currently working with its consultant and FCGMA to determine potential costs during wet, dry, and average water years.

6.2.8.8 Recharge of Flushing Water from SWP Interconnect Project

The City of Ventura's planned SWP Interconnection Pipeline and Blending Station project will include a blow off within United's spreading grounds for discharging of flushed water generated as a result of operations and maintenance. Flushed water can be recharged at the Saticoy Spreading Grounds. In addition, United is coordinating with the City of Ventura and designing the extension pipeline for additional turnouts for emergency supply as described in Section 6.2.7.3. These proposed turnouts may provide opportunities for delivery of modest quantities of water from Calleguas MWD (and wheeled through the SWP Interconnect Pipeline) or the City of Ventura, if available and under certain circumstances. The water may serve as emergency M&I supply for customers served by United within Metropolitan-annexed areas. United is currently planning for approximately 500 AFY of flushed water to be recharged at Saticoy, which will slightly increase overall yield and availability of groundwater at El Rio.

6.2.8.9 Other Projects Currently in Planning or Under Evaluation with FCGMA and Regional Stakeholders

Conejo Creek Storage Expansion—This potential project includes development of a storage facility to hold increased diversions from Conejo Creek for delivery to agriculture customers in the OPV area. The project could yield approximately 2,500 AFY in additional surface water supplies, which would improve overall availability and reliability of groundwater supplies for all users (M&I and agricultural), including the OH Project. Initial cost estimates vary widely depending on the eventual capacity (500-2,500 AFY), dimensions, location, and characteristics of the pond. Camrosa Water District, City of Camarillo, Pleasant Valley County Water District, and United Water Conservation District are beginning discussions about the scope of an initial study to further develop the concept and narrow the range of costs.

M&I Water Market—Conceptually, the development of an M&I Water Market is to allow flexibility within the M&I water user community that is presently available to the agricultural water user community. M&I groundwater producers in the FCGMA's service area typically have a portfolio of sources that they conjunctively manage during wet and dry periods. A market would allow users to sell a portion of their groundwater allocation in a given year, making groundwater available to other users, including small mutual water companies. The ability to transfer groundwater within a market would allow greater flexibility for the M&I water suppliers. The potential benefits to groundwater users in the basin (including the OH Project) are unknown at this time.

DRAFT Submittal Table 6-7 Wholesale: Expected Future Water Supply Projects or Programs						
☑	No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below.					
	Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.					
	Provide page location of narrative in the UWMP					
Name of Future Projects or Programs	Joint Project with other suppliers?		Description *(if needed)*	Planned Implementation Year	Planned for Use in Year Type *Drop Down list*	Expected Increase in Water Supply to Supplier
	Drop Down Menu	*If Yes, Agency Name*				

6.2.9 Summary of Existing and Planned Sources of Water

6.2.9.1 Description of Supplies

United's existing source of water for the OH System is groundwater pumped from the Oxnard Basin, which is managed by FCGMA. The District operates twelve (12) groundwater production wells in the Oxnard Basin, the El Rio Treatment Plant, and a transmission pipeline to serve the City of Oxnard, PHWA, and several mutual water companies. See section 6.1.1

6.2.9.2 Quantification of Supplies

As mentioned previously in section 6.2.2.3, *An Ordinance to Establish an Allocation System for the Oxnard and Pleasant Valley Groundwater Basins* was adopted pursuant to the GSP established by FCGMA meeting the requirements of the SGMA of 2014. United's 2021 allocation was established at 14,337 AFY for United's OH system with annual cutback volume of approximately 372 AFY (2.60% of the established base allocation per year) estimated by United to meet sustainable yield of the Oxnard basin as described in FCGMA's GSP. Allocation cutbacks are to start October 1st, 2021. After sustainability is reached in September 2040, cutbacks are assumed to stop, and supply is expected to remain constant.

DRAFT Submittal Table 6-8 Wholesale: Water Supplies — Actual				
Water Supply	Additional Detail on Water Supply	2020		
		Actual Volume	Water Quality	Total Right or Safe Yield *(optional)*
Groundwater (not desalinated)		13,374	Drinking Water	
Total		13,374		0

NOTES:

1) Transfer of Temporary Extraction Allocation occurred (and approved by FCGMA) of 600 AF to the City of Oxnard between July 1 and September 30, 2020. The extraction was due to maintenance issues related for Oxnard's groundwater pumping. This is not included in total water use for 2020.

3) Losses are calculated using the AWWA Method.

DRAFT Submittal Table 6-9 Wholesale: Water Supplies — Projected						
Water Supply	Additional Detail on Water Supply	Projected Water Supply *Report To the Extent Practicable*				
		2025	**2030**	**2035**	**2040**	**2045** *(opt)*
		Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume
Groundwater (not desalinated)		12,755	10,894	9,033	7,265	7,265
Total		12,755	10,894	9,033	7,265	7,265

Notes:
1) Groundwater allocation cutback of 372 AFY to begin Oct. 2021 and end Sep. 2040. Values shown in this table reflect calendar year ending Dec. 31st. (e.g. initial allocation Oct. 2021 of 14,337 AFY – (372 AFY x 4.25 years) = 12,755 AFY in Dec. 2025)

2) These projections are subject to change depending on actual implementation of the allocations in the Oxnard Basin by FCGMA. These projections do not include potential variances that may be granted to the OH System or and any additional variances would increase the total allocation for the Oxnard Basin.

