Appendix 5.11

Water Supply

Appendix 5.11a

Water Supply Assessment

RESOLUTION NO. SCV-279

RESOLUTION OF THE BOARD OF DIRECTORS OF THE SANTA CLARITA VALLEY WATER AGENCY ADOPTING THE SB 610 WATER SUPPLY ASSESSMENT FOR THE ENTRADA SOUTH/VALENCIA COMMERCE CENTER (VTTM No. 53295 & VTPM No. 18108)

WHEREAS, the Santa Clarita Valley Water Agency (SCVWA) provides retail water service to portions of the City of Santa Clarita and to unincorporated portions of Los Angeles County in the Santa Clarita Valley; and

WHEREAS, the SCVWA is a "public water system" as defined by California Government Code section 66473.7(a)(3) and California Water Code section 10912 and may receive requests from time to time to prepare a Water Supply Assessment pursuant to Water Code section 10910 et seq. (commonly referred to as SB 610) and/or a Water Supply Verification pursuant to Government Code section 66473.7 (commonly referred to as SB 221); and

WHEREAS, the SCVWA received a request from the Department of Regional Planning of the County of Los Angeles for SCVWA to prepare a Water Supply Assessment for projects within the County for Vesting Tentative Tract Map No. 53295 and Vesting Tentative Parcel Map No. 18108, otherwise referred to as the Entrada South/Valencia Commerce Center Project (the Project), where the County is the lead agency for the Project under the California Environmental Quality Act (CEQA) and the County is responsible for all land use decisions related to the Project; and

WHEREAS, the Project is within SCVWA's service area, and, therefore, SCVWA is the public water system to provide water service to the Project; and

WHEREAS, pursuant to the County's request for SCVWA to prepare a Water Supply Assessment for the Project, SCVWA has prepared a Water Supply Assessment for the Project in accordance with the requirements of Water Code section 10910 et seq.

NOW THEREFORE, BE IT RESOLVED that, the Board of Directors of SCVWA, as the governing body of the Santa Clarita Valley Water Agency, (1) has determined that all of the foregoing Recitals are true and correct and are incorporated herein and made an operative part of this Resolution; (2) has reviewed the Water Supply Assessment for the Project; (3) has determined, exercising its independent judgment, that a "sufficient water supply" is available for the Project based on the requirements of Water Code section 10910 et seq., the information and analyses contained in the Water Supply Assessment, the documentation contained in the administrative record in support of the Water Supply Assessment, and other relevant records on file with SCVWA; and (4) hereby approves the Water Supply Assessment for the Project, a copy of which is attached hereto as Exhibit 1 and incorporated herein by reference.

RESOLVED FURTHER that, the Agency's General Manager or his designee is authorized and directed to forward a copy of the approved Water Supply Assessment to the County of Los Angeles in response to the County's request, and to take any and all actions necessary in furtherance of the matters authorized or contemplated by the foregoing Resolution.

President

I, the undersigned, hereby certify: That I am the duly appointed and acting Secretary of the Santa Clarita Valley Water Agency, and that at a regular meeting of the Board of Directors of said Agency held on June 7, 2022 the foregoing Resolution No. SCV-279 was duly and regularly adopted by said Board, and that said resolution has not been rescinded or amended since the date of its adoption, and that it is now in full force and effect.

DATED: June 7, 2022

Secretary

Water Supply Assessment

Entrada South and Valencia Commerce Center Project (VTTM No. 53295 and VTPM No. 18108)

June 7, 2022

Prepared by

Santa Clarita Valley Water Agency
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List of Acronyms

AF	Acre-Feet
AFY	Acre-Feet Per Year
AIP	Agreement in Principle
AVEK	Antelope Valley East-Kern Water Agency

Bay-Delta	San Francisco Bay/Sacramento-San Joaquin Delta Estuary
BO	Biological Opinion
BVWSD	Buena Vista Water Storage District
Cal OES	California Office of Emergency Services
CASGEM	California Statewide Groundwater Elevation Monitoring
CCR	California Code of Regulations
CCWA	Central Coast Water Authority
CEC	California Energy Commission
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CEPA	California Environmental Protection Agency
CDFW	California Department of Fish and Wildlife
cfs	Cubic Feet Per Second
CII	Commercial, Industrial, Institutional
CLWA	Castaic Lake Water Agency
CNRA	California National Resources Agency
COA	Coordinated Operation Agreement
CORPS	Corps of Engineers
CVP	Central Valley Project
BPD	Disinfection By-Products
DCP	Delta Conveyance Project
DCP	Delivery Capability Report
DDW	Division of Drinking Water
DFW	Department of Fish and Wildlife
DLR	Detection Level for Reporting
DPH	California Department of Public Health
DPR	Direct Potable Reuse
DSS	Decision Support System
DTSC	Department of Toxic Substances Control
DWR	Department of Water Resources
FBR	Fluidized Bed Reactor
FWS	Fish and Wildlife Service
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
GWMP	Groundwater Management Plan

HET	High Efficiency Toilets
HEU	High Efficiency Urinals
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FBR	fluidized bed reactor
GIS	Geographic Information System
HAA5	Haloacetic Acids
KCWA	Kern County Water Agency
IRWMP	Integrated Regional Water Management Plan
LACWWD 36	Los Angeles County Water Works District 36
LARWQCB	Los Angeles Regional Water Quality Control Board
MAF	Million Acre-Feet
MGD	Million Gallons per Day
MGL	Micrograms per Liter
MOU	Memorandum of Understanding
NCWD	Newhall County Water District
NEPA	National Environmental Policy Act
Ng/L	nanograms per liter
NL	Notification Level
NLF	Newhall Land and Farming
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NOP	Notice of Preparation
NWD	Newhall Water Division
OAL	Office of Administrative Law
OVOV	One Valley One Vision
PFAS	Per- and Polyfluoroalkyl Substances
PFOA	Perfluorooctonic acid
PFOS	Perflurooctane sulfonate
PWAs	Public Water Agencies
RL	Response Level
RRBWSD	Rosedale Rio-Bravo Water Storage District
RWMP	Recycled Water Management Plan
SATP	Saugus Aquifer Treatment Plant

SB	Senate Bill
SCWD	Santa Clarity Water Division
SCVSD	Santa Clarita Valley Sanitation District
SCV Water	Santa Clarita Valley Water Agency
Semitropic	Semitropic Water Storage District
SGMA	Sustainable Groundwater Management Act
SLDMWA	San Luis & Delta Mendota Water Authority
SNMP	Salt and Nutrient Management Plan
SOC	Synthetic organic compounds
SWRCB	State Water Resources Control Board
SWP	State Water Project
SWRU	Stored Water Recovery Unit
THMS	Trihalomethanes
TTHMs	Total Trihalomethanes
TMDL	Total Maximum Daily Load
TOC	Total Organic Carbon
USCR	Upper Santa Clara River
VOC	Volatile Organic Compound
WMT	Water Management Tools
WQOs	Water Quality Objectives
WSA	Water Supply Assessment
WUESP	Water Use Efficiency Strategic Plan
ug/L	micrograms per liter
UIF	Unimpaired Flow
UWCD	United Water Conservation District
USEPA	United State Environmental Protection Agency
USBR	United States Bureau of Reclamation
UWMP	Urban Water Management Plan
UV	Ultra-Violet
WKWD	West Kern Water District
WQR	Water Quality Report
WRP	Water Reclamation Plant
VWC	Valencia Water Company
VWD	Valencia Water Division

Section 1: Introduction

1.1 Background

This Water Supply Assessment (WSA) has been prepared by the Santa Clarita Valley Water Agency (SCV Water) for the Entrada South and Valencia Commerce Center Project (VTTM No. 53295 and VTPM No.18108) (Project), a residential community with commercial space located in unincorporated Los Angeles County, in the Santa Clarita Valley. The WSA is prepared pursuant to the requirements of California Water Code Sections 10910, et seq., commonly known as Senate Bill 610 (SB 610; Costa; Chap. 643, Stats. 2001) and has been further amended from time to time.

SB 610 amended state law, effective January 1, 2002, to improve the link between information on water supply availability and certain land use decisions made by cities and counties. SB 610 requires that the water purveyor of a public water system prepare a water supply assessment to be included in the environmental documentation of certain proposed projects.

Once a city or county determines that a project, as defined by California Water Code section 10912, is subject to the California Environmental Quality Act, Public Resources Code section 21000, et seq. (CEQA), SB 610 requires the city or county to identify a public water system that may supply water for the project, and request that the public water system prepare a water supply assessment.[1]

A “public water system” is defined by the Water Code to mean “a system for the provision of piped water to the public for human consumption that has 3,000 or more service connections.” SCV Water serves piped water to the public (i.e., residents of the Santa Clarita Valley) within its current service area, and the area includes about 73,542 service connections in the City of Santa Clarita and in the unincorporated Los Angeles County communities. As a result, SCV Water is the “public water system” for the purposes of this WSA.

As noted above, a WSA is required for any “project” as defined by Water Code Section 10912 that is subject to CEQA. In this case, the Project proposes, among other things, a residential development of more than 500 dwelling units, and therefore a WSA is required.[2] SCV Water is the retail purveyor for the Project site, and thus SCV Water is required to prepare a WSA for the Project, pursuant to a request by CEQA lead agency the County of Los Angeles.[3]

1.2 Purpose

The general purpose of a WSA is to evaluate the following question:

> *Whether the public water system’s total projected water supplies available during normal, single-dry, and multiple-dry water years during a 20-year projection will meet the*

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1 California Water Code §§ 10910(b), 10910(c)(1).

2 Water Code § 10912(a)(1). This section also includes other types of development that are defined as a “project” by this section of the code.

3 Water Code § 10910(b).

projected water demand of the Project, in addition to the public water system's existing and planned future uses, including agricultural and manufacturing uses.[4]

If, as a result of its WSA, the public water system concludes that its water supplies are or will be insufficient, the public water system must provide to the applicable land use authority its plans for acquiring additional water supplies, setting forth the measures being undertaken to acquire and develop those supplies.[5] The WSA must include, among other information, an identification of any existing water supply entitlements, water rights, or water service contracts relevant to the identified water supply for the project, and water received in prior years by the public water system pursuant to those entitlements, rights, or contracts.[6]

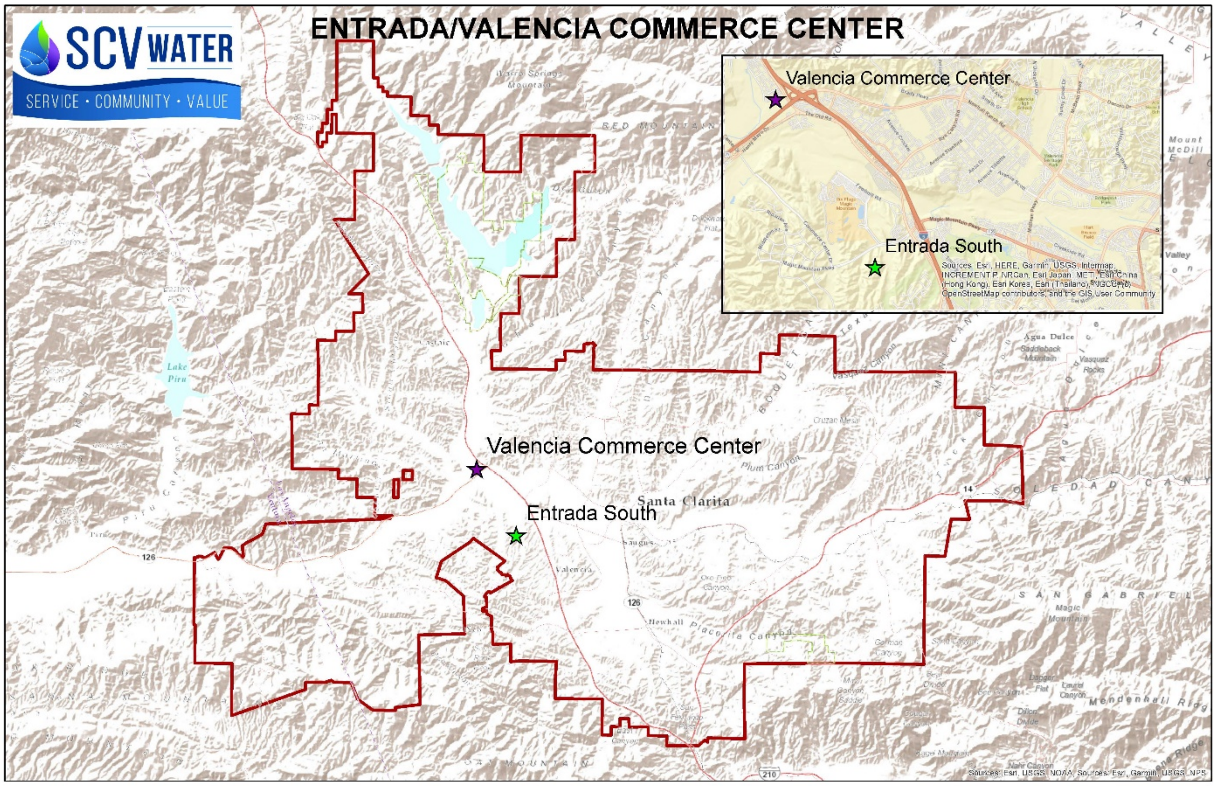
The WSA is required to be included in any environmental document prepared for the project pursuant to CEQA.[7] In this case, the County of Los Angeles is the lead agency under CEQA, and it has determined that a Supplemental Environmental Impact Report (EIR) is required for the Project; thus, this WSA will be included as part of the Entrada South and Valencia Commerce Center Project Draft Supplemental EIR. This WSA evaluates water supplies that are or will be available during normal, single-dry, and multiple-dry water years during a 30-year projection to meet existing demands, expected demands of the Project, and reasonably foreseeable planned future water demands served by SCV Water.

1.3 Project Description

The Entrada South Project (VTTM No. 53295) is located on the west side of the Old Road between Valencia Blvd. and Magic Mountain Parkway in unincorporated Los Angeles County. The Valencia Commerce Center Project (VTTM No. 18108) is located on the west side of The Old Road between State Hwy 126 and Commerce Center Drive, also in unincorporated Los Angeles County in the State of California. The Project is located within SCV Water's service area as shown in Figure 1-1. The Entrada South Project is located on 127.2 acres for residential and mixed-use land uses and 312.4 acres for recreation, arterial and open space land uses. The Entrada South Project consists of 371 multi-family detached residential units, 894 multi-family attached residential units and 309 mixed-use attached residential units as well as 582,025 square feet of mixed-use commercial, a 100-room hotel, a 750-student elementary school, 8.3-acre community park, 53.7 acres of irrigated slopes, 4.1 acres of irrigated medians and parkways and 119.1 acres of open space. The Valencia Commerce Center Project is located on 328.7 acres for commercial land uses. The Valencia Commerce Center Project consists of 2,909,700 square feet of mixed-use office development on 101.3 acres, 490,300 square feet of commercial retail and business park development on 17.1 acres, 41.8 acres of irrigated slopes, 0.5 acres of irrigated medians and parkways and 168 acres of open space. The total estimated water demand for the Project at build-out is approximately 1,411 AFY in an average/normal year. The Project Site Plan is shown in Appendix A.

4 Water Code § 10910(c).
5 Water Code § 10911(a).
6 Water Code § 10910(d).
7 Water Code § 10911(b).

Figure 1-1 Project Location Map



1.4 Santa Clarita Valley Water Agency

SCV Water is located in the northwestern portion of Los Angeles County. SCV Water is the regional water wholesaler and retailer for the Santa Clarita Valley. The Project site is located within SCV Water's service area and therefore, SCV Water is the water supplier for the Project.

SCV Water's service area includes nearly the entire city of Santa Clarita and unincorporated portions of Los Angeles County. SCV Water's current service area includes a mix of residential and commercial, and light industrial land uses, mostly comprised of single-family homes, apartments, condominiums, and several local shopping centers and neighborhood commercial developments. SCV Water serves approximately 73,542 service connections. SCV Water generally meets potable water demands using a mix of local groundwater, banked groundwater supplies, imported State Water Project (SWP) water and other imported supplies. Recycled water is delivered to some customers for non-potable uses, such as landscape irrigation.

The groundwater basin in the Santa Clarita Valley is un-adjudicated, meaning that SCV Water does not have specific adjudicated, or defined, water rights or specific limitations that dictate its water supply. However, in practice, SCV Water assesses available groundwater supplies pursuant to appropriative groundwater rights in the basin and in accordance with a groundwater operating plan developed by SCV Water and other retail water purveyors in the Santa Clarita Valley and complemented by analyses based on a numerical groundwater flow model of the basin. SCV Water is also a member of the Santa Clarita Valley Groundwater Sustainability Agency (SCV-GSA) for the Santa Clara River East Subbasin. In preparing the basin's Groundwater Sustainability Plan (GSP), it conducted additional numeric modeling that further refined the groundwater operating plan for the basin as further discussed in Section 3.3.2.1.

1.4.1 Water Management Within SCV Water

SCV Water was formed on January 1, 2018, when the Castaic Lake Water Agency (CLWA), which included Santa Clarita Water Division (SCWD) and Newhall County Water District (NCWD), merged to become a single agency pursuant to state legislation (SB 634, Chapter 833 2017). Later in January 2018, Valencia Water Company (VWC) was dissolved, and its assets were transferred to SCV Water. The SCV Water service area is shown on Figure 1-1. The formation of SCV Water occurred through a collaborative process. Until the merger, CLWA served as the regional wholesaler to the Santa Clarita Valley, encompassing a service area of 195 square miles in Los Angeles and Ventura Counties. SCV Water now serves the same service area and is made up of three water divisions with separate but interconnected distribution systems: NWD, SCWD, and VWD. Those divisions cover nearly the entire City of Santa Clarita and unincorporated portions of Los Angeles County. In addition, SCV Water serves as a wholesale water provider to LACWWD 36 whose service area includes the Hasley Canyon and the Val Verde communities in the Los Angeles County unincorporated area. LACWWD 36, which is in the SCV Water service area, relies primarily on its own groundwater. SCV Water provides imported water as a supplemental supply.

1.5 2020 Urban Water Management Plan

Pursuant to SB 610 requirements, if the projected water demand associated with the proposed project was accounted for in the most recently adopted Urban Water Management Plan (UWMP),[8] then relevant information from that document may be incorporated into the WSA. The 2020 UWMP was adopted by the SCV Water Board of Directors in June 2021 and filed with DWR.[9] It is noted that since the 2020 UWMP was submitted to DWR in 2021, additional information has become available which staff incorporated into this WSA. These updates primarily reflect revised SWP reliability data, that became available from the December 31, 2021 Draft SWP Delivery Capability Report (DCR) (see Section 3.2.7 SWP Water Supply Estimate).as well as updated planning, construction and permitting schedule for several groundwater well recovery projects (see Section 3.3.2.3 Available Groundwater Supplies) The 2020 UWMP information was therefore updated to provide the SCV Water Board with the most current information when it considers adoption of this WSA.

The 2020 UWMP is a planning document covering the SCV Water service area. The 2020 UWMP encouraged extensive public participation that included information dissemination; public workshops, meetings, and hearings; plan adoption; and plan submittal to DWR. The 2020 UWMP includes the following ten major sections:

Section 1: Introduction
Section 2: Water Use

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8 California Urban Water Management Planning Act (UWMP Act), Water Code § 10610, et seq.
9 The 2020 UWMP, Section 1.

Section 3: SBX7-7 Baseline, Targets, and 2020 Compliance
Section 4: Water Resources
Section 5: Recycled Water
Section 6: Water Quality
Section 7: Reliability Planning
Section 8: Demand Management Measures
Section 9: Catastrophic Interruptions in Water Service
Section 10: References

Consistent with the UWMP Act, the 2020 UWMP accomplishes water supply planning over the required 20-year period in five-year increments. While not required, SCV Water exceeded the requirements of the UWMP Act by including a span of 30 years in the 2020 UWMP, extending out to 2050. The 2020 UWMP identifies and quantifies adequate water supplies for existing and future demands, in normal/average, single-dry, and multiple-dry years, and describes implementation of conservation and efficient use of urban water supplies.

The Project's total projected water demand was accounted for in the 2020 UWMP because the Project demand details were known when preparing the document. Also, in order to estimate demand out to 2050 (assumed year of designated land use-buildout), population and water use projections were made based upon existing land uses and planned land use development compiled for the service area, including the City of Santa Clarita and County of Los Angeles land use plans, also known as the One Valley One Vision general plan (OVOV). The Project is located in the unincorporated area of LA County covered by the OVOV. It is SCV Water's understanding that this development is contained in and consistent with the OVOV plan. As the UWMP is based on the housing and commercial development projected in the OVOV plan, the project's water demand has already been incorporated into the existing UWMP demand projections. This information is incorporated by reference in this WSA and can be found on SCV Water's website at https://yourscvwater.com/uwmp/. Demands for the Project are included in Section 2.3 of this WSA.

1.6 SCV Water Policies and Regulatory Approvals/Permits

SCV Water Policies. The Project will be subject to all SCV Water policies that govern development and connection to the SCV Water public water system. As with other projects within its service area, the Project applicant is responsible for making appropriate financial and contractual arrangements with SCV Water to assure the necessary improvements are made to the water supply infrastructure to serve the Project site.

Other Regulatory Approvals/Permits. SCV Water is regulated by the State Water Resources Control Board – Division of Drinking Water (DDW) and must meet rigorous water quality standards. In addition, the Project is located in unincorporated Los Angeles County, therefore LA County will evaluate the Project, conduct extensive environmental oversight, and review, and independently determine the sufficiency of the water supplies to serve the Project site. (Water Code § 10911(b)-(c).) In doing so, the County will determine if the Project will be provided with an acceptable level of water supply based on the criteria set forth in the County's General Plan, because the Project is located within the Santa Clarita Valley, and because it includes a subdivision map application. In making this determination, the County may use water-related data set forth in documents such as the 2020 UWMP and other information provided by SCV Water.

1.7 Information Used or Relied Upon in Preparing this WSA

This WSA used or relied on information contained in the documents listed below. Documents may be available online or by contacting the SCV Water - Water Resources Department at (661) 297-1600. The documents are part of SCV Water's record for the preparation of this WSA.

- California Department of Water Resources, 2021 Draft State Water Project Delivery Capability Report
- California Department of Water Resources 2019 State Water Project Delivery Capability Report
- California Department of Water Resources. 2018. Delta Flood Emergency Plan.
- California Department of Water Resources. 2018a. Guidance for Climate Change Data Use During Groundwater Sustainability Plan Development
- California Department of Water Resources. November 2011. "Climate Change Handbook for Regional Water Planning"
- California Department of Water Resources, 2016. Bulletin 118 – Update 2016
- California Department of Water Resources and the Army Corps of Engineers, 2019. Delta Emergency Integration Plan.
- California Department of Water Resources Climate Change Technical Advisory Group (CCTAG). 2015. Producing Scientific and Strategic Guidance for California's Department of Water Resources
- California Division of Drinking Water, November 1997. Policy Memo 97-005: Policy Guidance for Direct Domestic Use of Extremely Impaired Sources
- California Ocean Protection Council. 2018. Sea-Level Rise Guidance
- California Office of Emergency Services (Cal OES). 2018. Northern California Catastrophic Flood Response Plan
- California State Water Resources Control Board, 2000. Revised Water Right Decision 1641
- Carollo Engineers, June 2015. Santa Clarita Valley Water Agency Water Resources Reconnaissance Study
- CH2M Hill, 2004a. Regional Ground water Flow Model for the Santa Clarita Valley, Model Development and Calibration
- CH2M Hill, 2004 b. Analysis of Perchlorate Containment in Ground water Near the Whittaker-Bermite Property, Santa Clarita, California, Prepared in support of the 97-005 Permit Application
- CH2M Hill, 2005a. Technical Memorandum, Calibration Update of the Regional Ground Water Flow Model for the Santa Clarita Valley, Santa Clarita, California
- CH2M Hill and Luhdorff & Scalmanini, Consulting Engineers, 2005. Analysis of Ground Water Basin Yield, Upper Santa Clara River Groundwater Basin, East Subbasin, Los Angeles County, California, prepared for Upper Basin Water Purveyors
- Geoscience. 2014. Salt and Nutrient Management Plan for the Upper Santa Clara River Groundwater Basin Volumes 1 and 2
- Geosyntec Water Supply Reliability Plan, 2021

- GSI Water Solutions (GSI), Inc. 2022. Santa Clara River Valley East Groundwater Sustainability Plan
- GSI Water Solutions (GSI), Inc. 2020a. Water Budget Development for the Santa Clara River Valley East Groundwater Subbasin, Draft Technical Memorandum
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- GSI & LSCE. 2014. Draft Report: Perchlorate Containment Plan for Well V201 and Saugus Formation Groundwater in the Santa Clarita Valley (Task 3 of the Well V201 Restoration Program)
- Kennedy/Jenks Consultants. 2021. Santa Clarita Valley Water Agency Groundwater Treatment Implementation Plan
- Kennedy/Jenks Consultants. 2021. Santa Clarita Valley 2020 Urban Water Management Plan
- Kennedy/Jenks Consultants. 2002. Recycled Water Master Plan Update
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- Kennedy/Jenks Consultants. 2016b. Santa Clarita Valley Recycled Water Rules and Regulations Handbook
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- Luhdorff & Scalmanini, Consulting Engineers, 2021. 2020 Santa Clarita Valley Water Report
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- Luhdorff and Scalmanini, 2005. Consulting Engineers, Impact and Response to Perchlorate Contamination, Valencia Water Company Well Q2, prepared for Valencia Water Company
- Luhdorff & Scalmanini, Consulting Engineers, December 2003. Ground Water Management Plan for the Santa Clara Valley Ground Water Basin, East Subbasin
- M&N. 2007. Levee Repair, Channel Barrier, and Transfer Facility Concept Analyses to Support Emergency Preparedness Planning
- Maddaus Water Management (MWM), Inc. 2021. Draft 2021 SCV Demand Study: Land-Use-Based Demand Forecast Analysis
- Maddaus Water Management (MWM), Inc. 2016. SCV Demand Study Update: Land-Use Based Demand Forecast, Final Technical Memorandum No.2
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- Santa Clarita Valley Water Agency (SCVWA). 2021. Final Water Shortage Contingency Plan
- Santa Clarita Valley Water Agency (SCVWA), July 2015. Castaic Lake Water Agency 2015 Strategic Plan, 2017 Addendum
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- Wang, Jianzhong, Hongbing Yin, Erik Reyes, Tara Smith, Francis Chung (California Department of Water Resources). 2018. Mean and Extreme Climate Change Impacts on the State Water Project. California's Fourth Climate Change Assessment. Publication number: CCCA4-EXT-2018-004
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- Santa Clarita Valley Water Agency State Water Contract with the Department of Water Resources (DWR)
- Santa Clarita Valley Water Agency 2014, Agreement in Principle with the Department of Water Resources for extension of contracts, September 12, 2014
- Department of Water Resources Contract Extension Amendment, February 2019
- Santa Clarita Valley Water Agency 2015, Agreement with Ventura County for use of their Flexible Storage Account
- Department of Water Resources Coordinated Operations Agreement with the Bureau of Reclamation, 1986
- Department of Water Resources Addendum to the Coordinated Operations Agreement with the Bureau of Reclamation, December 2018
- Santa Clarita Valley Water Agency Transfer Agreement with Buena Vista Water Storage District and Rosedale Rio Bravo Water Storage District
- Santa Clarita Valley Water Agency 2018, Yuba Accord Agreement
- Santa Clarita Valley Water Agency Two-for-One Water Exchange Program with Antelope Valley-East Kern Water Agency (AVEK), 2019

- Santa Clarita Valley Water Agency Two-for-One Water Exchange Program with United Water Conservation District, 2019
- Santa Clarita Valley Water Agency Agreement with Semitropic Water Storage District for participation in the Storage Water Recovery Unit (SWRU), 2015
- Santa Clarita Valley Water Agency Water Banking and Exchange Program Agreement with Rosedale Rio Bravo Water Storage District, 2005-2015
- Santa Clarita Valley Water Agency contract with the Santa Clarita Valley Sanitation District
- Santa Clarita Valley Water Agency, Biennial Budget for FY 2021/22, and FY 2022/23

Section 2: Historical and Projected Water Demands

This section describes historical and projected water use in the SCV Water service area and the methodology used to project future demands within SCV Water service area. In order to estimate demand out to 2050 (assumed year of designated land use-buildout), population and water use projections were made based upon existing land uses and planned land use development compiled for the service area, including the City of Santa Clarita and County of Los Angeles land use plans, also known as the One Valley One Vision general plan (OVOV). The Project is located in the unincorporated area of Los Angeles County covered by the OVOV. It is SCV Water's understanding that this development is contained in and consistent with the OVOV plan. As the UWMP is based on the housing and commercial development projected in the OVOV plan, the Project's water demand has already been incorporated into the existing UWMP demand projections. In addition, weather and water conservation effects on water usage were considered for this WSA consistent with the approach of the 2020 UWMP.

2.1 Existing and Projected SCV Water Demands

As part of the 2020 UWMP update, an analysis was performed that combined growth projections with water use data to forecast total water demand in future years. Water uses were broken out into specific categories and assumptions were made to accurately project water use over the next 30 years. The demand projections include econometric modeling and plumbing code changes and assume that water conservation programs will continue to be implemented. Climate change impacts on demands were assessed and incorporated in the demand projections. These projections were based on the 2021 Maddaus Technical Memorandum, which serves as the land-use demand forecast for SCV Water and its service area. The historical potable water demands for SCV Water's service area are shown in Table 2-1 and graphically in Figure 2-1. The current water use in SCV Water's service area (2020) is shown in Table 2-2.

TABLE 2-1 HISTORICAL WATER USE IN THE SCV WATER SERVICE AREA (AF)[(a)]

Year	SCV Water	LACWWD 36[(b)]	Total
1995	45,196	477	45,673
1996	49,614	533	50,147
1997	53,388	785	54,173
1998	48,280	578	48,858
1999	56,596	654	57,250
2000	60,188	800	60,988
2001	59,784	907	60,691
2002	67,156	1,069	68,225
2003	66,272	1,175	67,447
2004	71,062	1,234	72,296
2005	69,568	1,200	70,768
2006	72,837	1,289	74,126
2007	76,086	1,406	77,492
2008	74,546	1,354	75,900

2009	68,731	1,243	69,974
2010	62,925	1,141	64,066
2011	63,633	1,172	64,805
2012	68,447	1,265	69,712
2013	72,164	1,296	73,460
2014	66,936	1,242	68,178
2015	53,515	976	54,491
2016	56,916	1,050	57,966
2017	62,461	1,094	63,555
2018	64,011	1,209	65,220
2019	59,098	979	60,077
2020	64,734	1,262	65,996
2021[(c)]	67,470	1,244	68,714

Source: 2019 Santa Clarita Valley Water Report (July 2020) and 2020 and 2021 data provided by SCV Water and LACWWD 36

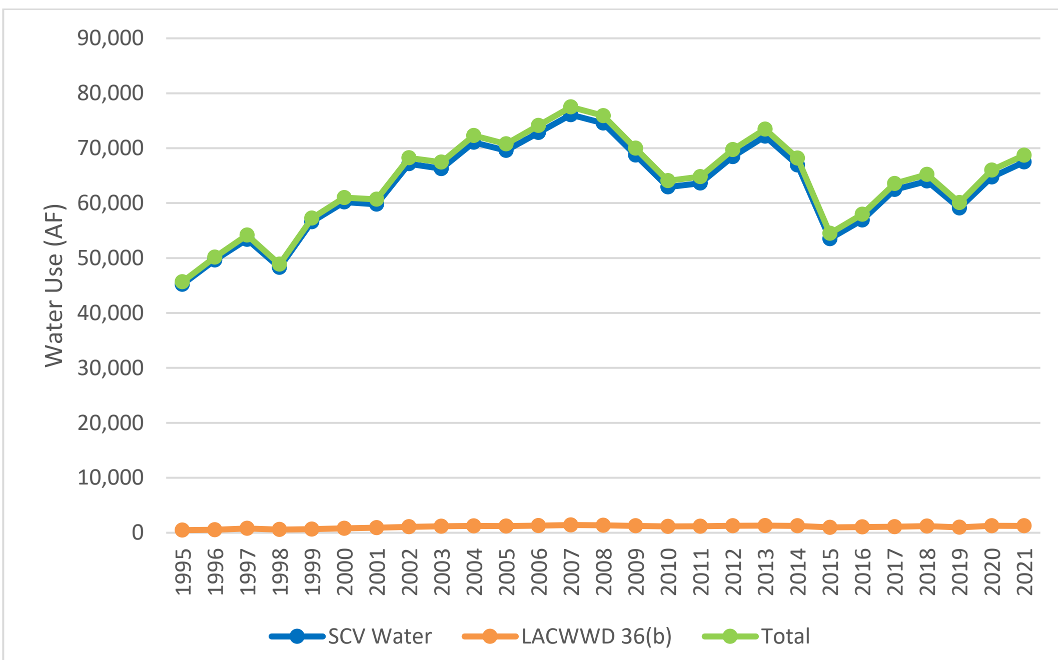
Notes:

(a) Total potable and non-potable water use.

(b) LACWWD 36 is included for purposes of providing regional completeness; however, it is not required to prepare an UWMP.

(c) Does not include required groundwater discharge to the stormwater system during initial operation at multiple SCV Water Groundwater Treatment Facilities.

FIGURE 2-1 Historical Water Use in the SCV Water Service Area (AF)



Source: 2019 Santa Clarita Valley Water Report (July 2020) and 2020 and 2021 data provided by SCV Water and LACWWD 36.

Note: Water use shown here includes potable and non-potable (recycled water) use. Recycled water makes up less than 1 percent of total use.

TABLE 2-2
SUMMARY OF WATER SUPPLIES USED IN 2020 (AF)

	2021[a]
Existing Groundwater	
Alluvial Aquifer	14,067
Saugus Formation	11,478
Total Groundwater[b]	**25,545**
Recycled Water	
Total Recycled	**480**
Imported Water	
State Water Project	7,510
Buena Vista-Rosedale	9,685
Yuba Accord Water	1,253
SWC Dry Year Transfer Program	208
Total Imported	**18,656**
Existing Banking and Exchange Programs	
Rosedale Rio-Bravo Bank	16,320
Semitropic Bank	5,000
Rosedale Rio-Bravo Exchange	0
Antelope Valley East Kern Water Agency Exchange	0
West Kern Exchange	0
Total Bank/Exchange	**21,320**
Total Supplies	**66,001**

Notes:
(a) Actual 2021 supplies utilized. These values are not indicative of available future supplies
(b) Reflects temporary greater pumping of Saugus Formation to mitigate for lost Alluvial Aquifer pumping pending installation of PFAS treatment described in Tables 3-4A, 3-4B, 3-4C, 3-5A, 3-5B and 3-5C. Additional details on water quality impacts to groundwater supply availability is provided in Section 3.3.

2.2 Projected Water Use

The demand projections for the SCV Water service area have been estimated through 2050. For the UWMP, a land use-based approach was used (which incorporates information from a population-based approach) because such an approach can further reflect assumptions regarding how future development is planned. It can also demonstrate how water usage patterns have evolved from what they were in the past as the Santa Clarita Valley approaches buildout.

2.2.1 Potable Water Use Projections

Potable water use projections are based on a combination of SCV Water and LACWWD 36 demands. For SCV Water's three retail water divisions, the potable demand forecast was determined from land-use-based estimates from 2020 through 2050 (buildout). The land use-based estimates were determined in a land use analysis that compiled data from planned development contracts and the OVOV General Plan. In general, the land use analysis leveraged the following information:

- Estimated dwelling units provided by City of Santa Clarita and Los Angeles County Planning Department,
- Land use-based GIS map shape files from City of Santa Clarita and Los Angeles County planners for determining the appropriate number of dwelling units and non-residential building area,
- Queries from GIS maps to determine dwelling units were multiplied by persons per household from the U.S. Census appropriate to each retailer's service area,
- Monthly billing data by customer category (single-family, multi-family, non-residential, etc.),
- Climate and economic adjustment factors for normalizing demands, and
- Future demand factors.

The LACWWD 36 potable demand projections relied on a population-based approach using OVOV-based population estimates. Based on these estimates for SCV Water and LACWWD 36, potable demand projections were developed using a Least Cost Planning Decision Support System Model (DSS Model), which incorporates econometric-based adjustments to better develop an accurate forecast through the year 2050. The DSS Model accounts for existing and future potable water consumption by water customers and estimated passive and active water conservation savings. Demand adjustments include accounting for climate change, drought rebound, weather normalization, work-at-home trends, and overwatering/irrigation equipment efficiency degradation.

In addition, recent legislation provides that, where available, demand projections "shall" display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use plans identified by the urban water supplier, as applicable to the service area. If such information is reported, the assessment will provide citations of the various codes, standards, ordinances, or transportation and land use plans utilized in making the projections. The UWMP must indicate the extent that the demand projections consider savings from codes, standards, ordinances, or transportation and land use plans (referred to as savings from passive conservation).

The demand forecast conducted for the UWMP accounts for savings from passive conservation and active conservation. Passive conservation savings focus on plumbing code change impacts on indoor fixtures and include the following laws, codes, and regulations:

- National Plumbing Code (also known as the Energy Policy Act) – Passed in 1992, has long required more efficient plumbing fixtures to be for sale throughout the United States.

- Assembly Bill (AB) 715 – California Plumbing Code includes the new California Code of Regulations (CCR) Title 20 Appliance Efficiency Standards requiring High Efficiency Toilets and High Efficiency Urinals to be exclusively sold in the state by January 1, 2014.

- SB 407 and SB 837 – SB 407 addresses plumbing fixture retrofits on resale or remodel, requiring single family residential property owners of pre-1994 buildings or dwelling units to replace existing plumbing fixtures with water conserving fixtures by 2017 and multi-family and commercial property owners of pre-1994 buildings to replace fixtures by 2019. It also requires all owners to upgrade existing buildings upon any remodel initiated after January 1, 2014, and authorizes the enactment of local ordinances for greater water savings. SB 837 (enacted in 2011) requires that sellers of real estate property disclose on their Real Estate Transfer Disclosure Statement whether their property complies with these requirements. Both laws are intended to accelerate the replacement of older, low efficiency plumbing fixtures, and ensure that only high efficiency fixtures are installed in new residential and commercial buildings.

- 2019 CALGreen and 2015 California Code of Regulations Title 20 Appliance Efficiency Regulations – Fixture characteristics in the DSS Model are tracked in new accounts, which are subject to the requirements of the 2019 California Green Building Code and 2015 California Code of Regulations Title 20 Appliance Efficiency Regulations adopted by the California Energy Commission (CEC) on September 1, 2015. The CEC 2015 appliance efficiency standards apply to the following new appliances, if they are sold in California: showerheads, lavatory faucets, kitchen faucets, metering faucets, replacement aerators, wash fountains, tub spout diverters, public lavatory faucets, commercial pre-rinse spray valves, urinals, and toilets. The DSS Model accounts for plumbing code savings due to the effects these standards have on showerheads, faucet aerators, urinals, toilets, and clothes washers.

- AB 1881 – State Model Water Efficient Landscape Ordinance adopted by the City of Santa Clarita effective January 1, 2010; improves efficiency in water use in new and existing urban irrigated landscapes.

The conservation savings analysis includes SCV Water's current active water conservation measures and also passive water savings such as indoor plumbing code measures as follows:

- Fixture Retrofit on Resale or Water Account Change
- New Development Submetering
- Landscape & Irrigation Codes
- Water Waste Implementation
- AMI
- Real Water Loss Reduction
- Education
- Water Smart Workshop Credit
- Landscape Transformation Incentives
- Smart Controller Rebates
- Irrigation Incentives
- Irrigation Check-Ups
- Pool Cover Rebates
- Residential Check-Ups
- Hot Water on Demand Rebate
- CII Check-Ups
- CII HET and HEU Rebates
- High Efficiency Fixture Giveaway
- Schools Retrofits

This active conservation methodology is an update from SCV Water's 2016 Water Use Efficiency Strategic Plan (WUESP) and the 2015 UWMP analysis.

Table 2-3 provides a summary of the projected total water use for the SCV Water service area in a normal/average water year. Table 2-4 provides projected demands in a single-dry year and Table 2-5 provides demands in a multiple-dry year.

Additional details of the demand projections analysis are provided in the 2021 Maddaus Technical Memorandum (Maddaus 2021).

TABLE 2-3 SCV WATER PROJECTED NORMAL/AVERAGE YEAR DEMANDS (AFY)[(a)(b)]

Year	2025	2030	2035	2040	2045	2050
Total Water Use	76,400	81,700	88,700	93,600	97,500	101,000

Source: Maddaus Water Management (MWM), Inc. 2021. Draft 2021 SCV Demand Study: Land-Use-Based Demand Forecast Analysis. April. Table 5 Estimated total demand with active conservation and plumbing code savings. Demands include climate change and recycled water.

[a] LACWWD 36 is included for purposes of providing regional completeness; however, it is not required to prepare an UWMP.

[b] Demands include the Entrada South and Valencia Commerce Center Project.

TABLE 2-4 SCV WATER PROJECTED SINGLE-DRY YEAR DEMANDS (AFY) [(a)(b)(c)]

Year	2025	2030	2035	2040	2045	2050
Total Water Use	81,000	86,600	94,000	99,200	103,400	107,100

Source: WSA5-3. Demands include savings from plumbing code and standards, and active conservation. Demands account for an estimated increase from climate change.

[a] LACWWD 36 is included for purposes of providing regional completeness; however, it is not required to prepare an UWMP.

[b] Demands include the Entrada South and Valencia Commerce Center Project.

[c] Demands assume a 6% increase above normal demand during dry years.

TABLE 2-5 SCV WATER PROJECTED MULTIPLE-DRY YEAR DEMANDS (AFY) [(a)(b)(c)]

Year	2025	2030	2035	2040	2045	2050
Total Water Use	77,830	83,620	90,570	95,780	99,670	102,870

Source: WSA Table 5-4.

[a] LACWWD 36 is included for purposes of providing regional completeness; however, it is not required to prepare an UWMP.

[b] Demands include the Entrada South and Valencia Commerce Center Project.

[c] Demands are weather adjusted for dry 1988-1992 hydrology.

2.3 Entrada South and Valencia Commerce Center Demands

Following the methodology used to calculate the water demands in the 2020 Urban Water Master Plan, the total estimated water demand for the Project at build-out is approximately 1,411 AFY in an average/normal year. These demands reflect updated residential unit counts in Entrata South as well as modification to commercial/industrial land use in the Valencia Commerce Center. These changes in land use led to a decrease in Project water demand of 511 AFY compared to the 2020 UWMP. Water demand for the Project at build-out may increase by approximately six percent in a single dry year to a total of 1,496 AFY and approximately two percent in multiple dry years to a total of 1,439 AFY. The total estimated water demand for the Project at build-out is summarized in Table 2-6 below.

Consistent with the 2020 UWMP, these demands reflect water use factors from the August 18, 2020, GSI Water Solutions, Inc., Updated Water Demand Projections for West Side Communities Draft Technical Memorandum and incorporate a 3.77% increase for climate change, a 26.5% adjustment for over watering of outdoor residential use and a 26.5% increase for over watering of commercial outdoor water use. The potential exists for the Project's outdoor water use to be reduced from the level incorporated into the WSA if irrigation practices are consistent with the Model Water Efficiency Landscape Ordinance (MWELO) irrigation design criteria and incorporated into the project. At this time, however, there are no means to compel the efficient irrigation practices envisioned under MWELO. While SCV Water would be interested in pursuing such arrangements, in their absence, this WSA incorporates overwatering adjustment based on studies prepared for the 2020 UWMP.

TABLE 2-6 WATER DEMAND ESTIMATES - ENTRADA SOUTH AND VCC PROJECTS						
Project	Land Use	# of Units	Unit	Potable Demand (AFY)	Non-Potable Demand (AFY)	Total Demand (AFY)
Entrada	Low-Medium Density/ Multi-Family Detached	371	Dwelling Units	83	26	108
Entrada	Medium Density/ Multi-Family Attached	894	Dwelling Units	199	42	242
Entrada	High Density Mixed Use/ Multi-Family	309	Dwelling Units	69	4	73
Entrada	Mixed Use Retail	1.5	acres	1	1	2
Entrada	Mixed Use Office	52.5	acres	26	33	59
Entrada	Business Park Office	0	acres	1	0	1
Entrada	Hotel	5.6	acres	33	5	38
Entrada	Schools	10.3	acres	17	13	29
Entrada	Parks	8.3	acres	1	27	28
Entrada	Landscape Areas	4.1	acres	0	10	10
Entrada	Irrigated Slopes	53.7	acres	0	134	134
Entrada	Irrigated Open Space	15.5	acres	0	35	35
VCC	Mixed Use Office	101.3	acres	147	63	210
VCC	Commercial Retail	0.6	acres	4	0	4
VCC	Business Park Industrial	16.5	acres	100	10	111
VCC	Landscape Areas	0.5	acres	0	1	1
VCC	Irrigated Slopes	41.8	acres	0	105	105
		Total Average Year Demands (AFY)				**1411**
		Projected Single Dry Year Demands (AFY)				**1496**
		Projected Multiple-Dry Year Demands (AFY)				**1439**

Note: Totals reflect additional overwatering factor of 26.5% for residential and 25.6% for commercial uses and 3.77% climate change factor

Section 3: Existing and Projected Water Supplies

Water Code Section 10910(b) requires a WSA to identify any existing water supply entitlements, water rights, or water service contracts relevant to the identified water supply for the Project and describe the quantities of water received in prior years by the public water system. The identification of existing water supply entitlements, water rights, or water service contracts held by the public water system must be demonstrated by providing information related to the following:

1. Written contracts or other proof of entitlement to an identified water supply;
2. Copies of a capital outlay program for financing the delivery of a water supply that has been adopted by the public water system;
3. Federal, state, and local permits for construction of necessary infrastructure associated with delivering the water supply; and
4. Any necessary regulatory approvals that are required in order to be able to convey or deliver the water supply.

In accordance with SB 610 (Water Code Section 10910(d)), Section 2 of the 2020 UWMP (June 2020) and the 2019 Santa Clarita Valley Water Report summarize the total quantity of water used by SCV Water to meet water demand since importation of SWP water began in 1980. Also, Section 1.7, above, contains a list of documents with information related to the identification of the existing water supply entitlements, water rights, or water service contracts relevant to meet the Project's water demand, in addition to the existing and projected water supplies reported in the 2020 UWMP and the most recent 2019 and 2020 Santa Clarita Valley Water Reports.

SCV Water has existing water entitlements, rights, and contracts to meet demand as needed over a 25-year horizon and beyond and has committed sufficient capital resources and planned investments in various water programs and facilities to serve all its existing and planned customers. As discussed herein, SCV Water also has identified an operational strategy combined with a prudent and flexible management approach to ensure water supply reliability.

SCV Water's existing supplies include imported water, local groundwater, recycled water, and water from existing groundwater banking programs. Planned supplies include new groundwater production as well as additional banking programs. The mix of supplies can vary significantly depending on local and statewide hydrology, access to groundwater, and other factors. For example, in 2019, a wet year, imported water supplies made up 58%, groundwater 41%, and recycled water less than 1%. In 2020 dry hydrology and perchlorate and PFAS in local groundwater resulted in groundwater production making up approximately 26% of SCV Water's total supplies, imported water making up 39%, recycled water making up less than 1% of supplies, and existing banking and exchange programs making up approximately 34% of total supplies. A further description of the variability of the mix of supplies is included in Section 5.1 of this WSA.

3.1 Imported Water Supplies

SCV Water's imported water supplies consist primarily of SWP supplies, which were first delivered to SCV Water (CLWA at the time) in 1980. From the SWP, SCV Water also has access to water from Flexible Storage Accounts in Castaic Lake, which are planned for dry-year use, but are not strictly limited as such. In addition to its SWP supplies, SCV Water has an imported supply from the Buena Vista Water Storage District (BVWSD) and Rosedale Rio-Bravo Water Storage District (RRBWSD) in Kern County, which was first delivered to SCV Water (CLWA at the time) in 2007. Additionally, Newhall Land and Farming Company (Newhall Land or NLF) (now also referred to as Five Point) has a water transfer supply from a source in Kern County, referred to as Nickel Water that for planning purposes is anticipated to be available beginning in 2035.

3.2 State Water Project Supplies

3.2.1 SWP Facilities

The SWP is the largest state-built, multi-purpose water project in the country. It was authorized by the California State Legislature in 1959, with the construction of most initial facilities completed by 1973. Today, the SWP includes 28 dams and reservoirs, 26 pumping and generating plants and approximately 660 miles of aqueducts. The primary water source for the SWP is the Feather River, a tributary of the Sacramento River. Storage released from Oroville Dam on the Feather River flows down natural river channels to the Sacramento-San Joaquin River Delta (Delta). While some SWP supplies are pumped from the northern Delta into the North Bay Aqueduct, the vast majority of SWP supplies are pumped from the southern Delta into the 444-mile-long California Aqueduct. The California Aqueduct conveys water along the west side of the San Joaquin Valley to Edmonston Pumping Plant, where water is pumped over the Tehachapi Mountains and the aqueduct then divides into the East and West Branches. SCV Water takes delivery of its SWP water at Castaic Lake, a terminal reservoir of the West Branch. From Castaic Lake, SCV Water delivers its SWP supplies to its customers through an extensive transmission pipeline system.

3.2.2 SWP Water Supply Contract Amendments

SWP Contract and Extension

The Department of Water Resources (DWR) provides water supply from the SWP to 29 SWP Contractors (Contractors) in exchange for Contractor payment of all costs associated with providing that supply. DWR and each of the Contractors entered into substantially uniform long-term water supply contracts (Contracts) in the 1960s with 75-year terms. The first Contract terminates in 2035, and most of the remaining Contracts terminate within three years after that. SCV Water is one of the 29 Contractors that have an SWP Contract with DWR.

The majority of the capital costs associated with the development and maintenance of the SWP is financed using revenue bonds. These bonds have historically been sold with 30-year terms. It has become more challenging in recent years to affordably finance capital expenditures for the SWP because bonds used to finance these expenditures are limited to terms that only extend to the year 2035, fewer than 15 years from now. To ensure continued affordability of debt service to Contractors, it was necessary to extend the termination date of the Contracts to allow DWR to continue to sell bonds with 30-year terms.

Public negotiations to extend the Contracts took place between DWR and the Contractors during 2013 and 2014. An Agreement in Principle (AIP) was reached and was the subject of analysis under the requirements of the CEQA (Notice of Preparation dated September 12, 2014). On December 11, 2018, the DWR Director approved the Water Supply Contract Extension Project. In accordance with CEQA, DWR also filed its Notice of Determination for the project with the Governor's Office of Planning and Research. In addition, DWR filed an action in Sacramento County Superior Court to validate the Contract Extension Amendments (https://Water.ca.gov/Programs/State-Water-Project/Management/Water-Supply-Contract-Extension). After CEQA was completed and contract language was finalized, DWR and 22 contractors have executed the Extension Amendment, including SCV Water, which executed the amendment in February 2019. The Extension Amendment extends the contracts through 2085 or the period ending with the latest maturity date of any bond issued to finance the construction costs of Project facilities, whichever is longer. The Extension Amendment will improve the project's overall financial integrity and management. The Extension Amendment is the subject of a validation action and two CEQA lawsuits.

Water Management Tools Contract Amendment

In a December 2017 Notice to Contractors, DWR indicated its desire to supplement and clarify existing SWP Contract's water transfer and exchange provisions to provide improved water management among public water agencies (PWAs). The purpose was to seek greater flexibility to manage the system in order to address changes in hydrology and further constraints placed on DWR's operation of the SWP. To this end, PWAs and DWR conducted public negotiations in 2017 with the purpose of improving these water management tools (WMT). Importantly, the transfers and exchanges provided for in a WMT Contract amendment are limited to those transfers and exchanges between PWAs with SWP Contracts.