6.2.10 Special Conditions

6.2.10.1 Climate Change Effects

Effects of Climate Change are discussed in Section 4.5. Per the adopted GSP, a literature review conducted in support of the *U.S. Bureau of Reclamation's Los Angeles Basin Stormwater Conservation Study Task 3.1 Report* found that the following changes are anticipated in Southern California due to global climate change (Bureau of Reclamation 2013):

- Increased temperature (1°C to 3°C)
- Increased evaporation rate
- Decrease in annual precipitation (2% to 5%)
- Increase in extreme precipitation events

Future climate conditions were modeled for the Oxnard Subbasin using climate change factors provided by DWR[6, pg. 6.5].

6.2.10.2 Regulatory Conditions and Project Development

The supply to the OH system is subject to basin regulation managed by the FCGWMA. The adopted GSP and GSP reevaluations every five years may influence future annual water supply volumes and reliability of groundwater within the Oxnard Basin.

6.2.10.3 Other Locally Applicable Criteria

6.3 Submittal Tables Completion Using the Optional Planning Tool

The Optional Planning Tool was not used in this UWMP.

6.4 Energy Intensity

Per Water Code 10631.2. (a) an UWMP shall include, to the extent possible, an estimate of energy used to extract, divert, convey, treat, and distribute water supplies. Estimated energy consumption for Groundwater extraction and pumping for the OH system for the calendar year 2020 is shown in Table 6-2. This information was made available by Southern California Edison from metered facilities that supply the OH system.

Table 6-2: OH System 2020 Estimated Energy Intensity		
Annual Energy Consumption		
Meter	**kWh**	**Facility Description**
OH Booster Plant	2,937,847	OH Booster Plant for treatment and pressure to supply the pipeline and
OH Well Field	3,177,108	Upper Aquifer Wells
Well #12	6,934	Lower Aquifer Well
Well #13	3,335	Lower Aquifer Well
Well #14	26,564	Lower Aquifer Well
OH Well Field Backup Generator	86	OH Well Field Backup Generator
Total	**6,151,874**	
Energy Intensity		
OH System Energy Consumption (kWh)	6,151,874	
OH System Water Volume (AF)	13,974	Includes the Transfer of Temporary Extraction Allocation (approved by FCGMA) of 600 AF to the City of Oxnard between July 1 and September 30, 2020
Estimated System Energy Intensity (kWh / AF)	**440**	

Chapter 7: Water Service Reliability and Drought Risk Assessment

7.1 Introduction

The UMWP requires urban water suppliers to assess water supply reliability and compare total projected water use with the expected water supply over the 20-year planning horizon in five-year increments. The UWMP also requires an assessment for a single dry year and five consecutive dry years. This chapter presents the reliability assessment for United's OH System service area.

It is United's and their retail water purveyors' goal to deliver a reliable and high-quality water supply for their customers, even during dry periods. Based on conservative water supply and demand assumptions over the next 25 years, in combination with conservation of non-essential demand during certain dry years, the UWMP successfully achieves this goal as presented further in this chapter.

7.2 Water Service Reliability Assessment

7.2.1 Constraints on Water Sources

As described in Chapter 6, *An Ordinance to Establish an Allocation System for the Oxnard and Pleasant Valley Groundwater Basins* was adopted pursuant to the GSP established by FCGWMA meeting the requirements of the SGMA of 2014. Based on groundwater production from 2004 to 2015, FCGWMA established an allocation of 14,337 AFY for United's OH system with an annual cutback volume of approximately 372 AFY (2.60% of the base allocation). The annual groundwater allocation cutbacks are to begin October 1st, 2021 and come to an end by September 30th, 2040 after sustainability is reached.

The Oxnard Basin currently provides a reliable source of water for the OH System except during the severest droughts. However, the allocation reductions to reduce groundwater overdraft on the Oxnard Plain and the resulting seawater intrusion have an impact on United's water supply. Therefore, the District is evaluating alternative water supplies (AWS) to supplement local water resources as discussed in Section 6.2.8.

United also has a contractual right to SWP water which can be released from either Pyramid Lake or Castaic Lake and diverted at the Freeman Diversion. Unfortunately, this supplemental source is costly and significant water is lost to infiltration, evaporation, and consumptive use by vegetation during its delivery in the Santa Clara River.

7.2.1.1 Water Quality

This section provides a general description of the water quality of the supplies delivered by United, aquifer protection, and a discussion of potential water quality impacts on the reliability of these supplies. United is committed to providing its purveyors with high quality water that meets all federal and state primary drinking water standards. Some contaminants are naturally occurring minerals. In some cases, the presence of animals or human activity can contribute to the constituents in the source waters. The following subsections address constituents reported in the 2010 Santa Clara River Watershed Sanitary

Survey Update (available at http://www.unitedwater.org/images/stories/reports/WaterQuality/Sanitary_Survey_Update_2010_Final.pdf) impacting water quality. The 2019 Consumer Confidence Report (CCR) was made available April 1, 2020.

Nitrate. Nitrate levels in the Oxnard Basin may rise quickly for short periods of time because of rainfall or agricultural activity. Studies by United indicate nitrate is contributed to groundwater by land uses within the Oxnard Plain Forebay and the likely sources are local septic systems and the application of nitrogen fertilizers. The greatest water quality concern in the UAS wells is nitrate concentrations which have historically increased during times of drought[13]. Nitrates are tested weekly for the shallow OH System wells. The MCL for nitrate as nitrogen is 10 mg/L. United is currently addressing nitrate issues at Well 15 by increasing the depth of the pump bowls. Well 4 was replaced in 2016 by a new, deeper Well 18. Well 18 has been commissioned and placed online.

Pathogens. Microbial contaminants, such as viruses and bacteria, can be naturally occurring or result from urban storm water runoff, sewage treatment plants, septic systems, agricultural livestock operations, and wildlife. Previously, the OH System was determined to be groundwater under the direct influence of surface water by the Division of Drinking Water (DDW), and United implemented an enhanced disinfection system to maintain the water quality delivered to its purveyors. Water is tested regularly for total coliform bacteria and fecal coliform. No total or fecal coliform were detected in the OH System in 2019. The bacteriological tests met federal and state requirements.

Radon. Radon is a naturally-occurring radioactive gas that is tasteless, odorless, and invisible, and is ubiquitous in the United States. It is found in indoor and outdoor air and in drinking water, although drinking water is generally a small contributor to radon exposure. Radon is a known human carcinogen; however, there is currently no Federal or State MCL for radon. In 2019, radon was detected in the OH System at average levels of 685.75 picocuries per liter.

Iron and Manganese. Iron and manganese are usually natural-occurring contaminants that enter the groundwater from leaching of natural mineral deposits. Iron and manganese have secondary MCLs which are established to regulate the aesthetic quality of water. Iron and manganese can also affect the efficiency of membrane treatment which is increasingly being used by the purveyors of the OH System. The greatest water quality concern in LAS wells is iron and manganese concentrations[14]. In 2019, average blended concentration of iron and manganese was 3.21 ppb (parts per billion) and 0.19 ppb, respectively. The OH System currently operates under a one-year waiver from DDW. United is constructing an iron and manganese treatment for the OH System which is anticipated to be online in October 2022. The Iron and Manganese Treatment Plant (Section 6.2.8.1) that is currently preparing for construction, is designed to reduce iron and manganese considerably and allow for reliable source of

[13] Iron and Manganese Removal TM with Pilot Plant Update, UWCD, 2016

[14] Iron and Manganese Removal TM with Pilot Plant Update, UWCD, 2016

groundwater from the LAS to blend with UAS water during periods of drought when the UAS pumped water has historically encountered nitrate concentration issues.

Groundwater Contamination

Potential risks to United's groundwater supplies include groundwater contamination caused by spillage of agricultural chemicals, runoff from industrial sites, spillage from tanker trucks carrying hazardous chemicals, or other accidents. Generally, United develops a response plan on a case-by-case basis depending on the severity of the risk. In a previous methyl tertiary butyl ether (MTBE) contamination event, United was closely involved in oversight of the cleanup and increased the frequency of contaminant monitoring at its wells. However, if a severe groundwater contamination event were to occur, water supplies for the OH System could be adversely affected.

Aquifer Protection

As described in Chapter 6, groundwater extractions from the Oxnard Basin are managed by FCGMA. As the designated Groundwater Sustainability Agency, FCGMA has the primary responsibility for aquifer protection and has prepared a Groundwater Sustainability Plan (GSP). United supports the FCGMA aquifer protection efforts through the preparation of an annual Groundwater Conditions Report, which analyzes the water balance in the Oxnard Basin, as well as the other basins within United's service area. United also prepares a biennial Groundwater and Surface Water Conditions Report, which summarizes hydrogeology, hydrologic conditions, water levels, surface water flows, groundwater extractions, and water quality of groundwater basins and surface waters within United's service area. It also discusses the key issues facing these hydrologic features.

Water Quality Impacts on Reliability

The primary factors affecting the availability of groundwater are sufficient source capacity (wells and pumps), sustainability of the groundwater resource to meet pumping demand on a renewable basis, and protection of groundwater sources (wells) from natural or anthropogenic contamination, or provisions for treatment in the event of contamination. The development of sufficient source water capacity is an ongoing concern to United. Several wells are currently scheduled for replacement due to age, condition, or high nitrate concerns. Aquifer protection is discussed in the previous section and United is currently constructing iron and manganese treatment for the OH System.

In general, the wells with high nitrate concentrations are shallower than the wells with high iron and manganese concentrations. During severe drought conditions, it may not be possible to blend water with high nitrate concentrations to with water lower in nitrate concentrations to acceptable levels, thereby impacting water supply reliability. This would improve the water supply reliability of the OH System. Accordingly, water quality is not expected to impact water supply reliability for the OH System.