In June 2018, PWAs and DWR agreed upon an Agreement in Principle (AIP), which included specific principles to accomplish this goal. These principles included a process for transparency for transfers and exchanges, new flexibility for single and multi-year non-permanent water transfers, allowing PWAs to set terms of compensation for transfers and exchanges, and providing for the limited transfer of carryover and Article 21 water.

In October 2018, a Draft Environmental Impact Report (DEIR) was circulated based on the agreed upon AIP principles for a WMT Contract amendments. At that time, the AIP included cost allocation for the California WaterFix project (WaterFix). In early 2019, Governor Newsom decided not to move forward with WaterFix, and DWR rescinded its approvals for WaterFix. After this shift, the PWAs and DWR held a public negotiation session and agreed to remove the WaterFix cost allocation sections from the AIP, but to keep all the water management provisions in the AIP. The AIP for water management provisions was finalized on May 20, 2019. In February 2020, DWR amended and recirculated the Partially Recirculated DEIR for the SWP Supply Contract Amendments for Water Management and in August 2020, DWR certified the Final EIR. The EIR is being challenged in court. The WMT Amendment became effective for those PWAs who executed the amendment on February 28, 2021. The transfer and exchange tools are available during litigation and will remain in effect unless there is a final court order that prohibits their continuation.

Delta Conveyance Project Agreement in Principle

On March 29, 2021, as part of a public negotiation that began in 2019, DWR and PWAs agreed upon an Agreement in Principle for a Contract amendment on a Delta Conveyance Project

(DCP). The objective of the DCP AIP is to develop an agreement to equitably allocate costs and benefits among SWP PWAs of a potential Delta Conveyance Facility that preserves operational flexibility. A decision by each participating PWA for approving a contract amendment with DWR would not occur until after the environmental review for the DCP is completed. That decision would likely occur in 2023, at the earliest.

3.2.3 SWP Water Supplies

Each SWP contractor's SWP Contract contains a "Table A," which lists the maximum amount of contract water supply, or "Table A Water," an agency may request each year throughout the life of the contract. The Table A Amounts in each contractor's SWP Contract ramped up over time, based on projections at the time the contracts were signed and future increases in population and water demand, until they reached a maximum Table A Amount. Most contractor's Table A Amounts reached their maximum levels in the early to mid-1990s. Table A Amounts are used in determining each contractor's proportionate share, or "allocation," of the total SWP Water supply DWR determines to be available each year.

The total planned annual delivery capability of the SWP and the sum of all contractors' maximum Table A Amounts was originally 4.23 million acre-feet (MAF). The initial SWP storage facilities were designed to meet contractors' water demands in the early years of the SWP, with the construction of additional storage facilities planned as demands increased. However, essentially no additional SWP storage facilities have been constructed since the early 1970s. SWP conveyance facilities were generally designed and have been constructed to deliver maximum Table A amounts to all contractors. After the permanent retirement of some Table A amount by two agricultural contractors in 1996, the maximum Table A Amounts of all SWP contractors now total about 4.17 MAF. Currently, SCV Water's annual Table A Amount is 95,200 AF,[10]

The primary supply of SWP water made available under the SWP Contracts is allocated Table A supply.

In addition to Table A supplies, the SWP Contracts provide for additional types of water that may periodically be available, including "Article 21" water and water made available through transfers from other SWP Contractors pursuant to the WMT amendment described above (amended Article 56). Article 21 water (which refers to the SWP Contract provision defining this supply) is water that may be made available by DWR when excess flows are available in the Delta (i.e., when Delta outflow requirements have been met, SWP storage south of the Delta is full and conveyance capacity is available beyond that being used for SWP operations and delivery of allocated and scheduled Table A supplies). Article 21 water is made available on an unscheduled and interruptible basis and is typically available only in average to wet years, generally only for a limited time in the late winter.

The availability of Article 21 water and water from transfers with other SWP Contractors can fluctuate significantly. When available, these supplies provide additional water that SCV Water may be able to use, either directly to meet demands or for later use after storage in its groundwater banking programs. Because of the fluctuations in availability of Article 21 water

[10] SCV Water's original SWP Contract with DWR was amended in 1966 for a maximum annual Table A Amount of 41,500 AF. In 1991, SCV Water (CLWA at the time) purchased 12,700 AF of annual Table A Amount from a Kern County Water district, and in 1999 purchased an additional 41,000 AF of annual Table A Amount from another Kern County Water district, for a current total annual Table A Amount of 95,200 AF.

and water from transfers, supplies of these types of SWP water are not included in this WSA. However, to the extent SCV Water is able to make use of these supplies when available, SCV Water may be able to improve the reliability of its SWP supplies beyond the values used throughout the 2020 UWMP and this WSA.

While not specifically provided for in the SWP Contracts, DWR or the State Water Contractors have in dry years facilitated Dry Year Water Purchase Programs for contractors needing additional supplies. Through these programs, water is purchased from willing sellers in areas that have available supplies and is then sold to contractors willing to purchase those supplies. The availability of these supplies is annually variable and therefore they are not included in this WSA. However, SCV Water's access to these supplies when they are available would enable it to improve the reliability of its dry-year supplies beyond the values used throughout this WSA.

Flexible Storage Account

As part of its SWP Contract with DWR, SCV Water has access to a portion of the storage capacity of Castaic Lake. This Flexible Storage Account allows SCV Water to utilize up to 4,684 AF of the storage in Castaic Lake for SCV Water. Any of this amount that SCV Water withdraws must be returned to storage by SCV Water within five years of its withdrawal. SCV Water manages this storage by keeping the account full in normal and wet years and then delivering that stored amount (or a portion of it) during dry periods. The account is refilled during the next year that adequate SWP supplies are available to SCV Water to do so. In 2005 and again in 2015, SCV Water negotiated with Ventura County SWP contractor agencies to obtain the use of their Flexible Storage Account. This allows SCV Water access to another 1,376 AF of storage in Castaic Lake. With the extension to the term of the agreement, SCV Water access to this additional storage is available on a year-to-year basis through 2025. While it is expected that SCV Water and Ventura County will extend the existing flexible storage agreement beyond the 2025 term, it is not assumed to be available beyond 2025 in the 2020 UWMP or this WSA.

Water Management Provisions

The SWP Contract includes a number of provisions that give each contractor flexibility in managing the supplies that are available to it in a given year. For example, a contractor may take delivery of its allocated SWP supplies for direct use or storage within its service area, store that water outside its service area for later withdrawal and use within its service area, carry over a portion of that supply for storage on an as-available-basis in SWP reservoirs for delivery in following years (commonly referred to as "carryover"), exchange a portion of that supply with others for return in a future year, or transfer water with other PWAs pursuant to the newly approved WMT amendment. The SWP Contract also provides for DWR to deliver non-SWP water supplies for contractors through SWP conveyance facilities.

SCV Water takes advantage of these water management provisions in wetter years by storing excess SWP allocated water supply, either in groundwater banking programs or as carryover, or by exchanging supplies with another contractor or water agency. Then in drier years, SCV Water withdraws its previously stored supplies or recovers water from its exchange partner(s). Water stored in groundwater banking programs has the benefit of remaining available until needed, and the water SCV Water currently has in storage is assumed to be available as described in the 2020 UWMP and incorporated herein. At current demand levels, SCV Water also regularly stores a portion of any excess supply as carryover in SWP reservoirs, which can provide it with additional supply for use in following years. Carryover is a no-added-cost storage option, is an easily and quickly accessible supply, and is a valuable benefit if the next year is dry. However, SCV Water carryover water may be lost when SWP reservoirs fill, which can occur in wetter years. Although the carryover water is considered in the 2021-2025 water drought assessment, because of the variability in how frequently SWP reservoir space would be available to store SCV Water's carryover, it is not specifically included in other supply projections of the 2020 UWMP or this WSA.

3.2.4 Factors Affecting SWP Table A Supplies

While Table A identifies the maximum annual amount of Table A Water a SWP contractor may request, the amount of SWP water actually available and allocated to SWP contractors each year is dependent on a number of factors and can vary significantly from year to year. The primary factors affecting SWP supply availability include: the availability of water at the source of supply in northern California, the ability to transport that water from the source to the primary SWP diversion point in the southern Delta, and the magnitude of total contractor demand for that water.

Availability of SWP Source Water

SWP supplies originate in northern California, primarily from the Feather River Watershed. The availability of these supplies is dependent on the amount of precipitation in the Watershed, the amount of that precipitation that runs off into the Feather River, water use by others in the Watershed, and the amount of water in storage in the SWP's Lake Oroville at the beginning of the year. Variability in the location, timing, amount, and form (rain or snow) of precipitation, as well as how wet or dry the previous year was, produces variability from year to year in the amount of water that flows into Lake Oroville. However, Lake Oroville acts to regulate some of that variability, storing high inflows in wetter years that can be used to supplement supplies in dry years with lower inflows.

In DWR's 2019 State Water Project Delivery Capability Report (2019 DCR), climate change adds another factor in estimating the future availability of SWP source water. Current projections indicate that global warming may change precipitation patterns in California from the patterns that have occurred historically. While different climate change models show differing effects, potential changes are anticipated to include more precipitation falling in the form of rain rather than snow and earlier snowmelt, which would result in more runoff occurring in the winter and early spring rather than spread out over the winter and spring, creating challenges in capturing this runoff for later use in the SWP delivery system.

Ability to Convey SWP Source Water

As discussed previously, water released from Lake Oroville flows down natural river channels into the Delta. The Delta is a network of channels and reclaimed islands at the confluence of the Sacramento and San Joaquin rivers. The SWP and the federal CVP use Delta channels to convey water to the southern Delta for diversion, making the Delta a focal point for water distribution throughout the state.

A number of issues affecting the Delta can impact the ability to divert water supplies from the Delta, including water quality, fishery protection and levee system integrity. Water quality in the Delta can be adversely affected by both SWP and CVP diversions, which primarily affect salinity, as well as by urban discharge and agricultural runoff that flows into the Delta, which can increase concentrations of constituents such as mercury, organic carbon, selenium, pesticides, toxic pollutants and reduce dissolved oxygen. The Delta also provides a unique estuarine habitat for many resident and migratory fish species, some of which are listed as threatened or endangered. The decline in some fish populations is likely the result of a number of factors, including water diversions, habitat destruction, degraded water quality, and the introduction of non-native species. Delta islands are protected from flooding by an extensive levee system. Levee failure and subsequent island flooding can lead to increased salinity requiring the temporary shutdown of SWP pumps. In addition, climate change analyses also project that salinity issues will increase with seal level rise, requiring extra Delta outflow to dilute more brackish Delta water to meet environmental standards.

In order to address some of these issues, SWP and CVP operations in the Delta are limited by a number of regulatory and operational constraints. These constraints are primarily incorporated into the SWRCB Water Rights Decision 1641 (D-1641), which establishes Delta water quality standards and outflow requirements with which the SWP and CVP must comply. In addition, SWP and CVP operations are further constrained by requirements included in Biological Opinions (BOs) for the protection of threatened and endangered fish species in the Delta issued by the FWS in December 2008 and the NMFS in June 2009, and most recently in 2019 by the FWS as described in Section 4.2. The requirements in the BOs are based on real-time physical and biological phenomena (such as turbidity, water temperature, and location of fish), which results in uncertainty in estimating potential impacts on supply of the additional constraints imposed by the BOs.

Demand for SWP Water

The reliability of SWP supplies is affected by the total amount of water requested and used by SWP contractors, since an increase in total requests increases the competition for limited SWP supplies. As previously mentioned, contractor Table A Amounts in the SWP Contracts ramped up over time, based on projected increases in population and water demand at the time the contracts were signed. Urban SWP contractors' requests for SWP water were low in the early years of the SWP, but have increased steadily over time, although more slowly than the initial ramp-up in their Table A Amounts, which reached a maximum for most contractors in the early to mid-1990s. Since that time, urban contractors' requests for SWP water have continued to increase until recent years when nearly all SWP contractors are requesting their maximum Table A Amounts.

Consistent with other urban SWP contractors, SWP deliveries to SCV Water have increased as its requests for SWP water have increased. Historical total SWP deliveries to SCV Water are shown in Section 3. The table shows deliveries to the SCV Water service area for supply to the purveyors, as well as delivery of SCV Water supplies to storage programs outside the service area and to exchange partners. SCV Water demand projections provided to DWR are typically conservative in order to maximize water deliveries available to SCV Water in any given year for both deliveries and to current and future storage programs.

3.2.5 Biological Opinion

In late 2019, the FWS and NMFS issued new Biological Opinions (BOs) for the Long-Term Operation of the CVP and SWP. Consultation on the BOs began in 2016 to update the prior 2008 and 2009 BO and provide Federal Endangered Species Act (ESA) compliance for the CVP and SWP. Additionally, in early 2020, the California Department of Fish and Wildlife (DFW) issued DWR an Incidental Take Permit for the Long-Term Operation of the SWP pursuant to the California Endangered Species Act (CESA) with regards to state-protected longfin smelt and state- and federally protected delta smelt, winter-run Chinook and spring-run Chinook. Previously, DFW had issued the SWP an Incidental Take Permit for the state-listed longfin smelt and Consistency Determinations with the 2008 and 2009 Biological Opinions for the state and federally listed species, not a separate permit. Some of the operational restrictions in the 2019 Biological Opinions differ from those in the 2020 Incidental Take Permit. Specifically, even though the projects' operations are coordinated, the SWP is subject to additional operational constraints that reduce SWP supplies and create operational conflicts. Both the 2019 BOs and the 2020 Incidental Take Permit are subject to multiple court challenges that are ongoing.

Biological Opinion Litigation. Two cases were filed challenging the BOs under the ESA, Administrative Procedure Act, and National Environmental Policy Act (NEPA). The first case, *Pacific Coast Federation of Fisherman's Association, et al. v.* Ross (Case No. 1:20-CV-00431-DAD-SAB (*"PCFFA v. Ross"*), was brought by six environmental organizations. The second case, *California Natural Resources Agency, et al. v. Ross* (Case No. 1:20) ("*CNRA v. Ross"*), was brought by the California Natural Resources Agency (CNRA), the California Environmental Protection Agency, and the California Attorney General. The State's case includes a cause of action under CESA alleging that the federal CVP must comply with CESA. The cases were coordinated and transferred to the Eastern District. State and federal water contractors have intervened as defendants in both cases. On October 1, 2021, the federal agencies announced re-initiation of consultation on the BOs. The court is currently considering motions by the Federal defendants, State plaintiffs, and environmental plaintiffs to impose an interim operations plan for the first year of reinitiated consultation.

CESA Incidental Take Permit Litigation. Eight cases, listed below, have been filed in state court by public agencies, environmental organizations, and a Native American tribe challenging DWR's approval of the Long-Term Operations of the SWP and associated environmental review. Most of the cases also challenge CDFW's issuance of an Incidental Take Permit for the SWP.

- *North Coast Rivers Alliance, et al. v. Department of Water Resources, et al.*, County of San Francisco Superior Court Case No. CPF-20-517078, filed April 28, 2020;

- *State Water Contractors, et al. v. California Department of Water Resources, et al.*, County of Fresno Superior Court Case No. 20CECG01302, electronically filed April 28, 2020;

- *Tehama-Colusa Canal Authority, et al. v. California Department of Water Resources, et al.*, County of Fresno Superior Court Case No. 20CECG01303, electronically filed April 28, 2020;

- *The Metropolitan Water District of Southern California, et al. v. California Department of Water Resources, et al.*, County of Fresno Superior Court Case No. 20CECG01347, electronically filed April 28, 2020;

- *Sierra Club, et al. v. California Department of Water Resources*, County of San Francisco Superior Court Case No. CPF-20-517120, filed April 29, 2020;

- *Central Delta Water Agency, et al. v. California Department of Fish and Wildlife, et al.*, County of Sacramento Superior Court Case No. 34-2020-80003368, filed May 6, 2020;

- *San Bernardino Valley Municipal Water District v. California Department of Water Resources, et al.*, County of Fresno Superior Court Case No. 20CECG01556, filed May 28, 2020;

- *San Francisco Baykeeper, et al. v. California Department of Water Resources, et al.*, County of Alameda Superior Court Case No. RG20063682, filed June 5, 2020.

The challenges are raised on several legal grounds, including CESA, California Environmental Quality Act, the Delta Reform Act, Public Trust Doctrine, area of origin statutes, breach of contract, and breach of covenant of good faith and fair dealing. All eight cases have been coordinated in Sacramento County Superior Court.

Litigation over the 2019 BOs and 2020 Incidental Take Permit will likely take several years. The projects began operating in accordance with the new requirements in 2020. Throughout implementation, any party may seek preliminary injunctive relief during the litigation, such as that described above. It is likely that the 2019 BOs and 2020 Incidental Take Permit, or some form of interim operations, will govern operations until final judicial determinations on the merits are made or the reinitiated consultation results in a new Biological Opinion and amended Incidental Take Permit. Thus, it is unlikely that SWP water supply would increase beyond that resulting from the limitations in the 2019 BOs and 2020 Incidental Take Permit during this timeframe.

3.2.6 SWP Table A Supply Assessment

DWR prepares a biennial report to assist SWP contractors and local planners in assessing the availability of supplies from the SWP. DWR issued its most recent update, the 2019 DCR, in August 2020. In this update, DWR provides SWP supply estimates for SWP Contractors to use in their planning efforts, including for use in their 2020 UWMPs. The 2019 DCR includes DWR's estimates of SWP water supply availability under both existing (2020) and future conditions (2040).

DWR's estimates of SWP deliveries are based on a computer model that simulates monthly operations of the SWP and Central Valley Project systems. Key inputs to the model include the facilities included in the system, hydrologic inflows to the system, regulatory and operational constraints on system operations, and contractor demands for SWP water. In conducting its model studies, DWR must make assumptions regarding each of these key inputs.

In the 2019 DCR for its model study under existing conditions, DWR assumed: existing facilities, hydrologic inflows to the model based on 82 years of historical inflows (1922 through 2003), current regulatory and operational constraints including 2018 Coordinated Operation Agreement Amendment, 2019 BOs and 2020 Incidental Take Permit, and contractor demands at maximum Table A Amounts. The long-term average allocation reported in the 2019 DCR for the existing conditions study provides an appropriate estimate of the SWP water supply availability under current conditions.

To evaluate SWP supply availability under future conditions, the 2019 DCR included a model study representing hydrologic and sea level rise conditions in the year 2040. The future condition study used all the same model assumptions as the study under existing conditions, but reflected changes expected to occur from climate change, specifically, projected temperature and precipitation changes centered around 2035 (2020 to 2049) and a 45 cm sea level rise. For the long-term planning purposes of this WSA and the 2020 UWMP, the long-term average allocations reported for the future conditions study from 2019 DCR is the most appropriate estimate of future SWP water supply availability.

3.2.7 SWP Water Supply Estimates

In the 2019 DCR, DWR estimates that for all Contractors combined, the SWP can deliver on a long-term average basis a total Table A supply of 58 percent of total maximum Table A Amounts under existing conditions and 52 percent under future conditions.

DWR's 2019 DCR indicates that the modeled single dry year SWP water supply allocation is 7% under the existing conditions. However, historically the lowest SWP allocations were at 5% in 2014 and initial allocations in 2021. Due to extraordinarily dry conditions in 2013 and 2014, the initial 2014 SWP allocation was a historically low 5% of Table A Amounts, was later reduced to 0% in January 2014, and was later raised back to 5%, the lowest ever final total SWP water supply allocation. In 2021, the initial allocation was 0%, the lowest ever on record and later increased to 5%. Similarly, the initial allocation for 2022 was set at 0% with DWR prioritizing deliveries to Human Health and Safety where alternative supplies were not available. Significant precipitation occurred in October and December of 2021. In January 2022, DWR raised its initial allocation to 15%.

Each year by October 1, SWP contractors submit their requests for SWP supplies for the following calendar year. By December 1, DWR estimates the available water supply for the following year and sets an initial supply allocation based on the total of all contractors' requests, current reservoir storage, forecasted hydrology through the next year, and target reservoir storage for the end of the next year. The most difficult of these factors to evaluate is the forecasted hydrology. In setting water supply allocations, DWR uses a conservative 90% hydrologic forecast, where nine out of ten years will be wetter and one out of ten years drier than assumed. DWR re-evaluates its estimate of available supplies throughout the runoff season of winter and early spring, using updated reservoir storage and hydrologic forecasts, and revises SWP supply allocations as warranted. Since most of California's annual precipitation falls in the winter and early spring, by the end of spring the supply available for the year is much more certain, and in most years DWR issues its final SWP allocation by this time. While most of the water supply is certain by this time, runoff in the late fall remains somewhat variable as the next year's runoff season begins. A drier than forecasted fall can result in not meeting end-of-year reservoir storage targets, which means less water available in storage for the following year.

Water year 2013 was a year with two hydrologic extremes. October through December 2012 was one of the wettest fall periods on record but was followed by the driest consecutive 12 months on record. The supply allocation for 2013 was a 35% allocation. However, the 2013 hydrology ended up being even drier than DWR's conservative hydrologic forecast, so the SWP began 2014 with reservoir storage lower than targeted levels and less stored water available for 2014 supplies. Compounding this low storage situation, 2014 also was a critically dry year, with runoff for water year 2014 the fourth driest on record.

The exceedingly dry sequence from the beginning of January 2013 through the end of 2014 was one of the driest two-year periods in the historical record. The dry-year sequence in 2020 through 2021 also represents an extreme hydrologic event in terms of temperature and precipitation. Water Year 2020 was California's fifth driest year on record based on statewide runoff, followed by Water Year 2021 which was the second driest year and warmest year on record. The warmer temperatures in 2014 and 2021 resulted in an increased climatic water deficit. This historical data has shown that California's climate is transitioning to a much warmer setting where historical relationships among temperature, precipitation and runoff are changing, and these conditions may become more frequent. As noted above, the circumstances that led to the low 2014 and 2021 SWP water supply allocation were unusual, and likely have a low probability of frequent occurrence in the future. Thus, the assumption for SWP contractors such as SCV Water is that a 5% allocation in 2014 and 2021 represents the "worst-case" scenario.

The 2020 UWMP reflected information from DWR's 2019 DCR. The report was based on DWR's CALSIM 2 model that utilizes a repeat of the historic hydrologic period of 1922 through 2003. DWR's analysis of existing (2020) conditions was used to estimate SWP supplies between 2020 and 2040 and its analysis of future (2040) conditions is used to estimate 2040-2050 SWP supplies. SWP supplies for the five-year increments between 2020 and 2040 are interpolated between these values. SWP supplies for years beyond 2040 are assumed to be the same as for 2040.

On December 31, 2021, DWR released its Draft 2021 DCR. This draft report is based on DWR's new CALSIM 3 model that extends the hydrologic period through 2015 thus incorporating the historic dry years of 2014 and 2015 but does not include the wet years in 2017 and 2019. This report reduces the 2020 average yield from 58% to 56%. The Draft 2021 DCR does not contain an analysis for 2040 conditions as it was not contained in the 2019 DCR. Thus, the SWP reliability shown in Table 3-1 reflects reduced reliability of 56% in 2020 and other year's supplies are interpolated between 2020 and 2040 values.

The Draft 2021 DCR also reduced the single year delivery capability in 2020 to 5%. As the 2020 UWMP was already using that value for its Single Years SWP supply, that value was not changed in the single year dry period. This is reflected in Table 3-1.

The Draft 2021 DCR did not provide Table A allocations for each individual year that would enable a re-analysis of the five-year multiple dry year period. The report does contain a summary of six-year drought that indicate an average allocation of 25% of Table A amounts. That is the same average value that was used in the 2020 UWMP. Thus, for purposes of this WSA, Table 3-1 reflects the same five-year multiple dry year analysis.

TABLE 3-1 SWP TABLE A SUPPLY RELIABILITY (AF)[(a)(b)]

Wholesaler (Supply Source)	2020	2025	2030	2035	2040-2050
Average Water Year[(c)]					
SWP Table A Supply	53,312	52,360	51,408	50,456	49,504
% of Table A Amount[(d)]	56%	55%	54%	53%	52%
Single-Dry Year					
SWP Table A Supply[(e)]	6,664	7,616	8,568	9,520	10,472
% of Table A Amount[(e)]	7%	8%	9%	10%	11%
SWP Table A Supply[(f)]	4,760	4,760	4,760	4,760	4,760
% of Table A Amount[(f)]	5%	5%	5%	5%	5%
Multiple-Dry Year[(h)]					
SWP Table A Supply[(g)]	23,800	23,800	23,800	23,800	23,800
% of Table A Amount[(d)]	25%	25%	25%	25%	25%

Notes:
(a) Supplies to SCV Water are based on DWR analyses presented in its 2021 draft DCR and 2019 DCR, assuming existing SWP facilities and current regulatory and operational constraints (except as indicated in Note f).
(b) Table A supplies include supplies allocated in one year that are carried over for delivery the following year.
(c) Based on average deliveries over a repeat of the study's historic hydrologic period of 1922 through 2003 for 2019 DCR, and 1922 through 2015 for the 2021 draft DCR.
(d) Supply as a percentage of SCV Water's Table A Amount of 95,200 AF.
(e) Based on a repeat of the worst case historic single dry year of 1977 (from 2019 DCR)
(f) Based on the worst-case actual allocation of 2014.
(g) Supplies shown are annual averages over five consecutive dry years, based on a repeat of the historic five-year dry period of 1988-1992.

3.2.8 Coordinated Operations Agreement

The Coordinated Operation Agreement (COA) was originally signed in 1986 and defines how the state and federal water projects share the available water supply and the obligations including senior water right demands, water quality and environmental flow requirements imposed by regulatory agencies. The agreement calls for periodic review to determine whether updates are needed in light of changed conditions. After completing a joint review process, DWR and the Bureau of Reclamation agreed to an addendum to the COA in December 2018, to reflect water quality regulations, biological opinions and hydrology updated since the agreement was signed.