7.2.2 Year Type Characterization

To determine the water supply reliability of United's OH System, an assessment was developed that includes a comparison of the total projected water demand with the supply available for the following conditions: (1) normal/average water year, (2) single-dry water year, and (3) five-consecutive-year

drought. The basis of the water supply and demand assessment is summarized in Table 7-1. The results for the assessment for each of these three conditions are described in the following sections.

Table 7-1 Wholesale: Basis of Water Year Data (Reliability Assessment)

Year Type	Base Year *If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 1999-2000, use 2000*	Available Supplies if Year Type Repeats	
		☐	Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____
		☑	Quantification of available supplies is provided in this table as either volume only, percent only, or both.
		Volume Available	**% of Average Supply**
Average Year	2004-2015	14,337	100%
Single-Dry Year	2010	15,709	110%
Multiple-Dry Years 1st Year	2010-2014	15,708	110%
Multiple-Dry Years 2nd Year	2010-2014	10,747	75%
Multiple-Dry Years 3rd Year	2010-2014	14,210	99%
Multiple-Dry Years 4th Year	2010-2014	12,854	90%
Multiple-Dry Years 5th Year	2010-2014	10,773	75%

Supplier may use multiple versions of Table 7-1 if different water sources have different base years and the supplier chooses to report the base years for each water source separately. If a supplier uses multiple versions of Table 7-1, in the "Note" section of each table, state that multiple versions of Table 7-1 are being used and identify the particular water source that is being reported in each table. Suppliers may create an additional worksheet for the additional tables.

NOTES: Average year is the current allocation value, the single dry year is the highest pumping level in the past 10 years, and the multiple consecutive dry years also represent the lowest pumping levels. These values do not reflect future allocation reductions.

7.2.3 Water Service Reliability

7.2.3.1 Water Service Reliability – Normal Year

Current and future water demands for the OH System are discussed in Chapter 4 and current and future water supplies are described in Chapter 6. Conservative assumptions were utilized concerning availability of supplies. The baseline period of 2004-2015 was used for the average/normal year assessment in

Table 7-1. However, FCGMA reduced allocations have been used in Tables 7-2 through 7-4 as this is considered the new normal supply for all types of water year. During a normal/average water year, United is anticipated to reduce its OH System purveyor allocations accordingly and, therefore, reduce water demands through 2040.

The OH system is physically robust to climate/drought, yet limitations from GSP related regulatory requirement and UAS water quality issues that arise during drought reduce the robustness. The Iron/Manganese treatment project, in part funded through DWR grant, will relieve drought-related water quality issues by blending Lower Aquifer wells with Upper Aquifer wells. Purveyors can also physically pump more than allocated, but they will be charged accordingly and be subject to penalties imposed by FCGMA.

DRAFT Submittal Table 7-2 Wholesale: Normal Year Supply and Demand Comparison

	2025	2030	2035	2040	2045 *(Opt)*
Supply totals *(autofill from Table 6-9)*	12,755	10,894	9,033	7,265	7,265
Demand totals *(autofill fm Table 4-3)*	12,755	10,894	9,033	7,265	7,265
Difference	0	0	0	0	0

NOTES:
1) See notes in Tables 6-9 and 4-3 for supply and demand projection assumptions represented by values provided here.

7.2.3.2 Water Service Reliability – Single Dry Year

The FCGMA has adopted an ordinance to establish an allocation system for the Oxnard and Pleasant Valley Groundwater Basins. The allocation system reduced United's annual allocation and therefore it is anticipated purveyors would reduce their consumption and obtain supplies from other sources available to them. As such, there is no difference between the projected supply and demand values shown Table 7-3. In future multiple-dry years, United is anticipated to reduce its OH System purveyor allocations accordingly. The single-dry year assessment resulted in a reduced water supply and therefore a reduced water demands through 2040.

DRAFT Submittal Table 7-3 Wholesale: Single Dry Year Supply and Demand Comparison					
	2025	2030	2035	2040	2045 (Opt)
Supply totals	12,755	10,894	9,033	7,265	7,265
Demand totals	12,755	10,894	9,033	7,265	7,265
Difference	0	0	0	0	0
NOTES: 1) See notes in Tables 6-9 and 4-3 for supply and demand projection assumptions represented by values provided here.					

7.2.3.3 Water Service Reliability – Five Consecutive Dry Years

The FCGMA has adopted an ordinance that establishes an allocation system for the Oxnard and Pleasant Valley Groundwater Basins. The allocation system reduced United's allocation and therefore it is anticipated purveyors would reduce their consumption and obtain supplies from other sources. As such, the difference between supply and demand totals is shown as "0 AF". In future multiple-dry years, United is anticipated to reduce its OH System purveyor allocations accordingly. As indicated in Table 7-4, the multiple-dry year assessment resulted in a reduced water supply and, therefore, a reduction in water demands through 2040.

DRAFT Submittal Table 7-4 Wholesale: Multiple Dry Years Supply and Demand Comparison						
		2025	2030	2035	2040	2045 (Opt)
First year	Supply totals	12,755	10,894	9,033	7,265	7,265
	Demand totals	12,755	10,894	9,033	7,265	7,265
	Difference	0	0	0	0	0
Second year	Supply totals	12,383	10,522	8,661	7,265	7,265
	Demand totals	12,383	10,522	8,661	7,265	7,265
	Difference	0	0	0	0	0
Third year	Supply totals	12,011	10,150	8,289	7,265	7,265

	Demand totals	12,011	10,150	8,289	7,265	7,265
	Difference	0	0	0	0	0
Fourth year *(optional)*	Supply totals	11,639	9,778	7,917	7,265	7,265
	Demand totals	11,639	9,778	7,917	7,265	7,265
	Difference	0	0	0	0	0
Fifth year *(optional)*	Supply totals	11,267	9,406	7,545	7,265	7,265
	Demand totals	11,267	9,406	7,545	7,265	7,265
	Difference	0	0	0	0	0

NOTES:
1) See notes in Tables 6-9 and 4-3 for supply and demand projection assumptions represented by values provided here.

7.2.4 Description of Management Tools and Options

The FCGMA has adopted an ordinance to establish an allocation system for the Oxnard and Pleasant Valley Groundwater Basins. The allocation system reduced United's annual allocation and therefore it is anticipated purveyors would reduce their consumption and obtain supplies from other sources available to them.

In addition to the reduced groundwater allocations, United is considering acquisition of alternative water supplies to supplement local water sources as discussed in Section 6.2.8 to reduce groundwater overdraft on the Oxnard Plain and the resulting seawater intrusion.

To address water quality issues, United is constructing an iron and manganese treatment for the OH System which is anticipated to be online in October 2022.

7.3 Drought Risk Assessment

The UMWP requires the DRA be based on the five driest consecutive years on record. The UWMP requires consideration be given to the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.

7.3.1 Data, Methods, and Basis for Water Shortage Conditions

For United, the five-consecutive years of 2010-2014 represent the driest five-consecutive years as shown in Figure 7-1.

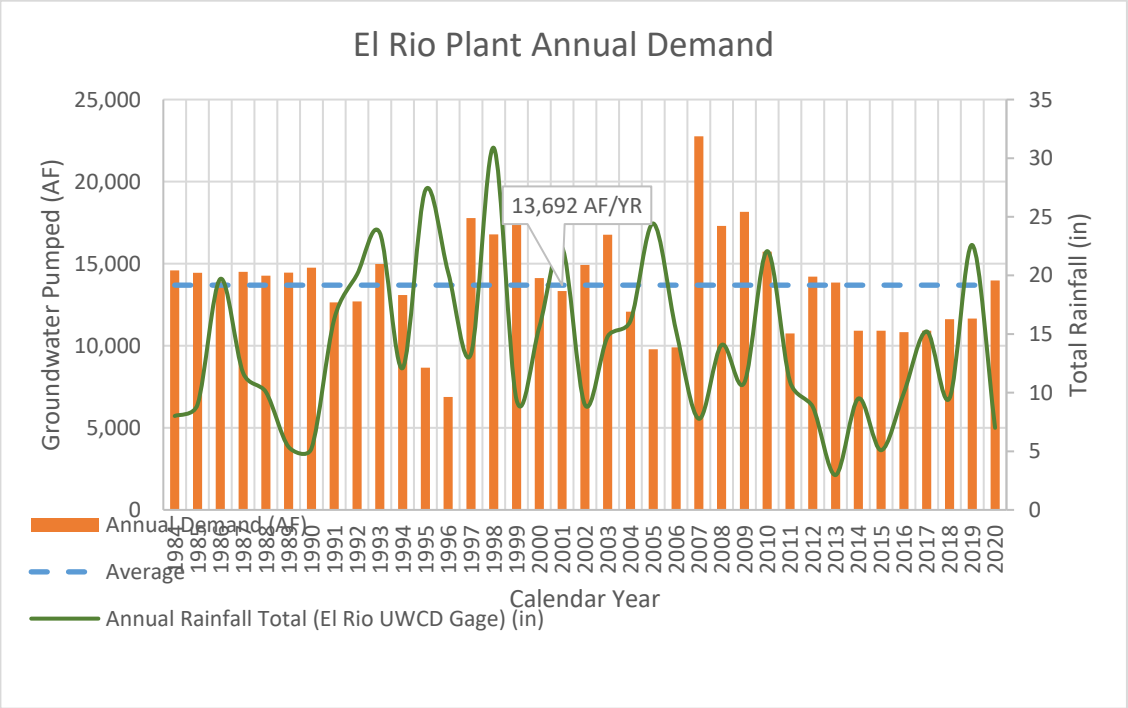

Figure 7-1 United's El Rio Plant Annual Demand (2019 and 2020 data shown is preliminary)

7.3.2 DRA Water Source Reliability

7.3.2.1 Groundwater

As discussed in Chapter 6, the FCGMA has adopted *The Ordinance to Establish an Allocation System for the Oxnard and Pleasant Valley Groundwater Basins*. The allocation system reduced United's annual allocation and therefore it is anticipated purveyors will be required to reduce their consumption and obtain supplies from other sources available to them. In future multiple-dry years, United anticipates reducing its OH System purveyor allocations accordingly.