The COA Addendum includes changes to the percentages for sharing responsibilities for in basin uses, sharing available export capacity, and the review process. The 1986 Agreement required CVP to meet 75% of the in basin uses and the SWP to meet 25%. The COA Addendum now distinguishes responsibility based on water year type and CVP responsibilities range from 80% in wet years to 60% in critical years. SWP responsibility ranges from 20% in wet years to 40% in critical years. Additionally, the COA Addendum changed sharing export capacity. Previously, export capacity was shared 50% to CVP and 50% to SWP. The COA addendum changed this formula to be 65% CVP and 35% SWP during balanced conditions and 60% CVP and 40 % SWP during excess conditions. Overall, based on modeling, these changes result in an approximately 115,000 AFY on average reduction in SWP supplies.

Finally, the 2018 COA Addendum updated the review process to require review of the COA Agreement and Addendum every 5 years. Litigation regarding the COA addendum environmental review is ongoing. The litigation is unlikely to change the negotiated COA addendum and implementation has already begun.

3.2.9 Delta Conveyance Project

Consistent with Executive Order N-10-19, in early 2019, the state announced a new single tunnel project, which proposed a set of new diversion intakes along Sacramento River in the north Delta for the SWP. In 2019, DWR initiated planning and environmental review for a single tunnel DCP to protect the reliability of SWP supplies from the effects of climate change and seismic events, among other risks. DWR's current schedule for the DCP environmental planning and permitting extends through the end of 2024. DCP will potentially be operational in 2040 following extensive planning, permitting and construction.

DWR estimates of SWP supply reliability in its 2019 DCR are based on existing facilities, and so do not include the proposed conveyance facilities that are part of the DCP. Since the 2020 UWMP uses DWR's 2019 DCR to estimate SWP supplies at 2040, any changes in SWP supply reliability that would result from the proposed DCP are not included in the UWMP. If the DCP is implemented, SWP reliability would improve, but to be conservative, that analysis is not incorporated in this WSA.

3.2.10 Emergency Freshwater Pathway Description (Sacramento-San Joaquin Delta)

It has been estimated by DWR that in the event of a major earthquake in or near the Delta, water supplies could be interrupted for up to three years, posing a significant and unacceptable risk to the California business economy. A post-event strategy would provide necessary water supply protections to avert this catastrophe. Such a plan has been coordinated through DWR, Corps of Engineers (Corps), Reclamation, California Office of Emergency Services (Cal OES), the Metropolitan Water District of Southern California, and the State Water Contractors.

DWR Delta Flood Emergency Management Plan: The Delta Flood Emergency Management Plan (DWR, 2018) provides strategies for response to Delta levee failures, up to and including earthquake-induced multiple island failures during dry conditions when the volume of flooded islands and saltwater intrusion are large, resulting in curtailment of export operations. Under these severe conditions, the plan includes a strategy to establish an emergency freshwater pathway from the central Delta along Middle River and Victoria Canal to the export pumps in the south Delta. The plan includes the prepositioning of emergency construction materials at existing and new stockpile and warehouse sites in the Delta, and development of tactical modeling tools (DWR Emergency Response Tool) to predict levee repair logistics, timelines of levee repair and suitable water quality to restore exports. The Delta Flood Emergency Management Plan has been extensively coordinated with state, federal and local emergency response agencies. DWR, in conjunction with local agencies, the Corps and Cal OES, conduct tabletop and field exercises to test and revise the plan under real time conditions.

DWR and the Corps provide vital Delta region response to flood and earthquake emergencies, complementary to Cal OES operations. These agencies perform under a unified command structure and response and recovery framework. The Northern California Catastrophic Flood Response Plan (Cal OES, 2018) incorporates the DWR Delta Flood Emergency Management

Plan. The Delta Emergency Operations Integration Plan (DWR and USACE, 2019) integrates personnel and resources during emergency operations.

<u>Pathway Implementation Timeline</u>: The Delta Flood Emergency Management Plan has found that using pre-positioned stockpiles of rock, sheet pile and other materials, multiple earthquake-generated levee breaches and levee slumping along the freshwater pathway can be repaired in less than six months. A supplemental report (Levee Repair, Channel Barrier, and Transfer Facility Concept Analyses to Support Emergency Preparedness Planning, M&N, August 2007) evaluated among other options, the placement of sheet pile to close levee breaches, as a redundant method if availability of rock is limited by possible competing uses. The stockpiling of sheet pile is vital should more extreme emergencies warrant parallel and multiple repair techniques for deep levee breaches. Stockpiles of sheet pile and rock to repair deep breaches and an array of levee slumping restoration materials are stored at DWR and Corps stockpile sites and warehouses in the Delta.

<u>Emergency Stockpile Sites and Materials</u>: DWR has acquired lands at Rio Vista and Stockton as major emergency stockpile sites, which are located and designed for rapid response to levee emergencies. The sites provide large loading facilities, open storage areas and new and existing warehousing for emergency flood fight materials, which augment existing warehousing facilities throughout the Delta. The Corps maintains large warehousing facilities in the Delta to store materials for levee freeboard restoration, which can be augmented upon request of other stockpiles in the United States. Pre-positioned rock and sheet pile are used for closure of deep levee breaches. Warehoused materials for rapid restoration of slumped levees include muscle (k-rail) walls, super sacks, caged rock containers, sandbags, stakes, and plastic tarp. Stockpiles will be augmented as materials are used.

<u>Emergency Response Drills</u>: Earthquake-initiated multiple island failures will mobilize DWR and Corps resources to perform Delta region flood fight activities within an overall Cal OES framework. In these events, DWR and the Corps integrate personnel and resources to execute flood fight plans through the Delta Emergency Operations Integration Plan (DWR and USACE, 2019). DWR, the Corps and local agencies perform emergency exercises focusing on communication readiness and the testing of mobile apps for information collection and dissemination. The exercises train personnel and test the readiness of emergency preparedness and response capabilities under unified command and provide information to help to revise and improve plans.

<u>Levee Improvements and Prioritization</u>: The DWR Delta Levees Subventions and Special Projects Programs have prioritized, funded, and implemented levee improvements along the emergency freshwater pathway and other water supply corridors in the central and south Delta. These efforts are complementary to the Delta Flood Emergency Management Plan, which along with pre-positioned emergency flood fight materials, ensures reasonable seismic performance of levees and timely pathway restoration after a severe earthquake. These programs have been successful in implementing a coordinated strategy of emergency preparedness to the benefit of SWP and CVP export systems.

Significant improvements to the central and south Delta levees systems along Old and Middle Rivers began in 2010 and are continuing to the present time. This complements substantially improved levees at Mandeville and McDonald Islands and portions of Victoria and Union Islands. Levee improvements along the Middle River emergency freshwater pathway and Old River consist of crest raising, crest widening, landside slope fill and toe berms, which improve seismic stability, reduce levee slumping, and create a more robust flood-fighting platform. Urban agencies, including Metropolitan, Contra Costa Water District, East Bay Municipal Utility District, and others have participated in levee improvement projects along or near the Old and Middle River corridors.

3.2.11 Sisk Dam Raise and San Luis Reservoir Expansion

Reclamation and San Luis & Delta Mendota Water Authority (SLDMWA) are proposing to raise Sisk Dam and increase storage capacity in San Luis Reservoir. The proposed 10-foot dam raise is in addition to the ongoing 12-foot raise of Sisk Dam to improve dam safety and would expand San Luis Reservoir storage by 130 thousand AF. The final supplemental EIS/EIR, released on December 18, 2020, estimated that the SWP exports could potentially reduce by about 23 thousand AFY on average under the preferred alternative. This project is currently undergoing design, environmental planning, and permitting. Construction is estimated to complete by 2030, following environmental planning and permitting.

DWR estimates of SWP supply reliability in its 2019 DCR are based on existing facilities, and do not include this project.

3.2.12 SWP Seismic Improvements

DWR's recent SWP seismic resiliency efforts have focused heavily on SWP Dam Safety. The most prominent is the joint Reclamation/DWR corrective action study of Sisk Dam which will result in a massive seismic stability alteration project and is expected to begin construction in 2021. Several analyses have been conducted on SWP dam outlet towers/access bridges which has resulted in seismic upgrades (some completed/some on-going). Castaic Reservoir outlet towers were determined to be vulnerable to a major earthquake. DWR is currently undertaking retrofits to the access bridge to the Castaic outlet tower. That work is scheduled to be completed in 2022. Updated dam seismic safety evaluations are being performed on the Oroville Dam embankment and the radial gate control structure on the flood control spillway.

Seismic retrofits have also been completed on 23 SWP bridges located in four Field Divisions with additional retrofits in various development stages. DWR has also updated the earthquake notification procedures and has replaced and expanded instrumentation for the SWP's seismic network.

3.2.13 Water Quality Control Plan/Voluntary Agreement

The State Water Board is responsible for adopting and updating the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta Plan), which establishes water quality control objectives and flow requirements needed to provide reasonable protection of beneficial uses in the Watershed. The State Water Board has been engaged for many years in updating the Bay Delta Plan.

The Bay-Delta Plan is being updated through phases. Phase 1 is updating the Bay-Delta Plan objectives for the San Joaquin River and its major tributaries and the southern Delta salinity objectives. Phase 2 is updating the objectives for the Sacramento River and Delta and their major tributaries. (Plan amendments). On December 12, 2018, through State Water Board Resolution No. 2018-0059, the State Water Board adopted the Phase 1 Plan amendments and Final Substitute Environmental Document (SED) establishing the Lower San Joaquin River flow objectives and revised southern Delta salinity objectives. On February 25, 2019, the Office of Administrative Law approved the Plan amendments. The 2020 UWMP requires an adaptive range of 30-50 percent of the unimpaired flow to be maintained from February through June in the Stanislaus, Tuolumne, and Merced Rivers, with a starting point of 40 percent of the unimpaired flow. During this same time period, the flows at Vernalis on the San Joaquin River, as provided by the unimpaired flow objective, are required to be no lower than a base flow of 1,000 cubic feet per second (cfs), with an adaptive range between 800 and 1,200 cfs, inclusive. Phase 1 plan amendments are the subject of litigation.

The State Water Board is also considering Phase 2 Plan amendments focused on the Sacramento River and its tributaries, Delta eastside tributaries (including the Calaveras, Cosumnes, and Mokelumne rivers), Delta outflows, and interior Delta flows. Staff is recommending an adaptive range of 45-65 percent Unimpaired Flow (UIF) objective with a starting point of 55 percent. Once the State Water Board adopts Phase 2 Plan amendments, the Board will need to conduct hearings to determine, consistent with water rights, water users' responsibilities for meeting the objectives in both Phase 1 and 2. At this time, the potential impacts to the SWP are unknown, but this objective would have a large impact on water users in the Phase 2 planning area.

The State and several water users began working on an alternative to the Bay-Delta Plan update in 2018, known as the Voluntary Agreement process. The Voluntary Agreement process offers an alternative to the State Water Board staff's flow only approach. A Voluntary Agreement, if agreed to by the State Water Board, would be a substitute for the UIF approach and would become the Program of Implementation for the Plan amendments. Implementing the Voluntary Agreement would not require a water rights hearing because the parties are agreeing to take the actions. The Voluntary Agreement approach would provide flow, and funding for flows, habitat actions, and a robust science program. The Voluntary Agreement approach could provide an opportunity to combine flow and habitat actions to protect public trust resources, while providing certainty for water users. If successful, it provides a pathway to avoid years of hearings and litigation.

3.2.14 Delta Reliance

Approximately half of SCV Water's water supply comes from the Delta. The 2020 UWMP Guidebook describes how urban water suppliers that anticipate participating in or receiving water from a "covered action" related to the Delta should provide information in their 2020 UWMPs to demonstrate consistency with *Delta Plan Policy WR P1, Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance* (Reduced Reliance Policy). SCV Water completed such documentation which is included in Appendix K of the 2020 UWMP.

3.2.15 Other Imported Supplies

The following supplies are available to SCV Water through agreements that have been executed since 2005. These supplies are now part of the imported supplies available to the service area.

3.2.15.1 Buena Vista-Rosedale Rio Bravo

SCV Water has executed a long-term transfer agreement for 11,000 AFY with BVWSD and RRBWSD. These two districts, both located in Kern County, joined together to develop a program that provides both a firm water supply and a water banking component. Both districts are member agencies of the Kern County Water Agency (KCWA), a SWP contractor, and both districts have contracts with KCWA for SWP Table A Amounts. The supply is based on existing long-standing Kern River water rights held by BVWSD and is delivered by exchange of the two districts' SWP Table A supplies or directly to the California Aqueduct via the Cross Valley Canal. This water supply is firm; that is, the total amount of 11,000 AFY is available in all water year types based on the Kern River Water right. SCV Water began taking delivery of this supply in 2007.

SCV Water has entered into agreements that reserved 3,378 AF of the Buena Vista-Rosedale Rio Bravo water for potential annexations into its service area. 389 AF is reserved for the second phase of the Tesoro Del Valle development. This development is scheduled to be completed by the end of 2025. 489 AF has been reserved for the Tapia Ranch development with development estimated to be completed in the late 2020s. 2,500 AF is reserved for the planned Legacy Village development. This development is assumed to occur after 2030 but before 2035. During the periods before demands for these developments occur, or if these developments occur but do not use all the amounts reserved for them in any year or years, the remaining supply would be available to the entire SCV Water service area.

3.2.15.2 Nickel Water - Newhall Land

Newhall Land has acquired a water supply from Kern County sources known as the Nickel water. This source of supply totals 1,607 AFY. As provided in its water purchase agreement, the Nickel water provides a firm source of supply and is available in all hydrologic water year types. This source of supply was acquired in anticipation of the development of the Newhall Ranch Specific Plan Development. Newhall Land currently stores its annual supply of Nickel water in its Semitropic Water Storage District Water Banking Program. Upon completion of the Newhall Ranch Specific Plan, Newhall Land will transfer its rights to this supply to SCV Water. In the 2020 UWMP, it is assumed for planning purposes that Newhall Ranch will be developed and that this water supply will be transferred to SCV Water in 2035 (i.e., the assumed completion of the Newhall Ranch Specific Plan), thereafter becoming available as an annual supply to SCV Water. Prior to any permanent transfer to SCV Water, Newhall Land may make this supply available to SCV Water for purchase. However, because there is no history of such purchases, the 2020 UWMP, and this WSA, does not assume this Nickel water will be generally available to meet SCV Water demands until 2035. Further, SCV Water is not aware of any agreement that Newhall Land has entered into to sell this water to other public water systems prior to the transfer of the Nickel water to SCV Water.

SCV Water and NLF will monitor the use and storage of Nickel water. SCV Water is required to undertake this effort to manage its overall supply portfolio, to meet SCV Water's obligations under applicable state law, and by request of the County of Los Angeles in the Specific Plan EIR. Based on current estimates, the Nickel water and the stored water in the Semitropic bank provide adequate reserves for potential future needs within the Specific Plan area. Under the Specific Plan EIR, NLF is to transfer Nickel water from its Semitropic Water Bank to make up a shortfall.

3.2.15.3 Yuba Accord Water

In 2008, SCV Water entered into the Yuba Accord Agreement, which allows for the purchase of water from the Yuba County Water Agency through DWR to 21 SWP contractors (including SCV Water) and the San Luis and Delta-Mendota Water Authority. Yuba Accord water comes from north of the Delta, and the water purchased under this agreement is subject to losses associated with transporting it through the Delta. These losses can vary from year to year, depending on Delta conditions at the time the water is transported. Under the agreement, an estimated average of up to 1,000 AFY of non-SWP supply (after losses) is available to SCV Water in dry years, through 2025. In 2021, with a SWP allocation of 5% of Table A Amount, a supply of 1,640 AF north of the Delta is available to SCV Water (based on September 27, 2021, estimate). Under certain hydrologic conditions, additional water may be available to SCV Water from this program. SCV Water received 284 AF from this source in 2020.

3.3 Groundwater

This section presents information about groundwater supplies, including a summary of the previously adopted groundwater management plan (GWMP) along with the recently adopted GSP.

3.3.1 Santa Clara River Groundwater Basin – East Subbasin

The sole source of local groundwater for urban water supply in the Valley is the groundwater Basin identified in the DWR Bulletin 118 (DWR 2016) as the Santa Clara River Valley Groundwater Basin, East Subbasin (Basin) (Basin No. 4-4.07). The un-adjudicated Basin is comprised of two aquifer systems, the Alluvium and the Saugus Formation. The Alluvium generally underlies the Santa Clara River and adjacent areas, including its several tributaries, to maximum depths of about 200 feet; and the Saugus Formation underlies practically the entire Upper Santa Clara River (USCR) area, to depths of at least 2,000 feet. There are also some scattered outcrops of Terrace deposits in the Basin that likely contain limited amounts of groundwater. However, since these deposits are located in limited areas situated at elevations above the regional water table and are also of limited thickness, they are of no practical significance as aquifers for municipal water supply; consequently, they have not been developed for any significant water supply in the Basin and are not included as part of the existing or planned groundwater supplies described in this WSA. The Basin is defined in Bulletin 118 as being bordered on the north by the Piru Mountains, on the west by impervious rocks of the Modelo and Saugus Formations and a constriction in the alluvium, on the south by the Santa Susana Mountains, and on the south and east by the San Gabriel Mountains (DWR 2016). The extent of the basin generally coincides with the outer extent of the Alluvium and Saugus Formation.

The Santa Clara River Valley Groundwater Basin, East Subbasin has been identified by DWR as a high priority basin, not subject to critical conditions of overdraft, thereby requiring preparation of a GSP, described below.

3.3.2 Groundwater Management Planning

As part of legislation authorizing SCV Water to provide retail water service to individual municipal customers, Assembly Bill (AB) 134 (2001) included a requirement that SCV Water prepare a GWMP (provided as Appendix I of the 2020 UWMP) in accordance with the provisions of Water Code Section 10753, which was originally enacted by AB 3030. This legislation has since been superseded by the passage of SGMA in 2014 and the submittal of a GSP to DWR by the SCV-GSA in January 2022. The GSP is available at https://scvgsa.org/wp-content/uploads/2021/12/SCV-GSP-Sections-Combined-20211217.pdf. The GSP was in large part built on the GWMP with the groundwater basin operating within the yields identified in the GWMP. A summary of GWMP and the GSP are provided below.

3.3.2.1 Groundwater Sustainability Plan

The Santa Clarita Valley Groundwater Sustainability Agency (SCV-GSA) operates under a Joint Powers Agreement, which was executed by member Agencies in 2018. The SCV-GSA has adopted the State-required GSP for the East Subbasin of the Santa Clara River Valley Groundwater Basin. The plan represents a significant multi-year undertaking concluding with its adoption and submittal to DWR in January 2022. Development of the GSP reflected a significant stakeholder engagement effort with the involvement of a Stakeholder Advisory Committee to reflect the views from private well owners, members at large, environmental interests, and the business community. This Stakeholder Advisory Committee met regularly to review technical memoranda and provided advisement to the GSA on materials and assistance with several public workshops.

The final Board- adopted GSP is consistent with the current groundwater operating plan as described in the GWMP (AB 3030 plan), and its 2009 update, described below. The GSP, however refined the technical analysis as it utilized a new groundwater flow model (an unstructured grid version of ModFlow called ModFlow USG) that models the groundwater operating plan. These refinements include updates such as redistribution of pumping and current Basin conditions. The plan also developed minimum thresholds as a basis to determine that the groundwater basin is being managed in a sustainable manner. The SCV-GSA will conduct the required annual monitoring and reports for the GSP.

3.3.2.2 Groundwater Management Plan

The general contents of the GWMP were outlined in 2002, and a detailed plan was adopted in 2003 to satisfy the requirements of AB 134. The plan both complements and formalized a number of existing water supply and water resource planning and management activities in SCV Water’s service area, which effectively encompass the East Subbasin of the Santa Clara River Valley Groundwater Basin. Notably, the GWMP also includes a basin-wide monitoring program, the results of which provide input to annual reporting on water supplies and water resources in the Basin, as well as input to assessment of Basin yield for water supply as described herein. Groundwater level data from the existing groundwater monitoring program is reported to DWR as part of SBX7-6 implementation CASGEM. SCV Water serves as the monitoring entity for CASGEM for the basin. Available groundwater level data for the CASGEM program is submitted twice a year. SCV Water will continue to provide groundwater level data consistent with the CASGEM program.

The GWMP contains four management objectives, or goals, for the Basin including (1) development of an integrated surface water, groundwater and recycled water supply to meet existing and projected demands for municipal, agricultural and other water uses; (2) assessment of groundwater basin conditions to determine a range of operational yield values that use local groundwater conjunctively with supplemental SWP supplies and recycled water to avoid groundwater overdraft; (3) preservation of groundwater quality, including active characterization and resolution of any groundwater contamination problems, and (4) preservation of interrelated surface water resources, which includes managing groundwater to not adversely impact surface and groundwater discharges or quality to downstream basin(s).

Prior to preparation and adoption of the GWMP, a local MOU process among the former CLWA, the CLWA retail water purveyors and UWCD in neighboring Ventura County, downstream of the East Subbasin of the Santa Clara River Valley, produced the beginning of local groundwater management. This is now embodied in the GWMP prepared and implemented in 2001. The MOU was a collaborative and integrated approach to several aspects of water resource management included in the GWMP. As a result of the MOU, the cooperating agencies integrated their respective database management efforts and continued to monitor and report on the status of Basin conditions, as well as on geologic and hydrologic aspects of their respective parts of the overall stream-aquifer system. Following adoption of the GWMP, the water suppliers developed and utilized a numerical groundwater flow model for analysis of groundwater basin yield and for analysis of extraction and containment of groundwater contamination. The results of those basin yield and contamination analyses, updated in 2009 by Luhdorff and Scalmanini Consulting Engineers and GSI Water Solutions, Inc. (LSCE & GSI, 2009), are bases for the amounts and allocations of groundwater supplies in the 2020 UWMP.

The adopted GWMP includes 14 elements intended to accomplish the Basin management objectives listed above. In summary, the plan elements include:

- Monitoring of groundwater levels, quality, production, and subsidence
- Monitoring and management of surface water flows and quality
- Determination of Basin yield and avoidance of overdraft
- Development of regular and dry-year emergency water supply
- Continuation of conjunctive use operations
- Long-term salinity management
- Integration of recycled water
- Identification and mitigation of soil and groundwater contamination, including involvement with other local agencies in investigation, cleanup, and closure
- Development and continuation of local, state, and federal agency relationships
- Groundwater management reports
- Continuation of public education and water conservation programs
- Identification and management of recharge areas and wellhead protection areas
- Identification of well construction, abandonment, and destruction policies
- Provisions to update the groundwater management plan

Work on a number of the GWMP elements had been ongoing for some time prior to the formal adoption of the GWMP and expanded work on implementation of the GWMP will continue on an ongoing basis through the administration of the GSP. The GSP evaluates the operating plan going forward and these analyses of the groundwater basin are reflected in the 2020 UWMP and this WSA. Notable in the implementation of the GWMP has been the annual preparation of a Santa Clarita Valley Water Report (Annual Report) that summarizes (1) water requirements, (2) all three sources of water supply (groundwater, imported surface water and recycled water, all as part of the GWMP's overall management objectives), and (3) projected water supply availability to meet the following year's projected water requirements. Besides for addressing GWMP requirements, the Annual Report is also prepared in response to a request by the Los Angeles County Board of Supervisors and the MOU between the water purveyors in the Basin and UWCD. SGMA also requires preparation of an annual report on basin conditions. The first report being due in April of 2022 will address much of the same information but framed in the context of the GSP Sustainability Criteria discussed below.

3.3.2.3 Available Groundwater Supplies

The groundwater component of overall water supply in the Valley derives from a groundwater operating plan developed and analyzed to meet water requirements (municipal, agricultural, small domestic) while maintaining the Basin in a sustainable condition, specifically no long-term depletion of groundwater or interrelated surface water. The operating plan also addresses groundwater contamination issues in the Basin, all consistent with the GWMP described above. The groundwater operating plan and the GSP are based on the concept that pumping can vary from year to year to allow increased groundwater use in dry periods and increased recharge during wet periods to collectively assure that the groundwater Basin is adequately replenished through various wet/dry cycles. As ultimately formalized in the GWMP and described in the Basin Yield Report (LSCE and GSI, 2009), and in the GSP, the operating yield concept has been quantified as ranges of annual pumping volumes to capture year-to-year pumping fluctuations in response to both hydrologic conditions and customer demand.

Ongoing work through implementation of the GWMP has produced three detailed technical reports in addition to the annual Water Reports (the most recent of which, for 2020, was the twenty-third annual report). The first detailed technical report (CH2M Hill, April 2004) documents the construction and calibration of the groundwater flow model for the Valley. The second report (CH2M Hill and LSCE, August 2005) presents the initial modeling analysis of the purveyors' original groundwater operating plan. The most recent report, an updated analysis of the Basin (LSCE & GSI, 2009) presents the modeling analysis of the current groundwater operating plan, including restoration of two Saugus Formation wells for municipal supply after treatment and also presents a range of potential impacts deriving from climate change considerations. All those results are reflected in this WSA. The primary conclusion of the technical analysis is that the groundwater operating plan will not cause detrimental short- or long-term effects to the groundwater and surface water resources in the Valley and is therefore sustainable. The analysis of sustainability for groundwater and interrelated surface water is described in detail in "Analysis of Groundwater Supplies and Groundwater Basin Yield, USCR Groundwater Basin, East Subbasin" (Basin Yield Analysis) prepared August 2009 (LSCE & GSI, 2009).

Additional technical work performed for the SCV-GSA in preparation of its GSP confirmed previous conclusions that the basin plan was sustainable. Utilizing the new MODFLOW-USG model, additional analysis of the basin plan operating plan was performed for the Water Budget Development for the Santa Clara River Valley East Groundwater Subbasin report, GSI Water Solutions Inc, October 2021. The analysis was based on the existing operating plan, modified spatial pumping distribution, incorporated updated climate change data, and made other refinements. The analysis concluded that chronic lowering of groundwater levels and groundwater storage would not occur under the operating plan and therefore operation was within the safe yield of the Basin.

The updated groundwater operating plan (LSCE & GSI, 2009), as well as operations anticipated under the GSP are summarized in Table 3-2, is as follows:

- **Alluvium:** Pumping from the Alluvial Aquifer in a given year is governed by local hydrologic conditions in the eastern Santa Clara River Watershed. Pumping for municipal, agricultural, and private purposes ranges between 30,000 and 40,000 AFY during normal and above-normal rainfall years. However, due to hydrogeologic constraints in the eastern part of the Basin along with distribution of groundwater pumping, pumping is reduced to between 30,000 and 35,000 AFY during locally dry years. These amounts result in an ability to operate supply wells in the Basin in a feasible and sustainable manner.

- **Saugus Formation:** Pumping from the Saugus Formation in a given year is tied directly to the availability of other water supplies, particularly from the SWP. During average-year conditions within the SWP system, Saugus pumping ranges between 7,500 and 15,000 AFY. Planned dry-year pumping from the Saugus Formation ranges between 15,000 and 25,000 AFY during a drought year and can increase to between 21,000 and 25,000 AFY if SWP deliveries are reduced for two consecutive years and between 21,000 and 35,000 AFY if SWP deliveries are reduced for three consecutive years. Such high pumping would be followed by periods of reduced (average-year) pumping, at rates between 7,500 and 15,000 AFY, to further enhance the effectiveness of natural recharge processes that would recover water levels and groundwater storage volumes after the higher pumping during years with low SWP allocations.

TABLE 3-2 GROUNDWATER OPERATING PLAN FOR THE SANTA CLARITA VALLEY

	Groundwater Production (AF)			
Aquifer	**Normal Years**	**Dry Year 1**	**Dry Year 2**	**Dry Years 3-5**
Alluvium	30,000 to 40,000	30,000 to 35,000	30,000 to 35,000	30,000 to 35,000
Saugus Formation	7,500 to 15,000	15,000 to 25,000	21,000 to 25,000	21,000 to 35,000
Total	**37,500 to 55,000**	**45,000 to 60,000**	**51,000 to 60,000**	**51,000 to 70,000**

Within the groundwater operating plan, three factors affect the availability of groundwater supplies: 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 known contamination, or provisions for treatment in the event of contamination. These factors are discussed below.

Protection of groundwater sources and provisions for treatment in the event of contamination is briefly discussed below and discussed further in Section 4.

Perchlorate has been a water quality concern since 1997 when first detected in SCV Water's service area. Several Saugus Formation and Alluvial wells were initially removed from service. Treatment facilities for two wells, Saugus 1 and Saugus 2, have been installed and are currently operational. A treatment facility has been installed for the V201 well and awaits final permitting. Treatment system design has been initiated for Well 205. Additionally, two new wells, Saugus 3 and 4 have been designed and await permitting from DDW prior to drilling. Additional details on DDW permitting and associated timeline for Saugus wells are provided in Section 4.

Recently, USEPA provided a health advisory of lifetime exposure to PFOA and PFOS of 70 parts per trillion (or 70 nanogram per liter (ng/l)) for polyfluoroalkyl substances (PFAS). The health advisory is non-enforceable and non-regulatory and is intended to provide technical information to local and state agencies. In August of 2019, DDW set notification level (NL) and response levels for various PFAS constituents. SCV Water wells were tested and as of February 2020, over 60% of Alluvium wells exceeded the NL or RL resulting in 18 wells being taken out of service. Treatment for three of these wells (N-Wells) has been installed and the wells are now operational. Construction is also currently underway at the Valley Center Wells with a scheduled completion in 2022. Design is underway for treatment of two additional wells, Honby and Santa Clara, scheduled to be back online by 2023. Preliminary design for an additional 6 wells is under way and they are anticipated to be back online between 2024 and 2025. The remaining wells are anticipated to have treatment installed by 2030.

During this interim period of operation, pumping from non-impacted alluvium wells and Saugus Formation wells will be increased to partially mitigate for lost production capacity. The pumping distribution for alluvium wells and Saugus wells is shown in Table 3-4A and Table 3-4B respectively and summarized in Table 3-4 below. The originally anticipated schedule for installation of treatment for alluvium wells and Saugus Formation wells is contained in Appendix E of the 2020 UWMP. Updated Detailed Water Supply Tables are provided in Tables 3-4B, 3-4C, 3-5B and 3-5C (these tables updated planning and construction and permitting schedules and have been prepared in consultation with SCV Water's Engineering and Operations divisions.). For example, the online date for Saugus Formation Well 201 was changed from 2022 to 2024 to reflect inclusion of VOC treatment facilities. Similarly, the Santa Clara and Honby alluvial wells, originally scheduled to be online in 2023, are now scheduled to be available in 2024 to reflect scheduling experience gained from the previously treatment facilities constructed at the N wells. These tables reflect a likely operation moving forward but will be adjusted to reflect operational conditions that may develop.

Recent historical groundwater pumping by SCV Water and other groundwater users is summarized in Table 3-3. The quantity of groundwater used can significantly vary year to year based on a number of factors. For example, in 2016 continued dry conditions in northern California resulted in an allocation of only 20% of SCV Water's Table A amount and SCV Water relied more heavily on groundwater. In contrast 2017 and 2019 were wet years in the watersheds that provide SWP supplies, and higher SWP allocations allowed SCV Water to reduce groundwater extraction allowing the basin to recover storage. 2020 groundwater production was significantly curtailed due to newly implemented PFAS regulatory actions.

Planned future groundwater pumping in normal years, by the retail water purveyors as well as by other groundwater users, is summarized in Table 3-4. Existing and planned groundwater pumping by SCV Water as well as by other groundwater users, for normal, single-dry and multiple-dry year periods, are summarized in Section 4 and in Table 3-6 through Table 3-8 below.

TABLE 3-3 RECENT HISTORICAL GROUNDWATER PRODUCTION (AF)[a]

Santa Clara River Valley East Subbasin	2016	2017	2018	2019	2020
SCWD	6,892	3,900	5,383	5,948	5,311
Alluvium	3,485	907	2,465	2,762	2,517
Saugus Formation[b]	3,407	2,993	2,918	3,186	2,794
LACWWD 36	1,047	1,093	1,204	972	1,257
Alluvium	0	0	0	0	0
Saugus Formation	1,047	1,093	1,204	972	1,257
NCWD/NWD	4,468	2,303	2,608	3,708	4,591
Alluvium	626	780	728	1,044	1,322
Saugus Formation	3,842	1,523	1,880	2,664	3,269
VWC/VWD	13,922	9,107	13,674	6,919	6,173
Alluvium	11,133	7,737	10,837	5,243	3,732
Saugus Formation	2,789	1,370	2,837	1,676	2,441
Total Purveyor	**26,329**	**16,403**	**22,869**	**17,547**	**17,332**
Alluvium	**15,244**	**9,424**	**14,030**	**9,049**	**7,571**
Saugus Formation	**11,085**	**6,979**	**8,839**	**8,498**	**9,761**
Agricultural and Other[d][c]	14,359	13,438	13,071	12,510	12,300
Alluvium	13,605	12,554	12,437	11,967	9,190
Saugus Formation	754	884	843	1067	1060
Total Basin	**40,688**	**29,841**	**36,149**	**30,581**	**27,582**
Alluvium	**28,849**	**21,978**	**26,467**	**21,016**	**16,761**
Saugus Formation	**11,839**	**7,863**	**9,682**	**9,565**	**10,821**
Groundwater Fraction of Total Municipal Water Supply	**56%**	**39%**	**46%**	**42%**	**36%**

Notes:

(a) From 2019 Santa Clarita Valley Water Report (July 2020) and recorded amounts for 2020.

(b) Represents pumping from Saugus 1 and Saugus 2 wells.

(c) Includes agricultural and other small private well pumping.

(d) 2020 Agricultural and Other alluvial production includes Pitches Detention Center = 1,282 AF, Sand Canyon Country Club 116 AF, Small Pumpers = 500 AF and 2020 Newhall Land and Farming pumping = 7,292 AF for a total of 9,190 AF. Saugus includes private irrigation pumping from Valencia Country Club and Vista Valencia Golf Course 612 AF Saugus and Whittaker Bermite Treatment = 448 AF, for a total of 1,060 AF.

TABLE 3-4 PROJECTED GROUNDWATER PRODUCTION (NORMAL YEAR) (AF)

	Groundwater Pumping (AF)					
Basin Name	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**
Santa Clara River Valley East Subbasin						
Purveyor						
Alluvium[(a)]	19,240	28,050	30,790	30,790	30,790	30,790
Saugus Formation[(b)]	17,450	9,900	9,900	9,900	9,900	9,900
Total Purveyor	**36,690**	**37,950**	**40,690**	**40,690**	**40,690**	**40,690**
Non-Purveyor (Agricultural and Other)[(c)]						
Alluvium[(d)]	11,540	9,150	6,410	6,410	6,410	6,410
Saugus Formation	1,200	1,200	1,200	1,200	1,200	1,200
Total Agricultural and Other	**12,740**	**10,350**	**7,610**	**7,610**	**7,610**	**7,610**
Basin						
Alluvium	30,780	37,200	37,200	37,200	37,200	37,200
Saugus Formation	18,650	11,100	11,100	11,100	11,100	11,100
Total Basin	**49,430**	**48,300**	**48,300**	**48,300**	**48,300**	**48,300**

Notes:

(a) Includes existing, future (associated with the assumed development under the Newhall Ranch Specific Plan) and recovered pumping capacity after PFAS and Perchlorate treatment.

(b) Saugus Normal Year pumping in 2025 is higher than normal to mitigate for lost alluvial pumping capacity due to impacted PFAS wells.

(c) Non purveyor pumping includes Five Point (Newhall Ranch Agriculture), Pitches Detention Center, and Small Private Domestic pumping and irrigation at Sand Canyon Country Club, private irrigation pumping from Valencia Country Club and Vista Valencia Golf Course, as well as projected Whittaker-Bermite pumping for perchlorate treatment.

(d) Reflects reduction of up to 7,038 AF associated with the assumed development under the Newhall Ranch Specific Plan.

As reflected in Table 3-4, the groundwater operating plan recognizes ongoing pumping for the two major uses of groundwater in the Basin, municipal and agricultural (including private pumpers) water supply. Consistent with the groundwater operating plan, projected groundwater pumping includes an ongoing conversion of pumping, coincident with planned land-use changes, from agricultural to municipal water supply. This is shown in Table 3-4, with projected pumping by agricultural and other users decreasing as purveyor pumping increases in such a manner that overall pumping remains within the basin operating plan. The reduction in pumping for agricultural supply is primarily due to the development of Newhall Ranch (expected buildout date of 2034) and is expected to shift to an increase in pumping by SCV Water. The groundwater operating plan and projected pumping also includes other small private domestic and related pumping. As shown in Table 3-4, total projected groundwater pumping by all users within each aquifer is within the ranges for normal year pumping identified in the groundwater operating plan (Table 3-2). SCV Water recognizes that these estimates of projected groundwater use are subject to adjustment based on various factors and conditions occurring from time to time. These estimates are provided for the planning purposes of this report and the UWMP, and do not constitute an allocation of groundwater from the local groundwater basins.

3.3.2.4 Alluvium

Based on a combination of historical operating experience and groundwater modeling analyses (2005 and 2009 groundwater operation plan updates), the Alluvial Aquifer can supply groundwater on a long-term sustainable basis in the overall range of 30,000 to 40,000 AFY, with a probable reduction in dry years to a range of 30,000 to 35,000 AFY. Both of those ranges include 13,000 to 6,400 AFY (as reflected in Table 3-6 and Table 3-7) of Alluvial pumping for agricultural and other non-municipal water uses. The dry year reduction is a result of practical constraints in the eastern part of the Basin, where lowered groundwater levels in dry periods have the effect of reducing pumping capacities in that shallower portion of the aquifer. The GSP will also consider potential impacts on Groundwater Dependent Ecosystems throughout the basin and available analysis supports a determination that historic pumping patterns and future pumping patterns consistent with the Groundwater Basin Operating Plan were protective of these systems. In addition, in general, increased water conservation practices are expected to reduce both indoor and outdoor irrigation demands. Less outdoor irrigation water use creates less return flow to the basin and less indoor water use creates less recycled water both for use within SCV Water and for return to the Santa Clara River. SCV Water will monitor these effects to ensure that pumping by SCV Water does not impact groundwater supply for other uses, including groundwater dependent ecology. Additionally, it is anticipated that the SCV-GSA will monitor groundwater conditions and implement management actions if Sustainable Management Criteria, or Groundwater Dependent Ecosystem triggers are reached so as to protect resources and ensure sustainable operation of the basin.

One notable change in the future geographic patterns of production compared to historical distributions concerns the historic distribution of agricultural pumping compared to future distribution among SCV Water wells. Under the Newhall Ranch Specific Plan, NLF is to dedicate up to 7,038 AFY by fallowing lands and reducing agricultural pumping on its lands. Under the Specific Plan, SCV Water would then have the ability to pump water to serve the new development. The project will be constructed in stages over a number of years depending on market conditions. Likewise, SCV Water pumping would increase over time in such a manner that the overall pumping remains within the basin operating plan. The Specific Plan development is projecting to implement water conservation practices which will reduce both indoor and outdoor irrigation demands. This reduces the overall water demand of the development. Consistent with the above, SCV Water will monitor the transfer of water from NLF to ensure it does not impact other uses

If the 7,038 AFY dedicated by NLF is not sufficient to support the Specific Plan Development, NLF (or its successor in interest), will transfer additional water to SCV Water from the Nickel Water and/or the Semitropic Water Bank to backstop demands. In anticipation of this development, VWC, a PUC regulated private utility then owned by NLF, installed four wells. However, to manage future potential reductions in groundwater levels in the vicinity of these new wells, particularly during drought conditions, the GSP Water Budget Analysis indicated it would be desirable to install several wells located near the confluence of Castaic Creek and the Santa Clara River near the existing “C” wells that are currently used for agricultural production for Newhall Land’s operations in Los Angeles County.

Adequacy of Supply

Three factors affecting the availability of groundwater are (1) sufficient source infrastructure capacity (wells and pumps), (2) sustainability of the groundwater resource to meet pumping demand on a renewable basis, and (3) protection of groundwater sources (wells) from known contamination or from potential sources of contamination.

For source infrastructure, existing and planned wells, and pumps, SCV Water has a combined pumping capacity from active Alluvial wells of approximately 51,000 gallons per minute (gpm), which translates into a current full-time Alluvial source pumping capacity of approximately 83,000 AFY. The higher individual and cumulative pumping capacities are primarily for operational reasons (i.e., to meet daily and other fluctuations from average day to maximum day and peak hour system demands). Further, to achieve these levels of production, SCV Water must complete treatment facilities for PFAS compliance. The timing for returning PFAS and Perchlorate impacted wells is shown in the 2020 UWMP and incorporated herein. Alluvial pumping capacity from all the active and future municipal supply wells is summarized in Table 3-4C.

In terms of adequate source capacity to provide flexible and adaptive management in the sustainable use of groundwater resources, the current and projected availability of Alluvial groundwater source capacity of municipal wells is approximately 83,000 AFY. This source capacity is more than sufficient to meet the 21,400 AFY in 2025 and increases to 30,800 in 2035 (Table 3-4). The higher individual and cumulative pumping capacities are primarily for operational reasons (i.e., to meet daily and other fluctuations from average day to maximum day and peak hour system demands). As illustrated on Table 3-4C, the balance of all Alluvial pumping 37,200 AFY, including non-SCV Water pumping, remains within the operating plan range of 30,000 to 40,000 AFY.

TABLE 3-4A ACTIVE MUNICIPAL GROUNDWATER SOURCE CAPACITY — ALLUVIAL AQUIFER WELLS[(a)]

Well	Permitted Capacity (gpm)	Max. Annual Capacity (AF)	GSP Water Budget Analysis[(b)] Normal Year (AF)	Dry Year (AF)
Existing Wells[(c)]				
Castaic 1	640	1,030	430	420
Castaic 2	500	810	220	220
Castaic 4	330	530	-	-
Castaic 6	600	970	-	-
Castaic 7	2,000	3,230	580	730
Pinetree 3	550	890	310	-
Pinetree 4	500	810	-	-
Guida	1,000	1,610	560	560
Lost Canyon 2[(d)]	800	1,290	410	250
Lost Canyon 2A[(d)]	1,000	1,610	420	160
N. Oaks West	750	1,210	-	-
Sand Canyon	1,200	1,940	730	310
Well E-15[(d)]	1,400	2,260	725	620
Well W9	800	1,290	1,010	700
Well W11	1,000	1,610	1,180	1,000
Well E-17[(d)]	1,200	1,940	725	620
Existing Subtotal	*14,270*	*23,030*	*7,300*	*5,590*
Future[(e)] and Recovered Wells				
Pinetree 1[(f)]	300	480	190	0
Pinetree 5[(f)]	500	810	200	0
Clark[(f)]	550	890	380	270
Honby[(f)]	950	1,530	760	110
Mitchell 5B[(f)]	1,000	1,610	200	60
N. Oaks Central[(f)]	1,200	1,940	500	340
N. Oaks East[(f)]	950	1,530	500	220
Santa Clara[(f)]	1,500	2,420	770	250
Sierra[(f)]	1,000	1,610	400	60
Valley Center[(f)]	1,200	1,940	1,000	610
Well D[(f)]	1,050	1,690	1,210	920
Well N[(f)]	1,250	2,020	630	1,060
Well N7[(f)]	2,500	4,040	1,470	1,680
Well N8[(f)]	2,500	4,040	1,430	1,680
Well Q2[(g)(f)]	1,200	1,940	770	850
Well S6[(f)]	2,000	3,230	640	2,080

Well	Permitted Capacity (gpm)	Max. Annual Capacity (AF)	GSP Water Budget Analysis[b] Normal Year (AF)	Dry Year (AF)
Well S7[f]	2,000	3,230	620	780
Well S8[f]	2,000	3,230	610	760
Well T7[f]	1,200	1,940	880	360
Well U4[f]	1,000	1,610	940	570
Well U6[f]	1,250	2,020	1,050	660
Well W10[f]	1,500	2,420	1,700	1,490
Well E-14[h]	1,200	1,940	725	610
Well E-16[h]	1,200	1,940	725	610
Well G-45[h]	1,200	1,940	1,670	1,430
Well C-11[h]	2,000	3,230	1,600	1,360
Well C-12[h]	2,000	3,230	1,600	1,360
S9 (Mitchell 5A Replacement)[h]	1,000	1,610	320	320
Future Subtotal	*37,200*	*60,060*	*23,490*	*20,500*
Total	**51,470**	**83,090**	**30,790**	**26,090**

Notes:
(a) The quantities of groundwater extracted by existing or future and recovered well capacity will vary depending on operating conditions. However, overall pumping remains within the groundwater basin yields per the GSP (GSI 2022) and the updated Basin Yield Analysis (LSC & GSI 2009).
(b) Production for Normal and Dry years represented in this table represent the period after all impacted wells (PFAS and Perchlorate impacts) are recovered. Dry-year production represents anticipated maximum dry year production. Schedule for recovered well capacity based on Groundwater Treatment Implementation Plan Technical Memorandum, Kennedy Jenks 2021 in Appendix M of the 2020 UWMP.
(c) Existing Category includes all wells currently online and in use.
(d) E Wells and Lost Canyon have been below the RL so are not impacted wells but they are anticipated to be connected into central treatment systems.
(e) Future Category includes all wells restored from PFAS and Perchlorate water quality issues, and other future alluvial wells including those associated with development under the Newhall Ranch Specific Plan.
(f) PFAS impacted well.
(g) Perchlorate impacted well.
(h) Future wells.

TABLE 3-4B
ACTIVE MUNICIPAL GROUNDWATER SOURCE CAPACITY - EXISTING, FUTURE AND RECOVERED ALLUVIAL AQUIFER WELLS[(a)]
NORMAL YEAR DETAIL (2021-2030)

Well	Permitted Capacity (gpm)	Max. Annual Capacity (AF)	Normal Year (AF)[(b)]									
			2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Existing Wells[(c)]												
Castaic 1	640	1,030	430	430	430	430	430	430	430	430	430	430
Castaic 2	500	810	220	220	220	220	220	220	220	220	220	220
Castaic 4	330	530	-	-	-	-	-	-	-	-	-	-
Castaic 6	600	970	-	-	-	-	-	-	-	-	-	-
Castaic 7	2,000	3,230	580	580	580	580	580	580	580	580	580	580
Pinetree 3	550	890	310	310	310	310	310	310	310	310	310	310
Pinetree 4	500	810	-	-	-	-	-	-	-	-	-	-
Guida	1,000	1,610	560	560	560	560	560	560	560	560	560	560
Lost Canyon 2[(d)]	800	1,290	410	410	410	410	410	410	410	410	410	410
Lost Canyon 2A[(d)]	1,000	1,610	420	420	420	420	420	420	420	420	420	420
N. Oaks West	750	1,210	-	-	-	-	-	-	-	-	-	-
Sand Canyon	1,200	1,940	730	730	730	730	730	730	730	730	730	730
Well E-15[(d)]	1,400	2,260	1,680	1,680	1,680	1,680	1,680	1,680	1,680	1,680	1,600	1,600
Well W9	800	1,290	1,030	1,030	1,030	1,030	1,030	1,030	1,030	1,030	1,010	1,010
Well W11	1,000	1,610	1,240	1,240	1,240	1,240	1,240	1,240	1,180	1,180	1,180	1,180
Well E-17[(d)]	1,200	1,940	1,290	1,290	1,290	1,290	1,290	1,290	1,290	1,290	730	730

Existing Subtotal	*14,270*	*23,030*	*8,900*	*8,900*	*8,900*	*8,900*	*8,900*	*8,900*	*8,840*	*8,840*	*8,180*	*8,180*
Future[e] and Recovered Wells												
Pinetree 1[f]	300	480	-	-	-	-	-	-	-	-	-	190
Pinetree 5[f]	500	810	-	-	-	-	-	-	-	-	-	200
Clark[f]	550	890	-	-	-	-	-	-	-	-	-	380
Honby[f]	950	1,530	-	-	-	760	760	760	760	760	760	760
Mitchell 5B[f]	1,000	1,610	-	-	-	-	-	-	-	-	-	200
N. Oaks Central[f]	1,200	1,940	-	-	-	-	-	-	-	-	-	500
N. Oaks East[f]	950	1,530	-	-	-	-	-	-	-	-	-	500
Santa Clara[f]	1,500	2,420	-	-	-	1,010	1,010	1,010	1,010	1,010	1,010	1,010
Sierra[f]	1,000	1,610	-	-	-	-	-	-	-	-	-	400
Valley Center[f]	1,200	1,940	-	1,190	1,190	1,030	1,030	1,030	1,030	1,030	1,030	1,030
Well D[f]	1,050	1,690	-	-	-	-	-	-	-	1,210	1,210	1,210
Well N[f]	1,250	2,020	980	870	870	870	630	630	630	630	630	630
Well N7[f]	2,500	4,040	2,600	2,180	2,180	2,180	1,470	1,470	1,470	1,470	1,470	1,470
Well N8[f]	2,500	4,040	2,600	2,180	2,180	2,810	1,430	1,430	1,430	1,430	1,430	1,430
Well Q2[g][f]	1,200	1,940	-	940	940	940	770	770	770	770	770	770
Well S6[f]	2,000	3,230	-	-	-	-	-	640	640	640	640	640
Well S7[f]	2,000	3,230	-	-	-	-	-	620	620	620	620	620
Well S8[f]	2,000	3,230	-	-	-	-	-	610	610	610	610	610
Well T7[f]	1,200	1,940	-	-	-	-	750	750	750	750	750	750
Well U4[f]	1,000	1,610	-	-	-	-	700	700	700	700	700	700
Well U6[f]	1,250	2,020	-	-	-	-	800	800	800	800	800	840
Well W10[f]	1,500	2,420	-	-	-	-	-	-	1,650	1,650	1,650	1,650
Well E-14[h]	1,200	1,940	-	-	-		740	740	740	740	740	740

Well E-16[h]	1,200	1,940	-	-	-		250	650	650	650	650	650
Well G-45[h]	1,200	1,940	-	-	-	-	-	-	-	-	1,670	1,670
Well C-11[h]	2,000	3,230	-	-	-	-	-	-	-	-	-	-
Well C-12[h]	2,000	3,230	-	-	-	-	-	-	-	-	-	-
S9 (Mitchell 5A Replacement)[h]	1,000	1,610	-	-	-	-	-	320	320	320	320	320
Future Subtotal	*37,200*	*60,060*	*6,180*	*7,360*	*7,360*	*9,600*	*10,340*	*12,930*	*14,580*	*15,790*	*17,460*	*19,870*
Total	**51,470**	**83,090**	**15,080**	**16,260**	**16,260**	**18,500**	**19,240**	**21,830**	**23,420**	**24,630**	**25,640**	**28,050**

Notes:

(a) The quantities of groundwater extracted by existing or future and recovered well capacity will vary depending on operating conditions. However, overall pumping remains within the groundwater basin yields per the 2020 SCV-GSA Water Budget Development Tech Memo (GSI 2020) and the updated Basin Yield Analysis (LSC & GSI 2009).

(b) Schedule for recovered well capacity based on Groundwater Treatment Implementation Plan Technical Memorandum, Kennedy Jenks 2021 in Appendix M of the 2020 UWMP. 2023 through 2025 adjustments based on January 2022 engineering project schedule updates.

(c) Existing Category includes all wells currently online and in use.

(d) E Wells and Lost Canyon have not come below the RL so are not impacted wells but are anticipated to be connected into central treatment systems.

(e) Future Category includes all wells restored from PFAS and Perchlorate water quality issues, and other future alluvial wells including those associated with development under the Newhall Ranch Specific Plan.

(f) PFAS impacted well.

(g) Perchlorate impacted well.

(h) Future wells.