7.3.2.2 Imported Water

The largest purveyors relying on the OH System also receive water from Calleguas, which is a member agency of the Metropolitan Water District of Southern California (MWD). The OH System purveyors purchase imported surface water from Calleguas, which in turn purchases SWP water from MWD. Imported water supply originates in Northern California and is conveyed over 500 miles to Southern California through the SWP's system of reservoirs, aqueducts, and pump stations. Water is filtered and disinfected at MWD's Joseph Jensen Filtration Facility in Granada Hills. Calleguas receives the treated water via MWD's West Valley Feeder and Calleguas' three-mile-long tunnel through the Santa Susana Mountains. Calleguas either stores the treated water in Lake Bard or feeds the water directly to the Calleguas Springville Reservoir near Camarillo. Although Calleguas has served the needs of its members, without fail, except for a few days following the 1994 Northridge Earthquake, MWD and Calleguas have implemented a Water Supply Allocation Plan which limits the quantity of water its

purveyors can receive without significant financial penalties. Both MWD and Calleguas are implementing a variety of programs to increase the reliability of imported water deliveries. Both MWD and Calleguas, due to their historical performance and scope of operations, have provided, and will continue to provide, a reliable source of water to the largest OH System purveyors.

As discussed previously in Section 6.2, United does not purchase or import water for the OH System on a regular basis for its direct supply to purveyors. United does purchase SWP water on an annual basis to recharge the groundwater basins to supplement the water that is naturally available within the Santa Clara River watershed.

7.3.3 Total Water Supply and Use Comparison

In accordance with Water Code Section 10612, the DRA evaluation is based on the five driest consecutive years on record which is 2010-2014 for United. The code requires considerations for plausible changes in climate, regulations, and other locally applicable criteria. As noted previously, the FCGMA has adopted an ordinance to establish an allocation system for the Oxnard and Pleasant Valley Groundwater Basins. This evaluation includes changes in climate, regulations, and hydraulic modeling specific to the regions United serves. Table 7-5 provides an assessment of water use over next five years versus water supply. The reduction in supply as a result of the allocation reductions for each subsequent year has also been accounted for in Table 7-5. See 6.2.9.2 and 4.2.6 for background on projected supply and demand values represented here.

DRAFT Submittal Table 7-5: Five-Year Drought Risk Assessment Tables to address Water Code Section 10635(b)

2021	Total
Gross Water Use	14,244
Total Supplies	14,244
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	0

2022	Total
Gross Water Use [Use Worksheet]	13,871
Total Supplies [Supply Worksheet]	13,871
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	

WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	0

2023	Total
Gross Water Use [Use Worksheet]	13,499
Total Supplies [Supply Worksheet]	13,499
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	0%

2024	Total
Gross Water Use [Use Worksheet]	13,127
Total Supplies [Supply Worksheet]	13,127
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	0%

2025	Total
Gross Water Use [Use Worksheet]	12,755
Total Supplies [Supply Worksheet]	12,755
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	0%

Chapter 8: Water Shortage Contingency Plan

As part of its UWMP, Water Code Section 10632 requires Suppliers to prepare and adopt a Water Shortage Contingency Plan (WSCP). The WSCP draws upon lessons learned from the 2012-2016 drought, California's driest period on record. The following discussion presents the various stages and basis for implementation. For the detailed WSCP, see Appendix E.

8.1 Water Supply Reliability Analysis

The primary source of water for the United OH system is the Oxnard Basin. The groundwater basin is managed by the FCGMA who sets allocations for each pumper. United's allocations were provided in Chapter 6.

8.2 Annual Water Supply and Demand Assessment Procedures

Pursuant to CWC Section 10632(a)(2), United must include in its WSCP the procedures used for conducting an annual Water Supply and Demand Assessment (Annual Assessment). The Annual Assessment is a determination of the near-term outlook for supplies and demands and how a perceived shortage may relate to WSCP response actions. This determination is based on information available to United at the time of the analysis. Starting in 2022, the Annual Assessment will be due on or before July 1 of each year.

The Annual Assessment and related reporting are to be conducted based on the supplier's procedures described in the WSCP. The Annual Assessment determination will be based on considerations of available water supplies, unconstrained water demand, planned water use, and infrastructure conditions. The balance between projected core water supplies and anticipated unconstrained demand will be used to determine what, if any, shortage stage is expected under the WSCP framework.

8.3 Six Standard Water Shortage Stages

Water Code Section 10632 (a)(3)(B) authorizes Suppliers to continue using their own water shortage levels that may have been included in past WSCPs. United follows, and is dependent upon, the actions taken by the FCGMA. Table 8-1 presents a crosswalk between the FCGMA imposed stages and the six standard stages.