TABLE 3-4 C
ACTIVE MUNICIPAL GROUNDWATER SOURCE CAPACITY
EXISTING, FUTURE AND RECOVERED ALLUVIAL AQUIFER WELLS[(a)]
DRY YEAR DETAIL (2021-2030)

Well	Permitted Capacity (gpm)	Max. Annual Capacity (AF)	Dry Year (AF)[(b)]									
			2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Existing Wells(c)												
Castaic 1	640	1,030	420	420	420	420	420	420	420	420	420	420
Castaic 2	500	810	220	220	220	220	220	220	220	220	220	220
Castaic 4	330	530	-	-	-	-	-	-	-	-	-	-
Castaic 6	600	970	-	-	-	-	-	-	-	-	-	-
Castaic 7	2,000	3,230	730	730	730	730	730	730	730	730	730	730
Pinetree 3	550	890	0	0	0	0	0	0	0	0	0	0
Pinetree 4	500	810	-	-	-	-	-	-	-	-	-	-
Guida	1,000	1,610	560	560	560	560	560	560	560	560	560	560
Lost Canyon 2[(d)]	800	1,290	250	250	250	250	250	250	250	250	250	250
Lost Canyon 2A[(d)]	1,000	1,610	160	160	160	160	160	160	160	160	160	160
N. Oaks West	750	1,210	-	-	-	-	-	-	-	-	-	-
Sand Canyon	1,200	1,940	310	310	310	310	310	310	310	310	310	310
Well E-15[(d)]	1,400	2,260	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,360
Well W9	800	1,290	940	940	940	940	940	940	940	940	940	700
Well W11	1,000	1,610	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,000
Well E-17[(d)]	1,200	1,940	1,060	1,060	1,060	1,060	1,060	1,060	1,060	1,060	1,060	620
Existing Subtotal	*14,270*	23,030	7,300	7,300	7,300	7,300	7,300	7,300	7,300	7,300	7,300	6,330

Future[e] and Recovered Wells												
Pinetree 1[f]	300	480	-	-	-	-	-	-	-	-	-	0
Pinetree 5[f]	500	810	-	-	-	-	-	-	-	-	-	0
Clark[f]	550	890	-	-	-	-	-	-	-	-	-	270
Honby[f]	950	1,530	-	-	-	110	110	110	110	110	110	110
Mitchell 5B[f]	1,000	1,610	-	-	-	-	-	-	-	-	-	60
N. Oaks Central[f]	1,200	1,940	-	-	-	-	-	-	-	-	-	340
N. Oaks East[f]	950	1,530	-	-	-	-	-	-	-	-	-	220
Santa Clara[f]	1,500	2,420	-	-	-	250	250	250	250	250	250	250
Sierra[f]	1,000	1,610	-	-	-	-	-	-	-	-	-	60
Valley Center[f]	1,200	1,940	-	800	800	800	610	610	610	610	610	610
Well D[f]	1,050	1,690	-	-	-	-	-	-	-	920	920	920
Well N[f]	1,250	2,020	1,060	1,060	1,060	1,060	1,060	1,060	1,060	1,060	1,060	1,060
Well N7[f]	2,500	4,040	2,310	2,310	2,310	2,310	1,680	1,680	1,680	1,680	1,680	1,680
Well N8[f]	2,500	4,040	2,310	2,310	2,310	2,310	1,680	1,680	1,680	1,680	1,680	1,680
Well Q2[g][f]	1,200	1,940	-	1,110	1,110	1,110	850	850	850	850	850	850
Well S6[f]	2,000	3,230	-	-	-	-	-	2,080	2,080	2,080	2,080	2,080
Well S7[f]	2,000	3,230	-	-	-	-	-	780	780	780	780	780
Well S8[f]	2,000	3,230	-	-	-	-	-	760	760	760	760	760
Well T7[f]	1,200	1,940	-	-	-	-	360	360	360	360	360	360
Well U4[f]	1,000	1,610	-	-	-	-	570	570	570	570	570	570
Well U6[f]	1,250	2,020	-	-	-	-	660	660	660	660	660	660
Well W10[f]	1,500	2,420	-	-	-	-	-	-	1,030	1,030	1,030	1,490
Well E-14[h]	1,200	1,940	-	-	-		620	620	620	620	620	620
Well E-16[h]	1,200	1,940	-	-	-		580	580	580	580	580	580

Well G-45[h]	1,200	1,940	-	-	-	-					650	690
Well C-11[h]	2,000	3,230	-	-	-	-	-	-	-	-	-	-
Well C-12[h]	2,000	3,230	-	-	-	-	-	-	-	-	-	-
S9 (Mitchell 5A Replacement)[h]	1,000	1,610	-	-	-	-	-	320	320	320	320	320
Future Subtotal	*37,200*	*60,060*	*5,680*	*7,590*	*7,590*	*7,950*	*9,030*	*12,970*	*14,000*	*14,920*	*15,570*	*17,020*
Total	**51,470**	**83,090**	**12,980**	**14,890**	**14,890**	**15,250**	**16,330**	**20,270**	**21,300**	**22,220**	**22,870**	**23,350**

Notes:

(a) The quantities of groundwater extracted by existing or future and recovered well capacity will vary depending on operating conditions. However, overall pumping remains within the groundwater basin yields per the 2020 SCV-GSA Water Budget Development Tech Memo (GSI 2020) and the updated Basin Yield Analysis (LSC & GSI 2009).

(b) Dry-year production represents anticipated maximum dry year production. Schedule for recovered well capacity based on Groundwater Treatment Implementation Plan Technical Memorandum, Kennedy Jenks 2021 in Appendix M of the 2020 UWMP. 2023 through 2025 adjustments based on January 2022 engineering project schedule updates.

(c) Existing Category includes all wells currently online and in use.

(d) E Wells and Lost Canyon have not come below the RL so are not impacted wells but are anticipated to be connected into central treatment systems.

(e) Future Category includes all wells restored from PFAS and Perchlorate water quality issues, and other future alluvial wells including those associated with development under the Newhall Ranch Specific Plan.

(f) PFAS impacted well.

(g) Perchlorate impacted well.

(h) Future wells.

Sustainability

Until 2003, the long-term renewability of Alluvial groundwater was empirically determined from approximately 60 years of pumping and groundwater level records. Generally, those long-term observations included stability in groundwater levels and storage, with some dry-period fluctuations in the eastern part of the Basin. During this period, the total Alluvial pumpage ranged from a low of about 20,000 AFY to as high as about 43,000 AFY. Those empirical observations have since been complemented by the development and application of a numerical groundwater flow model, which has been used to simulate aquifer response to the planned operating ranges and distribution of pumping. The numerical groundwater flow model has also been used to analyze the control of perchlorate contaminant migration. The model was used to evaluate the likelihood of perchlorate migration to the then VWC wells, in particular Well Q2 and the wells in the VWC Pardee wellfield. The assessment of perchlorate migration also evaluated the sustainability and reliability of water supplies from the Alluvial aquifer. This analysis (LSCE, 2005) concluded that there was sufficient production capacity in the Alluvium to meet water demands in the case of VWC Well Q2 and/or the Pardee well field being temporarily taken out of service due to perchlorate impacts.

To examine the yield of the Alluvium, or more specifically the sustainability of the Alluvium on a renewable basis, the original groundwater flow model was used to examine the long-term projected response of the aquifer to pumping for municipal and agricultural uses in the 30,000 to 40,000 AFY range under average/normal and wet conditions, and in the 30,000 to 35,000 AFY range under locally dry conditions, documented in the 2005 basin yield analysis (2005 Basin Yield Analysis), prepared by CH2M Hill & LSCE, 2005. To examine the response of the entire aquifer system, the original model also incorporated pumping from the Saugus Formation in accordance with the normal (7,500 to 15,000 AFY) and dry year (15,000 to 35,000 AFY) operating plan for that aquifer. The model was run over a synthetic 78-year hydrologic period, which was selected from actual historical precipitation to examine a number of hydrologic conditions expected to affect both groundwater pumping and groundwater recharge and including projected impacts from climate change.

Simulated Alluvial Aquifer response to the range of hydrologic conditions and pumping stresses was essentially a long-term repeat of the historical conditions that have resulted from similar pumping over the last several decades. The resultant response included (1) generally constant groundwater levels in the middle to western portion of the Alluvium, and fluctuating groundwater levels in the eastern portion as a function of wet and dry hydrologic conditions, (2) variations in recharge that directly correlate with wet and dry hydrologic conditions and (3) no long-term decline in groundwater levels or storage. Consequently, the Alluvial Aquifer was considered in the 2005 UWMP to be a sustainable water supply source to meet the Alluvial portion of the operating plan for the groundwater Basin.

In 2008, partly in preparation for the 2010 UWMP and partly in response to concerns about events expected to impact the future reliability of supplemental water supply from the SWP, an updated analysis was undertaken to assess groundwater development potential and possible augmentation of the groundwater operating plan. In addition to extending the model's calibration, the updated analysis simulated the historical record of climate and incorporated SWP deliveries for those climatic conditions for an 86-year period from 1922 through 2007, in place of the original model's synthetic 78-year hydrologic period that had been developed prior to the availability of combined climate and SWP deliveries since 1922. While the overall operating plan ranges in the updated basin yield analysis did not change from the original operating plan, prevailing land-use conditions and the specific distributions of pumping were found to produce the same kinds of resultant Alluvial groundwater conditions as concluded to be sustainable in 2005 – (1) no long-term declines in Alluvial groundwater levels and storage; (2) multi-year periods of locally declining, or locally increasing, groundwater levels in response to cycles of below-normal and above-normal precipitation and (3) short-term impacts on pumping capacities in eastern parts of the basin due to declining groundwater levels during dry periods, mitigable by short-term redistribution of pumping to wells located in the central and western portions of the Basin (reflected in pumping volumes included in this WSA and the 2020 UWMP) and by conformance with the dry-period reduction in Alluvial pumping in the operating plan (Table 3-2). Based on the results of the updated basin yield analysis (LSCE & GSI, 2009), the operating plan is considered to reflect ongoing sustainable groundwater supply rates. In the Alluvium, sustainability was found via explicit simulation of pumping in wet/normal years near the upper end of the operating plan range. In dry years, sustainability was found via explicit simulation of pumping throughout the dry-year operating plan range, with the additional consideration that some redistribution of municipal pumping (reflected in this WSA and the 2020 UWMP and experienced in the dry years of 2014 and 2015) be implemented to achieve pumping rates near the dry-period range.

The SCV-GSA's work on Basin sustainability for the GSP has advanced the technical understanding of basin conditions since the 2009 basin yield analysis and confirms the previous conclusion. A new groundwater flow model using the U.S Geological Survey software MODFLOW-USG was developed calibrated and peer reviewed. The MODFLOW-USG model improves the spatial resolution and employs more sophisticated methods of representing stream/aquifer interactions among other advancements over the previous model. A more thorough discussion is documented in Development of a Numerical Groundwater Flow Model for the Santa Clara River Valley East Groundwater Subbasin GSI September 22, 2020. Additionally, the GSP Water Budget Analysis reflects updated climate change assumptions provided by DWR. New GSP technical reports defining the extent and nature of groundwater dependent ecosystems informed potential future adjustments of pumping distributions throughout the Alluvial Aquifer and Saugus Formation when considering sustainability criteria including potential impacts on groundwater dependent ecosystems. Accordingly, the 2020 UWMP reflects adjusted pumping distributions that are reflected in this WSA's Table 3-4C.

On January 3, 2022, the GSP was adopted which reflects updated technical resources and analysis, and a robust public involvement and review process. The plan can be accessed at. *https://scvgsa.org/wp-content/uploads/2021/12/SCV-GSP-Sections-Combined-20211217.pdf*.

The plan reached the following conclusions relating to sustainability:

1. Chronic Lowering of Groundwater Levels – Alluvium and Saugus Formation pumping consistent with the basin operating plan does not result in chronic lowering of groundwater levels.

2. Reduction of Groundwater Storage - Alluvium and Saugus Formation pumping consistent with the basin operating plan does not result in long-term groundwater storage depletion.

3. Degraded Water Quality – Implementation of treatment for known contaminants support continued Alluvium and Saugus Formation groundwater use consistent with the operating plan.

4. Land Subsidence – An evaluation of the available information indicates there is no evidence of land subsidence occurring. The GSP does identify additional data collection needs to ensure land subsidence remains a non-issue while achieving the basin operation plan. The GSP incorporates active monitoring stations.

5. Depletion of Interconnected Surface Water/Groundwater Dependent Ecosystems – Existing riparian habitat along the Santa Clara River is considered by resource agencies as having very high value. The extent and quality of the habitat can vary significantly from year to year in response to very wet or dry conditions and demonstrates considerable resiliency. Certain aquatic habitats are critical for known protected species such as the Three Spined Unarmored Stickle Back. The GSP incorporates a process that avoids groundwater pumping related permanent loss of riparian habitat or the temporary loss of critical aquatic habitat. Active monitoring of groundwater levels will occur and when trigger levels (set at or above historical groundwater levels) are reached, an assessment of the cause would be conducted. If impacts are related to pumping, then responsive measures and/or projects would be implemented. These could include a reduction of groundwater pumping.

6. Seawater Intrusion – The significant distance of the Alluvial Aquifer and Saugus Formation from the ocean, as well as differences in elevation, do not allow for seawater intrusion into the upper basin.

Considering the results of the 2009 basin yield analysis and the results of the updated groundwater analysis performed by the SCV-GSA for its GSP which included the pumping distributions consistent with those shown in Table 3-4C, the basin can be sustainably operated without chronic lowering of groundwater levels or groundwater storage.

3.3.2.5 Saugus Formation

Based on historical operating experience and recent (2005 and 2009) groundwater modeling analysis, the Saugus Formation can supply water on a long-term sustainable basis in a normal range of 7,500 to 15,000 AFY. Intermittent increases to 25,000 to 35,000 AF in dry years have not been historically experienced operationally, however, investigations of the Saugus Formation, historical groundwater level monitoring data, and numerical modeling indicate that the Saugus Formation can be pumped sustainably at these higher rates in dry years, followed by reductions in pumping in wet to normal years. The dry-year increases, based on modeled projections, demonstrate that the 25,000 to 35,000 AFY is a small amount of the large groundwater storage in the Saugus Formation and these amounts can be pumped over a relatively short (dry) period. This would be followed by recharge (replenishment) of that storage during a subsequent normal-to-wet period when the Saugus pumping would be reduced to 7,500 to 15,000 AFY.

Adequacy of Supply

For municipal water supply with existing wells, SCV Water has a combined pumping capacity from active Saugus wells of nearly 16,200 gpm, which translates into a full-time Saugus

Formation source capacity of about 26,120 AFY. Additionally, LACWWD 36 completed a Saugus Formation Well with a pumping capacity estimated at 2,000 gpm and an annual capacity of 3,220 AFY. Saugus Formation pumping capacity from all the existing active municipal supply wells is summarized in Table 3-5A, as well as restored, replacement, and planned new supply wells. The active wells include two Saugus Formation wells contaminated by perchlorate (Saugus 1 and 2), which were returned to service in 2010 with treatment facilities for use of the treated water for municipal supply under permit from the California Department of Public Health (DPH). The permit is now with DDW. The active wells also include the most recent replacement well, Well 207, in a non-impacted part of the basin. Also included in Table 3-5A is Well 201, which was impacted by the detection of perchlorate and removed from service in 2010. The well has been equipped with treatment facilities for perchlorate and was awaiting final DDW approval), however, a second treatment train is being designed for treatment of VOCs. Well 201 is anticipated to provide a total of 2,000 gpm of pumping capacity and is anticipated to return to service sometime in 2024. Similarly, Well 205, was taken out of service for perchlorate. Treatment for this facility is under the early stages of design and it is anticipated to return to service in 2024 as shown in Table 3-6.

To achieve full dry year production of 33,800 AFY six additional Saugus wells are planned. Two of these wells, Saugus 3 and 4, located behind Magic Mountain, have been designed and rebid after consultation with DDW on the criteria for obtaining an operating permit as related to issues surrounding the proximity of abandoned oil wells. It is estimated that these wells should be available in 2025. The next wells anticipated to be available are Saugus 5 and 6, located in the Castaic Junction area. Sites have been secured for these wells and they are anticipated to be available in 2027. To accommodate the shifting of pumping patterns associated with treatment being added at Well 201 and Well 205 the GSP Water Budget Analysis concluded that two additional dry-year wells would be required to meet the Saugus Formation pumping objectives. These final two wells, Saugus 7 and Saugus 8, do not have specific sites. The GSP Water Budget Analysis assumed these wells would be located near the South Fork of the Santa Clara River in the vicinity of the existing well 12 and 13. These wells are anticipated to become available in 2030. Additional details on DDW permitting and associated timeline for Saugus wells are provided in Section 4.7.

In terms of adequacy and availability, the combined active (existing) Saugus groundwater source capacity of municipal wells of about 29,340 AFY is more than sufficient to meet the planned use of Saugus groundwater in normal years of 7,500 to 15,000 AFY. This existing active capacity is also more than sufficient to meet near term dry year water demands, in combination with other sources. In order to supplement long term dry-year supplies, additional Saugus Formation wells are planned to be operational within the next ten years.

With the restored capacity of Wells 201 and 205 and the additional planned new Saugus Formation wells, the total dry year combined capacity will increase to about 54,680 AFY. As shown in Table 3-5C, this combined capacity is more than sufficient to meet the multiple dry year municipal production target of 33,880 AFY.

TABLE 3-5A MUNICIPAL GROUNDWATER SOURCE CAPACITY- EXISTING, FUTURE, AND RECOVERED SAUGUS FORMATION WELLS[(a)]

Well		Permitted Capacity (gpm)	Max. Annual Capacity (AF)	GSP Water Budget Analysis[(b)] Normal Year (AF)	GSP Water Budget Analysis[(b)] Dry Year (AF)
Existing Wells[(c)]					
LACWWD36[(d)]					
	Palmer	2,000	3,220	500	1,250
SCV Water					
	12[(i)]	2,500	4,030	530	2,280
	13	2,500	4,030	540	2,280
	160	2,000	3,230	0	680
	206	2,500	4,030	180	2,830
	207	2,500	4,030	140	2,860
	Saugus 1	1,100	1,770	1,450	1,450
	Saugus 2	1,100	1,770	1,350	1,350
SCV Water Subtotal		*14,200*	*22,890*	*4,190*	*13,730*
Existing Purveyor Subtotal		*16,200*	*26,110*	*4,690*	*14,980*
Future[(f)] and Recovered Wells					
	201[(e)]	2,000	3,230	2,420	2,900
	205[(g)]	2,700	4,360	2,610	2,920
	Saugus 3[(h)]	2,500	4,030	30	2,620
	Saugus 4[(h)]	2,500	4,030	30	2,620
	Saugus 5[(h)]	2,000	3,230	30	1,940
	Saugus 6[(h)]	2,000	3,230	30	1,940
	Saugus 7[(h)]	2,000	3,230	30	1,940
	Saugus 8[(h)]	2,000	3,230	30	1,940
Future Subtotal		*17,700*	*28,570*	*5,210*	*15,920*
Total Purveyors		**33,900**	**54,680**	**9,900**	**33,800**

Notes:

(a) The quantities of groundwater extracted by existing or future and recovered well capacity will vary depending on operating conditions. However, overall pumping remains within the groundwater basin yields per the GSP (GSI 2022) and the updated Basin Yield Analysis (LSC & GSI 2009).

(b) Production for Normal and Dry years represented in this table represent the period after all impacted wells (PFAS and Perchlorate impacts) are recovered. See Tables 3-5B and 3-5C for anticipated production from 2021-2030. Dry-year production represents anticipated maximum dry year production. Schedule for recovered well capacity based on Groundwater Treatment Implementation Plan Technical Memorandum, Kennedy Jenks 2021 in Appendix M of the 2020 UWMP.
(c) Existing Category includes all wells currently online and in use.
(d) LAWWD36 anticipated production for normal and dry years.
(e) Well 201 is awaiting VOC treatment and DDW permitting, returning to service in 2024.
(f) Future Category includes two wells restored from Perchlorate and VOC water quality issues, and other future Saugus wells.
(g) Well 205 is impacted by Perchlorate and is expected to return to service in 2024.
(h) Future wells, Saugus 3 & 4, are planned replacement wells, Saugus 5-8 are new Dry Year wells. The new dry-year wells would not typically be operated during average/normal years.
(i) Permitted at 2,500 gpm but capacity was reduced to 2,000 gpm during last rehab.

TABLE 3-5 B
MUNICIPAL GROUNDWATER SOURCE CAPACITY
EXISTING, FUTURE AND RECOVERED SAUGUS FORMATION WELLS[a]
NORMAL YEAR DETAIL (2021-2030)

Well	Permitted Capacity (gpm)	Max. Annual Capacity (AF)	Normal Year (AF) [b]									
			2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Existing Wells [c]												
LACWWD36[d]												
Palmer	2,000	3,220	500	500	500	500	500	500	500	500	500	500
SCV Water												
12[i]	2,500	4,030	2,220	2,220	2,220	2,220	2,220	530	530	530	530	530
13	2,500	4,030	2,280	2,280	2,280	2,280	2,280	540	540	540	540	540
160	2,000	3,230	-	-	-	-	-	-	-	-	-	-
201[e]	2,000	3,230	-	-	-	2,580	2,580	2,480	2,420	2,420	2,420	2,420
206	2,500	4,030	2,830	2,830	2,830	2,020	2,020	200	200	200	200	180
207	2,500	4,030	2,860	2,860	2,860	2,040	2,040	180	180	180	180	140
Saugus 1	1,100	1,770	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450
Saugus 2	1,100	1,770	1,350	1,350	1,350	1,350	1,350	1,350	1,350	1,350	1,350	1,350
SCV Water Subtotal	*16,200*	*26,120*	*12,990*	*12,990*	*12,990*	*13,940*	*13,940*	*6,730*	*6,670*	*6,670*	*6,670*	*6,610*
Existing Purveyor Subtotal	*18,200*	*29,340*	*13,490*	*13,490*	*13,490*	*14,440*	*14,440*	*7,230*	*7,170*	*7,170*	*7,170*	*7,110*
Future[f] and Recovered Wells												
205[g]	2,700	4,360	-	-	-	3,010	2,610	2,610	2,610	2,610	2,610	2,610
Saugus 3[h]	2,500	4,030					200	30	30	30	30	30
Saugus 4[h]	2,500	4,030					200	30	30	30	30	30
Saugus 5[h]	2,000	3,230							30	30	30	30
Saugus 6[h]	2,000	3,230							30	30	30	30

Saugus 7[h]	2,000	3,230										30
Saugus 8[h]	2,000	3,230										30
Future Subtotal	*15,700*	*25,340*	*0*	*0*	*0*	*3,010*	*3,010*	*2,670*	*2,730*	*2,730*	*2,730*	*2,790*
Total Purveyors [j]	**33,900**	**54,680**	**13,490**	**13,490**	**13,490**	**17,450**	**17,450**	**9,900**	**9,900**	**9,900**	**9,900**	**9,900**

Notes:

(a) The quantities of groundwater extracted by existing or future and recovered well capacity will vary depending on operating conditions. However, overall pumping remains within the groundwater basin yields per the 2020 SCV-GSA Water Budget Development Tech Memo (GSI 2020) and the updated Basin Yield Analysis (LSC & GSI 2009).

(b) Schedule for recovered well capacity based on Groundwater Treatment Implementation Plan Technical Memorandum, Kennedy Jenks 2021 in Appendix M of the 2020 UWMP. 2022 and 2023 updates based on permitting and treatment project schedule changes.

(c) Existing Category includes all wells currently online and in use.

(d) LAWWD36 anticipated production for normal and dry years.

(e) Well 201 could have been put online through 97-005 permitting process, however treatment plans were altered and Well 201 is now awaiting supplemental VOC treatment and DDW permitting. Anticipate return to service in 2024.

(f) Future Category includes one well restored from Perchlorate water quality issues, and other future Saugus wells.

(g) Well 205 is impacted by Perchlorate and is expected to return to service in 2024.

(h) Future wells, Saugus 3 & 4, are planned replacement wells, Saugus 5-8 are new Dry Year wells. The new dry-year wells would not typically be operated during average/normal years.

(i) Permitted at 2,500 gpm but capacity was reduced to 2,000 gpm during last rehab.

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TABLE 3-5 C
MUNICIPAL GROUNDWATER SOURCE CAPACITY
EXISTING, FUTURE AND RECOVERED SAUGUS FORMATION WELLS[a]
DRY YEAR DETAIL (2021-2030)

Well	Permitted Capacity (gpm)	Max. Annual Capacity (AF)	Dry Year (AF)[b]									
			2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Existing Wells [c]												
LACWWD36[d]												
Palmer	2,000	3,220	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250
SCV Water												
12[i]	2,500	4,030	2,280	2,280	2,280	2,280	2,280	2,280	2,280	2,280	2,280	2,280
13	2,500	4,030	2,280	2,280	2,280	2,280	2,280	2,280	2,280	2,280	2,280	2,280
160	2,000	3,230	680	680	680	680	680	680	680	680	680	680
201[e]	2,000	3,230	-	-	-	2,900	2,900	2,900	2,900	2,900	2,900	2,900
206	2,500	4,030	2,830	2,830	2,830	2,830	2,830	2,830	2,830	2,830	2,830	2,830
207	2,500	4,030	2,860	2,860	2,860	2,860	2,860	2,860	2,860	2,860	2,860	2,860
Saugus 1	1,100	1,770	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450
Saugus 2	1,100	1,770	1,350	1,350	1,350	1,350	1,350	1,350	1,350	1,350	1,350	1,350
SCV Water Subtotal	*16,200*	*26,120*	*13,730*	*13,730*	*13,730*	*16,630*	*16,630*	*16,630*	*16,630*	*16,630*	*16,630*	*16,630*
Existing Purveyor Subtotal	*18,200*	*29,340*	*14,980*	*14,980*	*14,980*	*17,880*	*17,880*	*17,880*	*17,880*	*17,880*	*17,880*	*17,880*
Future[f] and Recovered Wells												
205[g]	2,700	4,360	-	-	-	3,050	3,050	3,050	3,050	3,050	3,050	2,920
Saugus 3[h]	2,500	4,030					3,020	3,020	2,620	2,620	2,620	2,620
Saugus 4[h]	2,500	4,030					3,020	3,020	2,620	2,620	2,620	2,620
Saugus 5[h]	2,000	3,230							2,420	2,420	2,420	1,940

Saugus 6[h]	2,000	3,230							2,420	2,420	2,420	1,940
Saugus 7[h]	2,000	3,230										1,940
Saugus 8[h]	2,000	3,230										1,940
Future Subtotal	*15,700*	*25,340*	*0*	*0*	*0*	*3,050*	*9,090*	*9,090*	*13,130*	*13,130*	*13,130*	*15,920*
Total Purveyors	**33,900**	**54,680**	**14,980**	**14,980**	**14,980**	**20,930**	**26,970**	**26,970**	**31,010**	**31,010**	**31,010**	**33,800**

Notes:

(a) The quantities of groundwater extracted by existing or future and recovered well capacity will vary depending on operating conditions. However, overall pumping remains within the groundwater basin yields per the 2020 SCV-GSA Water Budget Development Tech Memo (GSI 2020) and the updated Basin Yield Analysis (LSC & GSI 2009).

(b) Dry-year production represents anticipated maximum dry year production. Schedule for recovered well capacity based on Groundwater Treatment Implementation Plan Technical Memorandum, Kennedy Jenks 2021 in Appendix M of the 2020 UWMP. 2022 and 2023 updates based on permitting and treatment project schedule changes.

(c) Existing Category includes all wells currently online and in use.

(d) LAWWD36 anticipated production for normal and dry years.

(e) Well 201 could have been put online through 97-005 permitting process, however treatment plans were altered and Well 201 is now awaiting supplemental VOC treatment and DDW permitting. Anticipate return to service in 2024.

(f) Future Category includes one well restored from Perchlorate water quality issues, and other future Saugus wells.

(g) Well 205 is impacted by Perchlorate and is expected to return to service in 2024.

(h) Future wells, Saugus 3 & 4, are planned replacement wells, Saugus 5-8 are new Dry Year wells. The new dry-year wells would not typically be operated during average/normal years.

(i) Permitted at 2,500 gpm but capacity was reduced to 2,000 gpm during last rehab.

Sustainability

Until 2003, the long-term sustainability of Saugus Formation groundwater was empirically estimated from limited historical experience. Historically (and continuing to the present), pumping from the Saugus Formation has been fairly low in most years, with one four-year period of increased pumping up to about 15,000 AFY that had short-term water level impacts but produced no long-term depletion of the substantial groundwater storage in the Saugus Formation. Those empirical observations have now been complemented by the development and application of the numerical groundwater flow model. The numerical groundwater flow model has also been used to analyze the control of perchlorate contaminant migration on two separate occasions under selected pumping conditions. The first occasion resulted in the implementation of a plan to restore, with treatment, pumping capacity that was formerly inactivated due to perchlorate contamination detected in the Saugus 1 and Saugus 2 wells in the Basin. The second occasion utilized the numerical groundwater flow model to evaluate preferred plans to control the migration of perchlorate in the vicinity of Well 201. As discussed in Section 3, those restoration efforts have been undertaken and the restoration of that pumping is reflected in the Saugus Formation operating plan (Table 3-2) and pumping distribution (Table 3-5A).

To examine the yield of the Saugus Formation, or its sustainability on a renewable basis, the original groundwater flow model was used to examine long-term projected response to pumping from both the Alluvium and the Saugus Formation over the synthetic 78-year period of hydrologic conditions that incorporated alternating wet and dry periods as have historically occurred (CH2M Hill and LSCE, 2005). The model was based upon field investigations and historical data collected from numerous sources including annual reports prepared by LSCE and investigations of Saugus Formation and Alluvial aquifers by CH2M Hill and Richard C. Slade and Associates among others (CH2M Hill, 2004a, 2004b, 2005a; CH2M Hill & LSCE 2005; LSCE 2005; Slade & Associates 1986, 1988, 2002). The pumping simulated in the model was in accordance with the then-current operating plan for the Basin. For the Saugus Formation, simulated pumping included the then-planned restoration of historic pumping from the wells impacted by perchlorate at that time (Saugus 1 and Saugus 2).

The originally simulated Saugus Formation response to the ranges of operating plan pumping under assumed recurrent historical hydrologic conditions was consistent with actual experience under smaller pumping rates: (1) short-term declines in groundwater levels and storage near pumped wells during dry-period pumping, (2) recovery of groundwater levels and storage after cessation of dry-period pumping and (3) no long-term decreases or depletion of groundwater levels or storage. The combination of actual experience with Saugus Formation recharge and pumping up to about 15,000 AFY, complemented by modeled projections of aquifer response that showed long-term utility of the Saugus Formation at 7,500 to 15,000 AFY in normal years and rapid recovery from higher pumping rates during intermittent dry periods, was the basis for concluding that the Saugus Formation could be considered a sustainable water supply source to meet the Saugus Formation portion of the operating plan for the groundwater Basin.

As discussed under Sustainability of the Alluvium above, an updated basin yield analysis was undertaken in 2008 to assess groundwater development potential and possible augmentation of the groundwater operating plan. After extended and updated model calibration and incorporation of extended historical records, the overall operating plan (Table 3-2) and specific distribution of Saugus Formation pumping were found to produce the same kinds of resultant Saugus Formation groundwater conditions as concluded to be sustainable in 2005 – (1) long-term stability of groundwater levels, with no sustained declines; (2) groundwater levels slightly below historic Saugus Formation levels, in response to greater long-term utilization of the Saugus and (3) maintenance of sufficiently high Saugus Formation groundwater levels to ensure achievement of planned individual pumping capacities (Table 3-5). Thus, the operating plan for the Saugus Formation, with fairly low pumping in wet/normal years and increased pumping through dry periods, is concluded to reflect sustainable groundwater supply rates.

The SCV-GSA's work on basin sustainability for the GSP has advanced the technical understanding of basin conditions since the 2009 basin yield analysis and confirms the previous conclusion. A new groundwater flow model using the U.S Geological Survey software MODFLOW-USG was developed calibrated and peer reviewed. The MODFLOW-USG model improves spatial resolution and employs more sophisticated methods of representing stream/aquifer interactions among other advancements over the previous model. A more thorough discussion is documented in Development of a Numerical Groundwater Flow Model for the Santa Clara River Valley East Groundwater Subbasin (GSI 2020). Additionally, the GSP Water Budget Analysis reflects updated climate change assumptions provided by DWR. New GSP technical reports defining the extent and nature of groundwater dependent ecosystems informed potential future adjustments of pumping distributions throughout the Alluvial Aquifer and Saugus Formation when considering likely sustainability criteria and potential impacts on groundwater dependent ecosystems. Accordingly, the 2020 UWMP reflects adjusted pumping distributions that are reflected in this WSA's Table 3-5A.

On January 3, 2022, the SCV GSP adopted the GSP which reflected updated technical resources and analysis, and a robust public involvement and review process. The plan can be accessed at: https://scvgsa.org/wp-content/uploads/2022/02/Santa-Clara-River-Valley-East-Groundwater-Subbasin-GSP.pdf

The plan reached the following conclusions relating to sustainability:

1. Chronic Lowering of Groundwater Levels – Alluvium and Saugus Formation pumping consistent with the basin operating plan does not result in chronic lowering of groundwater levels.

2. Reduction of Groundwater Storage - Alluvium and Saugus Formation pumping consistent with the basin operating plan does not result in long-term groundwater storage depletion.

3. Degraded Water Quality – Implementation of treatment for known contaminants support continued Alluvium and Saugus Formation pumping consistent with the operating plan.

4. Land Subsidence – An evaluation of the available information indicates there is no evidence of land subsidence occurring. The GSP does identify additional data

collection needs to ensure land subsidence remains a non-issue while achieving the basin operating plan. The GSP incorporates active monitoring stations.

5. Depletion of Interconnected Surface Water/Groundwater Dependent Ecosystems – Existing riparian habitat along the Santa Clara River is considered by resource agencies as having very high value. The extent and quality of the habitat can vary significantly from year to year in response to very wet or dry conditions and demonstrates considerable resiliency. Certain aquatic habitats are critical for known protected species such as the Three Spined Unarmored Stickle Back. The GSP incorporates a process that avoids groundwater pumping related to permanent loss of riparian habitat or the temporary loss of critical aquatic habitat. Active monitoring of groundwater levels will occur and when trigger levels (set at or above historical groundwater levels) are reached, an assessment of the cause would be conducted. If impacts are related to pumping, then responsive measures and/or projects would be implemented. These could include a reduction of groundwater pumping

6. Sea Water Intrusion – The proximity of the Alluvial Aquifer and Saugus Formation to the ocean as well as differences in elevation, do not allow for seawater intrusion into the upper basin.

The results of the 2009 basin yield analysis and the results of the updated groundwater analysis performed by the SCV-GSA for the GSP, which included pumping distributions consistent with those shown in Table 3-5A, show that the basin can be sustainably operated without chronic lowering of groundwater levels or groundwater storage.

Thus, the operating plan for the Saugus Formation, with fairly low pumping in wet/normal years and increased pumping through dry periods, is concluded to reflect sustainable groundwater supply rates.

3.3.3 Existing and Planned Groundwater Pumping

3.3.3.1 Impacted Well Capacity

As discussed in Section 6, USEPA recently implemented a new lifetime health advisory level of 70 parts per trillion (or 70 nanogram per liter (ng/l)) for polyfluoroalkyl substances (PFAS). In August of 2019, DDW set notification level (NL) and response levels for various PFAS constituents. SCV Water wells were tested and as of February 2020, over 60% of Alluvium wells exceeded the NL or RL resulting in 18 wells being taken out of service. Treatment for three of these wells (N-Wells) has been installed and is now operational. Design is underway for treatment of two additional wells, Honby and Santa Clara, that are scheduled to be returning to service by 2023. Preliminary design for an additional 6 wells is under way and these are anticipated to be returning to service between 2024 and 2025. The remaining wells are anticipated to have treatment installed by 2030. A feasibility assessment and schedule for completion of these wells are shown in the April 2021 Technical Memorandum, Groundwater Treatment Implementation Plan (Kennedy Jenks 2021). The Capital Improvement Section of SCV Water's FY 2021/222 and FY2022/23 Biennial Budget provides near term funding treatment for PFAS impacted alluvial wells.

As discussed in Section 6.2.1 of the 2020 UWMP and incorporated herein, certain wells in the Basin were impacted by perchlorate contamination and thus represented a temporary loss of well capacity within SCV Water's service area. Six wells were initially taken out of service upon the detection of perchlorate including four Saugus wells and two Alluvial wells. All have either been (1) abandoned and replaced, (2) returned to service with the addition of treatment facilities that allow the wells to be used for municipal Water supply as part of the overall water supply systems permitted by DDW, or (3) will be replaced under an existing perchlorate litigation settlement agreement (see Section 4). The restored wells (two Saugus wells and one Alluvial well), one Saugus well which is currently being restored, and the replacement wells (one Saugus and one Alluvial well), which collectively restore much of the temporarily lost well capacity, are now included as parts of the municipal groundwater source capacities. Additional wells will be drilled to fully restore the impacted well capacity, thus restoring the operational flexibility that existed prior to perchlorate contamination being discovered.

In August 2010, Well 201, located downgradient from the Whittaker-Bermite site and downgradient from the initially impacted Saugus 1 and Saugus 2 wells and well 157 had detections of perchlorate and was removed from service. Treatment facilities were constructed, are operational, and are now awaiting final DDW approval to be returned to potable drinking water service, similar to the Saugus 1 and Saugus 2 wells. Well 201 is anticipated to provide a total of 2,000 gpm of pumping capacity (for a dry-year production capacity of 2,900 AFY) and is shown in Table 3-5A. Similarly, Well 205, was taken out of service for perchlorate. Treatment for this facility is under the early stages of design and it is anticipated to return to service in 2024 as shown in Tables 3-5B and 3-5C. Additional details on DDW permitting and associated timeline for Saugus wells 201 and 205 are provided in Section 4.7.

To achieve full dry-year production of 33,800 AFY six additional Saugus wells are planned. Two of these wells Saugus 3 and 4, located west of Magic Mountain, have been designed and are being rebid. As indicated above, this delay was related to issues surrounding the proximity to abandoned oil wells and discussion with DDW resulted in an approach that should facilitate DDW issuing an operating permit. It is estimated that these wells should be available in 2025. The next wells anticipated to be available are Saugus 5 and 6, located in the Castaic Junction area. Sites for these wells have been secured and the wells are anticipated to be available in 2027. The final two wells, Saugus 7 and 8, do not have specific sites. The GSP Water Budget Analysis (GSI 2020a) assumed these wells would be located near the South Fork of the Santa Clara River in the vicinity of the existing well 12 and 13. These wells are anticipated to become available in 2030. Additional details on DDW permitting and associated timeline for Saugus wells are provided in Section 4.7.

3.3.3.2 Alluvium

In terms of adequacy and availability, the current Alluvial Aquifer groundwater pumping capacity is constrained, however the current reductions in supply are being met by other sources of supply such as imported SWP water or banked water supplies. The schedule for recovery of this supply is shown in Table 3-4B for normal years and Table 3-4C for dry years. When well capacity is recovered in 2030 and other future wells are in service in 2035 the combined Alluvial Aquifer groundwater source municipal well capacity of approximately 83,090 AFY will be sufficient to meet anticipated demands. The higher cumulative pumping capacities are for operational reasons (i.e., to meet daily and other fluctuations from average day to maximum day and peak hour system demands).

Table 3-4B and 3-4C include future and recovered Alluvial Aquifer supplies. These planned supplies do not increase the total quantity of water being withdrawn from the Alluvial Aquifer but represent anticipated or potential shifts in pumping involving different or new wells.

For example, as shown on Table 3-4, planned Alluvial Aquifer supplies assume a reduction of Newhall Land agricultural uses and a corresponding increase in SCV Water Alluvial water use for the Newhall Ranch Specific Plan area. Total purveyor and non-purveyor supplies remain consistent with the operating plan shown on Table 3-2. Based on existing information the conclusion of the analysis is that total Alluvial Aquifer pumping is sustainable. However, should droughts extend for periods longer than those shown in the historical record, potential exists for future curtailments.

3.3.3.3 Saugus Formation

In terms of adequacy and availability, the combined active Saugus groundwater source municipal well capacity of 26,120 AFY (29,340 including LACWD36 well) is more than sufficient to meet the planned use of Saugus groundwater in normal years of 7,500 to 15,000 AFY (Table 3-5A). Near term dry-year supplies will be augmented once Well 205 is restored to service by 2024 utilizing treatment technologies currently being used in the Santa Clarita Valley. In order to accommodate the longer-term demands, current GSP Water Budget Analysis indicates six additional wells will be required. Two of these wells have been designed and await permitting, sites for two additional wells have been secured and the final two wells need to be sited. These additional Saugus wells would provide for meeting the planned maximum purveyor use of 33,800 AFY of Saugus groundwater during a multiple-dry year period. That amount combined with non-purveyor pumping of 1,200 AFY is at the maximum of 35,000 AFY consistent with operating plan shown on Table 3-2. The conclusion of the analysis is that the Saugus operating plan is sustainable. However, associated with the implementation of the GSP, the potential exists for some future curtailment of pumping during extreme long-term drought events over the upcoming twenty years. Table 3-6, Table 3-7, and Table 3-8 include planned Saugus Formation supplies.

3.3.3.4 Summary

Overall, the total municipal supply in the 2020 UWMP, incorporated herein, includes a groundwater component that is, in turn, part of the overall groundwater supply of the Santa Clarita Valley. As such, the municipal groundwater supply recognizes the existing and projected future uses of groundwater by overlying interests in the Valley, such that the combination of municipal and all other groundwater pumping, remains within the groundwater operating plan (Table 3-2) that has been analyzed for sustainability.

TABLE 3-6 AVERAGE/NORMAL YEAR EXISTING AND PLANNED GROUNDWATER USAGE (AF)[a]

Alluvium Supplies	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**
Purveyors Existing	8,900	8,180	7,300	7,300	7,300	7,300
Purveyors Future and Recovered[b]	10,340	19,870	23,490	23,490	23,490	23,490
Purveyors Total	*19,240*	*28,050*	*30,790*	*30,790*	*30,790*	*30,790*
Non-Purveyors (Agricultural & Other)[c]	11,540	9,150	6,410	6,410	6,410	6,410
Total Alluvium Production	**30,780**	**37,200**	**37,200**	**37,200**	**37,200**	**37,200**
Alluvial Operating Plan Range for Average/Normal Year (30,000-40,000)						

Saugus Formation Supplies	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**
Purveyors Existing	14,440	7,110	7,110	7,110	7,110	7,110
Purveyors Future and Recovered[d]	3,010	2,790	2,790	2,790	2,790	2,790
Purveyors Total	*17,450*	*9,900*	*9,900*	*9,900*	*9,900*	*9,900*
Non purveyors[e]	1,200	1,200	1,200	1,200	1,200	1,200
Total Saugus[f]	**18,650**	**11,100**	**11,100**	**11,100**	**11,100**	**11,100**
Saugus Operating Plan Range for Average/Normal Year (7,500-15,000)						

Notes:

(a) The quantities of groundwater extracted by existing or future and recovered well capacity will vary depending on operating conditions. However, overall pumping remains within the groundwater basin yields per the 2020 SCV-GSA Water Budget Development Tech Memo (GSI 2020) and the updated Basin Yield Analysis (LSC & GSI 2009).

(b) These values account for recovery of alluvial PFAS and Perchlorate impacted wells along with additional pumping to supply Newhall Ranch Specific Plan.

(c) Alluvial non purveyor pumping includes Five Point (Newhall Ranch Agriculture), Pitches Detention Center, and Small Private Domestic pumping and irrigation at Sand Canyon Country Club. Decline in pumping rates incorporate reduced pumping by Five Point of 7,038 AFY for Newhall Ranch Specific Plan.

(d) This includes Saugus Perchlorate impacted wells 201 and 205, two replacement wells (Saugus 3 & 4), and up to four new wells (Saugus 5-8) planned to provide additional dry-year supply. The new dry-year wells would not typically be operated during average/normal years.

(e) This includes private irrigation pumping from Valencia Country Club and Vista Valencia Golf Course, as well as projected Whittaker-Bermite pumping for perchlorate treatment, assumed constant.

(f) Higher total Saugus Production from 2021 to 2026 reflect temporary increase in purveyor production to mitigate for lost Alluvial pumping capacity due to PFAS impacted wells.

TABLE 3-7 SINGLE-DRY YEAR EXISTING AND PLANNED GROUNDWATER USAGE (AF) [a]

Alluvium Supplies	2025	2030	2035	2040	2045	2050
Purveyors Existing	7,300	6,330	5,590	5,590	5,590	5,590
Purveyors Future and Recovered[b]	9,030	17,020	20,500	20,500	20,500	20,500
Purveyors Total	*16,330*	*23,350*	*26,090*	*26,090*	*26,090*	*26,090*
Non-Purveyors (Agricultural & Other)[c]	11,540	9,150	6,410	6,410	6,410	6,410
Total Alluvium Production	**27,870**	**32,500**	**32,500**	**32,500**	**32,500**	**32,500**
Alluvial Operating Plan Range for Single Dry Year (30,000-35,000)						

Saugus Formation Supplies	2025	2030	2035	2040	2045	2050
Purveyors Existing	17,880	17,880	17,880	17,880	17,880	17,880
Purveyors Future and Recovered[d]	9,090	15,920	15,920	15,920	15,920	15,920
Purveyors Total	*26,970*	*33,800*	*33,800*	*33,800*	*33,800*	*33,800*
Non purveyors[e]	1,200	1,200	1,200	1,200	1,200	1,200
Total Saugus	**28,170**	**35,000**	**35,000**	**35,000**	**35,000**	**35,000**
Saugus Operating Plan Range for Single Dry Year (21,000-35,000)						

Notes:

(a) The quantities of groundwater extracted by existing or future and recovered well capacity will vary depending on operating conditions. However, overall pumping remains within the groundwater basin yields per the 2020 SCV-GSA Water Budget Development Tech Memo (GSI 2020) and the updated Basin Yield Analysis (LSC & GSI 2009).

(b) These values account for recovery of alluvial PFAS and Perchlorate impacted wells along with additional pumping to supply Newhall Ranch Specific Plan.

(c) Alluvial non purveyor pumping includes Five Point (Newhall Ranch Agriculture), Pitches Detention Center, and Small Private Domestic pumping and irrigation at Sand Canyon Country Club. Decline in pumping rates incorporate reduced pumping by Five Point of 7,038 AFY for Newhall Ranch Specific Plan.

(d) This includes Saugus Perchlorate impacted well 205, two replacement wells (Saugus 3 & 4), and up to four new wells (Saugus 5-8) planned to provide additional dry-year supply. The new dry-year wells would not typically be operated during average/normal years.

(e) This includes private irrigation pumping from Valencia Country Club and Vista Valencia Golf Course, as well as projected Whittaker-Bermite pumping for perchlorate treatment, assumed constant.

TABLE 3-8 MULTIPLE DRY YEAR (5-YEAR) EXISTING AND PLANNED GROUNDWATER USAGE (AF) [(a)]

Alluvium Supplies	2025	2030	2035	2040	2045	2050
Purveyors Existing	7,300	6,330	5,890	5,590	5,590	5,590
Purveyors Future and Recovered[(b)]	11,930	16,310	19,900	20,500	20,500	20,500
Purveyors Total	19,230	22,640	25,790	26,090	26,090	26,090
Non-Purveyors (Agricultural & Other)[(c)]	11,490	9,190	6,710	6,410	6,410	6,410
Total Alluvium Production	**30,720**	**31,830**	**32,500**	**32,500**	**32,500**	**32,500**
Alluvial Operating Plan Range for Single Dry Year (30,000-35,000)						

Saugus Formation Supplies	2025	2030	2035	2040	2045	2050
Purveyors Existing	17,880	17,610	17,610	17,610	17,610	17,610
Purveyors Future and Recovered[(d)]	5,750	8,020	8,020	8,020	8,020	8,020
Purveyors Total	23,630	25,630	25,630	25,630	25,630	25,630
Non purveyors[(e)]	1,200	1,200	1,200	1,200	1,200	1,200
Total Saugus	**24,830**	**26,830**	**26,830**	**26,830**	**26,830**	**26,830**
Saugus Operating Plan Range for Single Dry Year (21,000-35,000)						

Notes:

(a) The quantities of groundwater extracted by existing or future and recovered well capacity will vary depending on operating conditions. However, overall pumping remains within the groundwater basin yields per the 2020 SCV-GSA Water Budget Development Tech Memo (GSI 2020) and the updated Basin Yield Analysis (LSC & GSI 2009).

(b) These values account for recovery of alluvial PFAS and Perchlorate impacted wells along with additional pumping to supply Newhall Ranch Specific Plan.

(c) Alluvial non purveyor pumping includes Five Point (Newhall Ranch Agriculture), Pitches Detention Center, and Small Private Domestic pumping and irrigation at Sand Canyon Country Club. Decline in pumping rates incorporate reduced pumping by Five Point of 7,038 AFY for Newhall Ranch Specific Plan.

(d) This includes Saugus Perchlorate impacted well 205, two replacement wells (Saugus 3 & 4), and up to four new wells (Saugus 5-8) planned to provide additional dry-year supply. The new dry-year wells would not typically be operated during average/normal years.

(e) This includes private irrigation pumping from Valencia Country Club and Vista Valencia Golf Course, as well as projected Whittaker-Bermite pumping for perchlorate treatment, assumed constant.

3.4 Transfers and Exchanges

An opportunity available to SCV Water to increase water supplies is to participate in voluntary Water transfer programs. Since the drought of 1987-1992, the concept of water transfer has evolved into a viable supplemental source to improve supply reliability. The initial concept for water transfers was codified into law in 1986 when the California Legislature adopted the “Katz” Law (California Water Code, Sections 1810-1814) and the Costa-Isenberg Water Transfer Law of 1986 (California Water Code, Sections 470, 475, 480-483). These laws help define parameters for water transfers and set up a variety of approaches through which water or water rights can be transferred among individuals or agencies.

Up to 27 million AF of water are delivered for agricultural use every year. Over half of this water use is in the Central Valley, and much of it is delivered by, or adjacent to, SWP and CVP conveyance facilities. This proximity to existing water conveyance facilities could allow for the voluntary transfer of water to many urban areas, including SCV Water, via the SWP. Such water transfers can involve water sales, conjunctive use and groundwater substitution and water sharing. They usually occur as a form of spot, option, or core transfers agreements. The costs of a water transfer would vary depending on the type, term, and location of the transfer.

One of the most important aspects of any resource planning process is flexibility. A flexible strategy minimizes unnecessary or redundant investments (or stranded costs). The voluntary transfer of water between willing sellers and buyers can be an effective means of achieving flexibility. However, not all water transfers have the same effectiveness in meeting resource needs. Through the resource planning process and ultimate implementation, several different types of Water transfers could be undertaken.

3.4.1 Core Transfers

Core transfers are agreements to purchase a defined quantity of water every year. These transfers have the benefit of more certainty in costs and supply, but in some years can be surplus to imported water (available in most years) that is already paid for.

3.4.2 Spot Market Transfers

Spot market transfers involve water purchased only during a time of need (usually a drought). Payments for these transfers occur only when water is actually requested and delivered, but there is usually greater uncertainty in terms of costs and availability of supply. Examples of such transfers were the Drought Water Banks of 1991, 1992 and 1994 and DWR Dry Year Water Purchase Programs in 2001 through 2004 and 2008 along with transfers between willing sellers and buyers during the current drought period. In 2021, the Dry Year Water Purchase Program provided approximately 200 AF. An additional risk of spot market transfers is that the purchases may be subject to institutional limits or restricted access (e.g., requiring the purchasing agency to institute rationing before it is eligible to participate in the program).

3.4.3 Option Contracts

Option contracts are agreements that specify the amount of water needed and the frequency or probability that the supply will be called upon (an option). Typically, a relatively low up-front option payment is required and, if the option is actually called upon, a subsequent payment would be made for the amount called. These transfers have the best characteristics of both core and spot transfers. With option contracts, the potential for redundant supply is minimized, as are the risks associated with cost and supply availability.