Table 8-1: Water Shortage Contingency Plan Levels		
Shortage Level	**Percent Shortage Range**	**Water Supply Condition**
1	Up to 10%	Up to 10% reduction in groundwater allocation imposed by the FCGMA
2	Up to 20%	Up to 20% reduction in groundwater allocation imposed by the FCGMA
3	Up to 30%	Up to 30% reduction in groundwater allocation imposed by the FCGMA
4	Up to 40%	Up to 40% reduction in groundwater allocation imposed by the FCGMA
5	Up to 50%	Up to 50% reduction in groundwater allocation imposed by the FCGMA
6	>50%	Greater than 50% reduction in groundwater allocation imposed by the FCGMA

8.4 Shortage Response Actions

The following section specifies the types of shortage response actions that may be undertaken before and during a shortage declaration. The actions will align with FCGMA allocation ordinances and emergency agreements and the WSCPs prepared by United's retail suppliers, the City of Oxnard and Port Hueneme Water Agency. Table 8-2 below provides a summary of the shortage stage and the suite of response actions United may take.

Table 8-2: Demand Reduction Actions				
Shortage Level	Demand Reduction Actions ***Drop down list*** *These are the only categories that will be accepted by the WUEdata online submittal tool. Select those that apply to you.*	How much is this going to reduce the shortage gap? *Include volume units used.*	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement? *Drop Down List*
Add additional rows as needed				
1-6	Expand Public Information Campaign	up to 20 percent		No
1-6	Other	0 to >50 percent	In accordance with the OH Users agreement and United's Board Policy for the OH System, United will coordinate with FCGMA and the OH Users to reduce allocations imposed by FCGMA to users.	No[1]

NOTES:

1) Penalties for water delivered above allocation is subject to penalties imposed by FCGMA. Following any allocation reduction imposed by FCGMA, OH System allocation limits would be adjusted accordingly.

8.5 Monitoring and Reporting

Monitoring and reporting key water use metrics is fundamental to water supply planning and management. Monitoring is also essential to ensure that the response actions are achieving their intended water use reduction purposes, or if improvements or new actions need to be considered. United will monitor and report on implementation of its WSCP.

On a monthly basis, United staff generate a technical report detailing the forebay available storage levels. This data is used to measure the effectiveness of any water shortage contingency stage that may be implemented. As stages of water shortage are declared by FCGMA, the District will follow implementation of those stages and continue to monitor water demand levels. United's Board reserves its right to undertake future actions in support of water conservation as authorized by law, including but not limited to declaration of a water shortage emergency, the filing of judicial actions concerning the ownership or use of water within the service area, and the enactment of ordinances for the operation of OH facilities.

8.6 Plan Adoption, Submittal, and Availability

The United WSCP was developed and is included in this UWMP and shall be made available to its purveyors and any city or county within which it provides water supplies no later than 30 days after adoption. Below is a description of how the WSCP will be adopted, submitted, implemented, and amended. The information provided is similar to the UWMP adoption, submittal and implementation process provided in Chapter 10. The WSCP may be periodically amended independently of the UWMP, as needed (see section 8.9 for detail).

To adopt this WSCP or amend, the following actions will be completed:

- *Notice of public hearing notifying the cities, counties, and the general public 60 day prior. The public hearing must be noticed in a local newspaper for two successive weeks (14 calendar days), at least two times, with at least five days between publication dates, as prescribed in Government Code section 6066. This notice must include time and place of hearing, as well as the location where the plan is available for public inspection.*
- *The public hearing may take place at the same meeting as the adoption hearing of the governing board. If a Supplier chooses to combine these meetings, the agenda must include the public hearing as an agenda item.*
- *Submit to DWR for review and make the WSCP available for the public on their website: https://www.unitedwater.org/.*

Chapter 9: Demand Management Measures

This section describes United's Demand Management Measures.

9.1 Demand Management Measures for Wholesale Suppliers

As a wholesale agency, United is required to describe four demand management measures: 1) metering, 2) public education and outreach, 3) water conservation program coordination and staffing support, and 4) other demand management measures. As a wholesale supplier, United is also required to discuss their asset management program and supplier assistance programs.

9.1.1 Metering

United's OH System and groundwater wells are fully metered, as well as the discharge pipeline from the treatment facility. Meters are changed out as they age as part of United's maintenance program. A regular calibration program is in place to ensure meters are operating within acceptable ranges of accuracy for the specific type of meter.

9.1.2 Public Education and Outreach

United actively participates in regional public education and outreach programs, including an annual water symposium, tours of regional water facilities, and presentations to interested stakeholders. The budget for fiscal year 2021-2022 and beyond will include specific line items for public outreach, and United intends to increase its efforts in this area.

United does not have a structured outreach program at this time. United will assist its retail agencies upon request by distributing water conservation materials for programs offered by the retail suppliers.

9.1.3 Water Conservation Program Coordination and Staffing Support

United does not employ a full- or part-time Water Conservation Coordinator. Instead, the duties are shared among several staff members including planners, engineers, and the policy analyst. Tours are provided by the Operations Division staff as they are the most knowledgeable about the facilities. United's largest purveyors employ conservation staff.

United does have a water use efficiency page on their website and provides educational materials to those who request information. Website here: https://www.unitedwater.org/water-use-efficiency/

9.1.4 Other Demand Management Measures

There are not any additional demand management measures to report for United.

9.1.5 Asset Management

United's existing operations and maintenance activities for the OH System include regular replacement of anodes, a valve exercise program, replacement of blind flanges, and meter change-outs. United also has a well replacement program. Every year, Southern California Edison performs efficiency tests on the well pumps and poor performing pumps are repaired or replaced. United has invested toward a geographic information system based computerized maintenance management system (CMMS) and expects to have this updated asses management system implemented by 2022.

9.1.6 Wholesale Supplier Assistance Programs

United has relied on its retailers to implement their conservation programs and will provide assistance when requested.

9.2 Demand Management Measures for Retail Suppliers

This section is for retail suppliers and does not apply to United.

9.3 Implementation over Past Five Years

United has included budget line items for their meter replacement program of approximately $10,000 annually. As a wholesale supplier, United does not actively implement a water conservation program, but is supportive and cooperative of the efforts of its retail agencies.

9.4 Planned Implementation to Achieve Water Use Targets

This section is for retail supplies and does not apply to United.

9.5 Water Use Objectives

These objectives will not be developed until 2023, but the first report will require information on what DMMs Suppliers will implement to meet their objectives. The District is encouraged to consider aligning conservation management actions and the changing urban use patterns in order to consider these future obligations. Including this information in the 2020 UWMP will help Suppliers prepare for the future requirements.

Chapter 10: Plan Adoption, Submittal, and Implementation

Since 2015, the public process for completing the UWMP has not been revised. However, the Water Shortage Contingency Plan is a new component of the 2020 UWMP that can be amended separately from the UWMP (see Chapter 8).

10.1 Inclusion of all 2020 Data

All reported supply, demand and planning data for the year 2020 is based on a complete set of data record for the 2020 calendar year.

10.2 Notice of Public Hearing

A public meeting will be held prior to the adoption of the United's OH System UWMP. A public hearing is scheduled to be held at United's Board Room located at 1701 N. Lombard Street, Oxnard CA 93030 on May 12, 2021 to receive public comments. The public meeting will provide a platform for cities, counties, and members of the public to comment on the UWMP prior to its adoption. Notice of the public hearing was given to cities and counties within which water is supplied and to the general public. Copies of all public notices will be included in Appendix A.

10.2.1 Notification to Cities and Counties

Table 10-1 provides a summary of cities and counties that were provided with both the 60-Day Notice and Notice of Public Hearing by mail and email.

DRAFT Submittal Table 10-1 Wholesale: Notification to Cities and Counties (select one)		
☐	Supplier has notified more than 10 cities or counties in accordance with Water Code Sections 10621 (b) and 10642. **Completion of the table below is not required. Provide a separate list of the cities and counties that were notified.**	
	Provide the page or location of this list in the UWMP.	
☑	Supplier has notified 10 or fewer cities or counties. **Complete the table below.**	
City Name	60 Day Notice	Notice of Public Hearing
Add additional rows as needed		
Oxnard	☑	☑
Port Hueneme	☑	☑
Channel Island Beach	☑	☑
County Name *Drop Down List*	60 Day Notice	Notice of Public Hearing
Add additional rows as needed		
Ventura County	☑	☑
	☐	☐
NOTES:		

Table 10-1 will be fully completed following the Notices made to the Public, Cities, County, and Stakeholders. The list of those notified will be similar to Table 2-4, and those listed in 2.6.2 and 2.6.3.

10.2.2 Notice to the Public

Prior to holding the public hearing and adoption meeting for this UWMP, two Notices of Public Hearing will be published in a local newspaper, with at least five intervening days between each notice. Copies of the public notices will be included in Appendix B.

10.3 Public Hearing and Adoption

A public meeting is scheduled to be held at United's Board Room located at 1701 N. Lombard Street, Oxnard CA 93030 on May 12, 2021 to receive public comments.

A copy of the Board Adoption Resolution for this UWMP will be included in Appendix C.

10.4 Plan Submittal

2020 UWMPs must be submitted to DWR within 30 days of adoption and by July 1, 2021. Upon completion of the Plan review, DWR will issue a letter to the Supplier with the results of the review.

10.5 Public Availability

Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours. The adopted 2020 UWMP for the OH system will be made publicly available on United's website https://www.unitedwater.org/.

10.6 Amending an Adopted UWMP

If a Supplier amends an adopted UWMP, each of the steps for notification, public hearing, adoption, and submittal must also be followed for the amended plan.

APPENDICES

Appendix A Notification Letters (Blank in draft document)

Appendix B Public Notification (Blank in draft document)

Appendix C Adoption Resolution (Blank in draft document)

Appendix D 2015 Ventura County Multi Hazard Mitigation Plan (Blank in draft document)

Available here:

http://www.vcfloodinfo.com/resources/ventura-county-hazards-mitigation-plan

Appendix E Water Shortage Contingency Plan (Blank in draft document)

Available here:

https://www.unitedwater.org/key-documents/#water-supply

Appendix F DWR UWMP Checklist (Blank in draft document)