SCV Water has entered into one such transfer, for Yuba Accord water, as discussed previously. SCV Water and a number of other entities entered into the Yuba Accord Agreement, which allows for the purchase of water from the Yuba County Water Agency through DWR. Under the agreement, an estimated average of up to 1,000 AFY of Water (after losses) is available to SCV Water in dry years, through 2025. Under certain hydrologic conditions, additional water may be available to SCV Water under this program. In 2014, 2020, and 2021, SCV Water received approximately 1,900 AF from this source (see Table 5-1).

3.4.4 Future Market Transfers

The most viable types of water transfers are core and option transfers and, as such, are a part of SCV Water's long-term strategy.

3.4.5 Water Exchanges

In addition to water transfers, short-term water exchanges may also serve as a means to enhance water reliability.

In 2011 SCV Water entered into two unbalanced exchange agreements to enhance the management of its water supplies. SCV Water executed a Two-for-One Water Exchange Program with RRBWSD, whereby SCV Water can recover one acre-foot of water for each two acre-feet SCV Water delivered to RRBWSD (less losses). SCV Water delivered 15,602 AF to the program in 2011, delivered another 3,969 AF in 2012 and, after program losses, had about 9,500 AF of recoverable water. The term for this agreement was ten years. In 2020, 9,500 AF of water was withdrawn from this exchange account, completing the execution of this agreement.

SCV Water also entered into a Two-for-One Water Exchange Program with the West Kern Water District (WKWD) in Kern County and SCV Water delivered 5,000 AF in 2011, resulting in a recoverable total of 2,500 AF. The term of the agreement was ten years. In 2014, 2,000 AF of water was withdrawn from this exchange program leaving a balance of 500 AF. In 2020, the remaining balance of 500 AF of water was withdrawn, completing the execution of this agreement.

In 2014, SCV Water entered into an unbalanced exchange agreement to enhance the management of its water supplies. SCV Water executed a Two-for-One Water Exchange Program with the NLF, whereby SCV Water could recover one acre-foot of water for every two acre-feet SCV Water delivered to NLF's Semitropic Water Storage District Banking Program. SCV Water transferred 10,000 AF of water to the program in 2014 and recovered 4,950 AF in

2014, fully executing the exchange. Additional details on the Semitropic Banking Program are provided below.

In 2016, SCV Water entered into an unbalanced exchange agreement to enhance the management of its water supplies. SCV Water executed a Two-for-One Water Exchange Program with the Central Coast Water Agency (CCWA) on behalf of the Santa Barbara County Flood Control and Water Conservation District (Santa Barbara), whereby SCV Water could recover one acre-foot of water for every two acre-feet SCV Water delivered to CCWA. SCV Water delivered 1,500 AF to the program in 2016 and recovered 750 AF in 2019, fully executing the exchange.

In 2019, SCV Water entered into three separate unbalanced exchange agreements to enhance the management of its water supplies. First, SCV Water executed a Two-for-One Water Exchange Program with RRBWSD whereby SCV Water could recover one acre-foot of water for every two acre-feet SCV Water delivered to RRBWSD (less losses). SCV Water delivered 11,000 AF to the program in 2019 and recovered 5,500 AF in 2020, fully executing the exchange.

In 2019, SCV Water also executed a Two-for-One Water Exchange Program with Antelope Valley-East Kern Water Agency (AVEK), whereby SCV Water could recover one acre-foot of water for every two acre-feet SCV Water delivered to AVEK. SCV Water delivered 7,500 AF to the program in 2019 and has 3,750 AF of recoverable water. In 2020, 1,406 AF of Water was withdrawn from this exchange program leaving a balance of 2,344 AF. Recovery of the balance is limited to years where the SWP allocation is at least 30%. The term for this agreement is for ten years.

In 2019, SCV Water also executed a Two-for-One Water Exchange Program with UWCD, whereby SCV Water could recover one acre-foot of water for every two acre-feet SCV Water delivered to UWCD. SCV Water delivered 1,000 AF to the program in 2019 and has 500 AF of recoverable water. Recovery of the balance is limited to years where the SWP allocation is at least 30%. The term for this agreement is for ten years.

3.5 Groundwater Banking Programs

With the development of conjunctive use and groundwater banking, the water supply reliability for SCV Water has improved significantly. Conjunctive use is the coordinated operation of multiple water supplies to achieve improved supply reliability. Most conjunctive use concepts are based on storing surface supplies in groundwater basins in times of surplus for withdrawal and use during dry periods and drought when surface water supplies would likely be reduced.

Groundwater banking programs involve storing available SWP surface water supplies during wet years in groundwater basins in, for example, the San Joaquin Valley. Water would be stored either directly by surface spreading or injection, or indirectly by supplying surface water to farmers for their use in lieu of their intended groundwater pumping. During water shortages, the stored water could be pumped out and conveyed through the California Aqueduct to SCV Water as the banking partner or used by the farmers in exchange for their surface water allocations, which would be delivered to SCV Water as the banking partner through the California Aqueduct.

SCV Water is a partner in two existing groundwater banking programs, the Semitropic Banking Program and RRBWSD Banking Program, respectively. Newhall Land is also a partner in the Semitropic Banking Program, described below. In addition, SCV Water has updated its plan to enhance its overall supply reliability, including the need for additional banking programs.

3.5.1 Semitropic Banking Program

Semitropic Water Storage District (Semitropic) provides SWP Water to farmers for irrigation. Semitropic is located in the San Joaquin Valley in the northern part of Kern County immediately east of the California Aqueduct. Using its available groundwater storage capacity (approximately 1.65 million AF), Semitropic has developed a groundwater banking program, which takes available SWP supplies in wet years and returns the water in dry years. As part of this dry-year return, Semitropic can either leave its SWP Water in the Aqueduct for delivery to a banking partner and increase its groundwater production for its farmers, or Semitropic can pump groundwater that can be pumped into a Semitropic canal and, through reverse pumping plants, be delivered to the California Aqueduct. Semitropic's original banking program currently has six long-term first priority banking partners: the Metropolitan Water District of Southern California (Metropolitan), Santa Clara Valley Water District, Alameda County Water District, Alameda County Flood Control and Water Conservation District Zone 7, Newhall Land and Farming, and San Diego County Water Authority. The total amount of storage capacity under contract in the original banking program is 1 million AF, with approximately 700,000 AF currently in storage. Under its original program, Semitropic can pump back a maximum of 90,000 AFY of water into the California Aqueduct.

Semitropic has recently expanded its groundwater banking program to incorporate its Stored Water Recovery Unit (SWRU). This supplemental program includes an additional storage capacity of 650,000 AF and an expansion of pumpback recovery capacity by 200,000 AFY. That pumpback capacity includes well connections and conveyance facility improvements to increase the existing Semitropic pumpback capacity to the California Aqueduct by an additional 50,000 AFY, and the future development of a new well field with approximately 65 wells along with new collection and transmission facilities to convey an additional 150,000 AFY to the California Aqueduct. Participants in the SWRU include Poso Creek Water Company, San Diego County Water Authority, City of Tracy, Homer LLC, Harris Farms, Shows Family Farms, Lazy Dog Orchard, and SCV Water.

In 2002, SCV Water entered into a temporary storage agreement with Semitropic and stored an available portion of its Table A supply (24,000 AF) in an account in Semitropic's program. In 2004, 32,522 AF of SCV Water's available 2003 Table A supply was stored in a second temporary Semitropic account. In accordance with the terms of SCV Water's storage agreements with Semitropic, 90 percent of the banked amount, or a total of 50,870 AF, was recoverable through 2013 to meet SCV Water demands when needed. SCV Water executed an amendment for a ten-year extension of each banking agreement with Semitropic in April 2010. After storage withdrawals in 2009, 2010, and 2014 (and with 5,000 AF given to Newhall Land in consideration for SCV Water's use of Newhall Land's first priority extraction capacity), the storage balance available to SCV Water was 35,970 AF.

In 2015 SCV Water entered into an agreement with Semitropic to participate in the SWRU. Under this agreement, the two short-term accounts containing 35,970 AF were transferred into this new program. Under the SWRU agreement, SCV Water can store and recover additional Water within a 15,000 AF storage account. SCV Water increased storage in the SWRU by 4,806 AF in 2017, and 4,502 AF in 2019, and recovered 5,000 AF in 2020, leaving the total storage available at 40,278 AF. The term of the Semitropic Banking Program extends through 2035 with the option of two 10-year renewals. SCV Water may withdraw up to 5,000 AFY from its account.

Current operational planning includes use of the water stored in Semitropic for dry-year supply. Accordingly, it is reflected in the available supplies delineated in this section and in the Annual Reports prepared for SCV Water. It is also reflected as contributing only to dry-year supply reliability in Section 7, through 2045.

3.5.2 Rosedale-Rio Bravo Banking Program

Also located in Kern County, immediately adjacent to the Kern Water Bank, RRBWSD has developed a Water Banking and Exchange Program. SCV Water has entered into a long-term agreement with RRBWSD with a total storage capacity of 100,000 AF. Between 2005 and 2012 SCV Water delivered sufficient water from the SWP and other supplies to fill its 100,000 AF account. SCV Water began storing water in this program in 2005 and stored water in 2005, 2006, 2007, 2010, 2011, and 2012. In 2012, the maximum storage capacity of 100,000 AF was reached. Withdrawals from the water bank occurred in 2014, 2015 and 2020. Storage into the water bank occurred in 2016 leaving storage at 98,800 AF currently available for withdrawal.

SCV Water's existing firm withdrawal capacity in this program is 10,000 AFY. To enhance dry-year recovery capacity, in 2015 SCV Water in cooperation with RRBWSD and Irvine Ranch Water District initiated construction of additional facilities that were completed in 2019. These facilities became available in 2020 and increased the firm extraction capacity for SCV Water to 10,000 AFY. In addition, SCV Water has the right under the contract to develop four additional wells which would bring the firm recovery capacity to 20,000 AFY. This additional capacity is anticipated to be available by 2030. In addition to existing firm recovery capacity, in moderately dry years Rosedale is required to use other available recovery capacity to meet its recovery obligations under the banking agreement, up to 20,000 AFY. This occurred in 2021 when RRBWSD was able to recover a total of 20,000 AF of SCV Water's banked supply.

This project is a water management program to improve the reliability of SCV Water's existing dry-year supplies. It is not an annual supply that could support growth. Accordingly, it is reflected in the available supplies delineated in this section and it is also reflected as contributing only to dry-year supply reliability.

3.5.3 Semitropic Banking Program – Newhall Land

As mentioned above, one of Semitropic's long-term groundwater banking partners is Newhall Land (now owned by Five Point). In its agreement with Semitropic, Newhall Land has available to it a pump-back capacity of 4,950 AFY and a total storage capacity of 55,000 AF. At the end of 2020, Newhall Land had a storage balance of approximately 38,000 AF. This storage volume is primarily the result of Newhall Land storing its annual allotment of Nickel Water in the program as well as 5,000 AF of exchange water provided by SCV Water.

Newhall Land entered into this groundwater banking program in anticipation of the development of Newhall Ranch. It provides a supply that is committed by Newhall Land under the Newhall Ranch Specific Plan to make up shortfalls in water supply for Newhall Ranch should such shortfall be shown to exist. Under its agreement with Semitropic, Newhall Land may transfer its rights to this program to SCV Water (as the successor to CLWA). In this WSA and in the 2020 UWMP, it is assumed for planning purposes construction of the Newhall Ranch Specific Plan will be completed by 2035 and that Newhall Land's rights in this banking program will be transferred to SCV Water at that time. Based on previous cooperation between CLWA and Newhall Land in 2009 and 2014, when Newhall Land effectively made its withdrawal capacity available to CLWA, it is likely that this practice would continue and SCV Water could access additional water from its Semitropic account using Newhall Land's firm extraction capacity. However, as no such contract to accomplish this is currently in place a conservative assumption has been made in the 2020 UWMP and this WSA that supplies associated with this source will not be available prior to 2035 when SCV Water is presumed to control this program.

3.5.4 Other Opportunities

In addition to those dry year water supplies identified in the 2020 UWMP, SCV Water has identified two additional groundwater banking programs. While not a part of the resource mix currently incorporated into the water supply reliability tables in the 2020 UWMP or this WSA, these projects represent projects that SCV Water could consider providing redundancy or substitute for some portion of the UWMP's programs if those were not brought online.

The first is the High Desert Water Bank being developed by the Antelope Valley East Kern Water Agency. The project overlies an adjudicated groundwater basin in the Antelope Valley. The Metropolitan Water District of Southern California has contracted with AVEK to develop the first phase of the project's four phases. The first phase will store up to 200,000 AFY with 70,000 AFY of recovery capacity. AVEK is currently working with SCV Water and other SWP Contractors including Santa Clara Valley Water District, and Palmdale Water District to define the second phase. The second phase may incorporate a direct connection to the West Branch of the California Aqueduct to facilitate return deliveries. The location of this water bank is desirable as it is located south of the San Andreas Fault. The second phase could provide SCV Water with up to 80,000 AF of storage with recovery capacity of up to 20,000 AFY.

The second is the Aquaterra Water Bank being developed by the McMullin Groundwater Sustainability Agency. This water bank in Fresno County adjacent to Delta Mendota Pool, is projected to store up to 800,000 AF and have an extraction capacity of 146,000 AFY. Water would be available to SWP Contractors and Central Valley Project Contractors through an exchange with the Central Valley Project participating Contractors. The McMullin GSA intends to initiate environmental review for this project in 2022. SCV Water could potentially participate in this project at levels similar to those contemplated for the AVEK High Desert Water Bank.

3.6 Planned Water Supply Projects and Programs

SCV Water prepared the Water Resources Reconnaissance Study (Study) (Carollo, 2015). The Study discusses the potential for acquiring additional water supplies. The Study evaluated a series of supply measures in the hopes that an additional 10,000 AFY of supply could be made available to the service area. The study identified two local measures that might enable SCV Water to get at least part way to that goal: (1) a groundwater recharge project using recycled water and (2) an imported water injection project during wet years to augment Saugus formation groundwater storage. Both projects were evaluated at the conceptual level, but significantly more investigation would need to be completed before either was implemented.

While the recycled groundwater recharge measure is not currently being pursued, as detention and dilution challenges were analyzed by Trussell Technologies Inc in its USCR Watershed Recharge Feasibility Study, 2017. SCV Water continues investigating the potential to spread imported water directly into the Alluvial Aquifer at several sites. Promising infiltration tests have been conducted on SCV Water owned property adjacent to Castaic Creek. Additional siting is being conducted along the easterly portions of the Santa Clara River. Further, the potential exists to cooperate with the City of Santa Clarita to use future storm water detention facilities. One such site is located near along the Santa Clara River near the intersection of Whites Canyon Road and Via Princessa.

3.6.1 Sites Reservoir

Sites Reservoir is a proposed new 1,500,000 acre-feet off-stream storage reservoir in northern California near Maxwell. Sacramento River flows will be diverted during excess flow periods and stored in the off-stream reservoir and released for use in the drier periods. Sites Reservoir is expected to provide water supply, environmental, flood, and recreational benefits. The proponents of Sites Reservoir include 23 entities including several individual SWP PWAs including SCV Water. Sites Reservoir is expected to provide approximately 240,000 AFY (Sites Reservoir Value Planning Report, 2020, Table 8-1) of additional deliveries on average to participating agencies under existing conditions. SCV Water's current participation is 3% of that total. Further, SCV Water would operate its share of project storage so as to maximize delivery during dry and critically dry years and the project is projected to provide between 9,800 and 7,100 AFY depending on final project configuration and level of Federal participation by the United States Bureau of Reclamation (USBR). Sites Reservoir is currently undergoing environmental planning and permitting. Full operations of the Sites Reservoir are estimated to start by 2029 following environmental planning, permitting, and construction. Sites was conditionally awarded $816 million from the California Water Commission for ecosystem, recreation, and flood control benefits under Proposition 1. Reclamation may also invest in Sites under the Water Infrastructure Improvements for the Nation (WIIN) Act and recently transmitted a final Federal Feasibility Report to Congress for the project.

DWR estimates of SWP supply reliability in its 2019 DCR are based on existing facilities, and do not include the proposed Sites Reservoir. SCV Water along with other SWP public water agencies and north of Delta participants, however, are members of the Sites Reservoir Committee and are sharing costs, to advance environmental, permitting, and other planning activities. The Sites Reservoir staff has performed modeling of potential water supply from this project. While not identified as a project in the reliability tables provided in this WSA, the project is analyzed as part of the SCV Water's Updated Water Reliability Report and could serve as an alternative if other future water supply programs are not feasible. The Capital Improvement section of SCV Water's current FY 2021-22 FY2022-23 Capital Budget provides for continued participation in the planning of Sites Reservoir. At the end of the planning period the project is anticipated to complete CEQA and NEPA documentation, have acquired water rights and key permits including incidental take permits. The project is scheduled to become operational in 2030.

3.7 Recycled Water

This section of the WSA describes the existing and future recycled water opportunities available to the SCV Water service area. The description includes estimates of potential recycled water supply and demand through 2050 in five-year increments, as well as SCV Water's proposed incentives and implementation plan for recycled water.

As discussed below, SCV Water's source of supply for current and planned recycled water consists of flows coming from the Valencia Water Reclamation Plant and the future Newhall Ranch Water Reclamation plant as well as the Vista Canyon Ranch Water Factory (Vista Canyon WRP). SCV Water recently extended the term of its recycled water purchase agreement with the Santa Clarita Valley Sanitation District (SCVSD) and is currently negotiating a recycled water purchase agreement with the City of Santa Clarita for supplies from the Vista Canyon WRP. An additional recycled water purchase agreement with the Newhall Ranch Sanitation District is anticipated when it becomes operational. Collectively these sources are anticipated to make 8,961 AFY available to SCV Water. That supply includes 450 AFY to existing users identified under SCVSD's approved State Water Resources Control Board petition. Currently planned additional supplies would be developed under the SCV Water's New Drop Program, which is based on using wastewater flows from new customers rather than treated wastewater that has historically been discharged into the Santa Clara River. The New Drop Program would not require a requested change to the SCVSD's existing petition. This is particularly important because there are potential regulatory challenges to using additional recycled water that would reduce flows in the Santa Clara River. This is discussed in more detail below.

Recycled water is dependent on potential user demands, availability of supplies, and the economics and feasibility of serving those users. The Draft Update of the Recycled Water Master Plan identified over 20,000 AFY of existing and future landscape demands that could potentially be irrigated using recycled water. However, due to the potential need for instream flows and feasibility considerations including costs, SCV Water plans call for a recycled water distribution system that would be sufficient to meet demands of 9,749 AFY. This includes SCV

Water's Phase 1 project, which is currently serving 450 AF of demand, along with its Phase 2 projects and certain non-potable irrigation systems to be constructed by a developer for a specific project described in more detail below.

As discussed below, additional opportunities to further expand recycled water use will be evaluated as part of SCV Water's Water Resilience Initiative, however, these have not been incorporated into the prospective water supplies accounted for in Section 3.

3.7.1 Recycled Water Master Planning Efforts

It is anticipated that water demands will continue to increase as a result of a growing population. Accordingly, SCV Water is planning to secure additional reliable sources of water to help meet projected water demands. SCV Water recognizes that recycled water is an important and reliable source of additional water that should be pursued as an integral part of the SCV Water's water supply portfolio. Recycled water enhances reliability in that it provides an additional source of supply and allows for more efficient utilization of potable groundwater and imported water supplies. Draft Recycled Water Master Plans for the SCV Water service area were completed in 1993 and 2002. These master plans considered various factors affecting recycled water sources, supplies, users and demands so that SCV Water could develop a cost-effective recycled water system within its service area. In 2007, SCV Water completed CEQA analysis of the 2002 Recycled Water Master Plan (RWMP). This analysis consisted of a Programmatic EIR covering the various phases for a recycled water system as outlined in the RWMP. The Programmatic EIR was certified by the, then, CLWA Board in March 2007.

An update to the RWMP was initiated in 2016 (Kennedy/Jenks 2016) based on recent developments affecting recycled water sources, supplies, uses, and demands. The update was not completed but it provides important guidance on feasible projects in the short term. One reason the study was not finalized was in part due to ongoing litigation related to recycled water supplies between the Affordable Clean Water Alliance and SCVSD, which is SCV Water's main supplier of recycled water. Further, SCV Water anticipates undertaking a water resiliency planning process that would in part explore the interconnection of future groundwater operations, recycled water usage, and environmental uses of water in the USCR Watershed. It is anticipated that this effort would inform future environmental evaluations and permitting for future projects and programs. Overall, recycled water uses included in this WSA and the 2020 UWMP update include uses prioritized in the Kennedy/Jenks 2016 report and available supplies from the SCV Water New Drop program.

Table 3-9 provides a list of entities that participate in the implementation of the RWMP and RWMP Update. In accordance with Water Code section 10633, the preparation of the 2020 UWMP was also coordinated with these entities.

TABLE 3-9 PARTICIPATING ENTITIES[a]

Participating Entities	Role in Plan Development
SCV Water	Retail and Wholesale water provider
Los Angeles County Waterworks District No. 36	Retail water purveyor
Santa Clarita Valley Sanitation District	Recycled Water supplier
Berry Petroleum	Potential recycled water supplier
City of Santa Clarita[b]	Potential recycled water supplier

Notes:
(a) The Newhall Ranch Water Reclamation Plant would serve the Newhall Ranch Specific Plan and will be owned and operated by the Newhall Ranch Sanitation District.
(b) The City of Santa Clarita will eventually operate the Vista Canyon Water Reclamation Plant.

SCV Water has constructed Phase 1 of the 2002 RWMP (Kennedy Jenks 2002), which delivers on average approximately 450 AFY. Although the original SCVSD contract and applicable permits anticipate the use of 1,600 AFY for this initial phase project, demands for recycled water have not developed at all the specific places of use identified in the SCVSD's SWRCB Water Code Section 1211 petition. Deliveries of recycled water began in 2003 for irrigation water supply and currently serve a golf course, a shopping center, and roadway median strips. Use of the remaining volumes at new locations would require submission and approval of a revised petition, triggering a similar State Water Resources Control Board petition process to the new petition described below.

Phase 2 is planned to expand recycled water use within Santa Clarita Valley and consists of four projects currently in various stages of design and/or construction. All available recycled water from the SCV Water's New Drop Program in the peak summer months is anticipated to be used to meet the demands of these Phase 2 expansions currently in design and construction, including planned developments by Five Point that are referred to as the Westside communities.

3.7.2 Existing Wastewater Treatment Facilities

SCVSD owns and operates two Water Reclamation Plants (WRPs), the Saugus WRP and the Valencia WRP, within the SCV Water service area. The water is treated to disinfected tertiary levels and, with the exception of water used in Phase I of the RWMP, is discharged to the Santa Clara River. The Newhall Ranch and Vista Canyon developments will have their own dedicated tertiary treatment WRPs, and non-potable recycled water from these sources, when available, is anticipated to be incorporated directly into the recycled water system.

The Valencia WRP, completed in 1967, is located on The Old Road near Magic Mountain Amusement Park. The Valencia WRP has a current treatment capacity of 21.6 million gallons per day (MGD), equivalent to 24,190 AFY, developed over time in stages. The average annual production is 15,500 AFY of tertiary recycled water. Use of recycled water from the Valencia WRP for irrigation use is permitted under Los Angeles Regional Water Quality Control Board (LARWQCB) Order Nos. 87-48 and 97-072.

The Saugus WRP, completed in 1962, is located southeast of the intersection of Bouquet Canyon Road and Soledad Canyon Road. The Saugus WRP has a current treatment capacity of 6.5 MGD (7,280 AFY). No future expansions are possible at the plant due to space limitations at the site. In 2020 the Saugus WRP produced 5,150 AFY of tertiary recycled water. Use of recycled water from this facility is permitted under LARWQCB Order Nos. 87-49 and 97-072.

The Saugus and Valencia WRPs operated independently of each other until 1980, at which time the two plants were linked by a bypass interceptor. The interceptor was installed to transfer a portion of flows received at the Saugus WRP to the Valencia WRP. Together, the Valencia and Saugus WRPs have a design capacity of 28.1 MGD (31,470 AFY) and produce 20,450 AFY of treated effluent on average. The primary sources of wastewater to the Saugus and Valencia WRPs are domestic. Both plants are tertiary treatment facilities and produce high quality effluent. Historically, the effluent from the two WRPs has been discharged to the Santa Clara River. The Saugus WRP effluent outfall is located at Bouquet Canyon Road. Effluent from the Valencia WRP is discharged to the Santa Clara River at a point approximately 2,000 feet downstream (west) of The Old Road Bridge.

SCVSD is currently constructing advanced treatment facilities (AWT) to desalinate tertiary recycled water with a capacity of approximately 6,000 AFY to comply with the Regional Water Quality Control Board, Los Angeles Region Chloride Total Maximum Daily Load (TMDL). The facilities are sized to treat enough disinfected tertiary recycled water to blend down the chloride levels for discharge to the Santa Clara River at the design capacity of the combined Saugus and Valencia WRPs at chloride levels during a drought. Since design capacities will not be reached for a decade or more and chloride levels on average are much lower during average precipitation years, the AWT will have excess capacity that could be utilized to produce desalinated water for reuse purposes for sale to SCV Water. Desalinated recycled water could be used to improve water quality or for indirect potable reuse in the future but only with the construction of additional treatment.

3.7.3 Wastewater Treatment Facility Improvements and Expansions

A third reclamation plant, the Vista Canyon Water Factory (Vista Canyon WRP), has been constructed as a part of the Vista Canyon Project. The plant is located near Highway 14, just south of the Santa Clara River and will be operated by the City of Santa Clarita. The plant will have an ultimate capacity of 440 AFY (Kennedy Jenks, 2015). The Vista Canyon Development is anticipated to use 137 AFY of the recycled water supply and the remaining excess flow would be available for reuse as part of Vista Canyon Recycled Water Main Extension (Phase 2B) of the RWMP currently under construction.

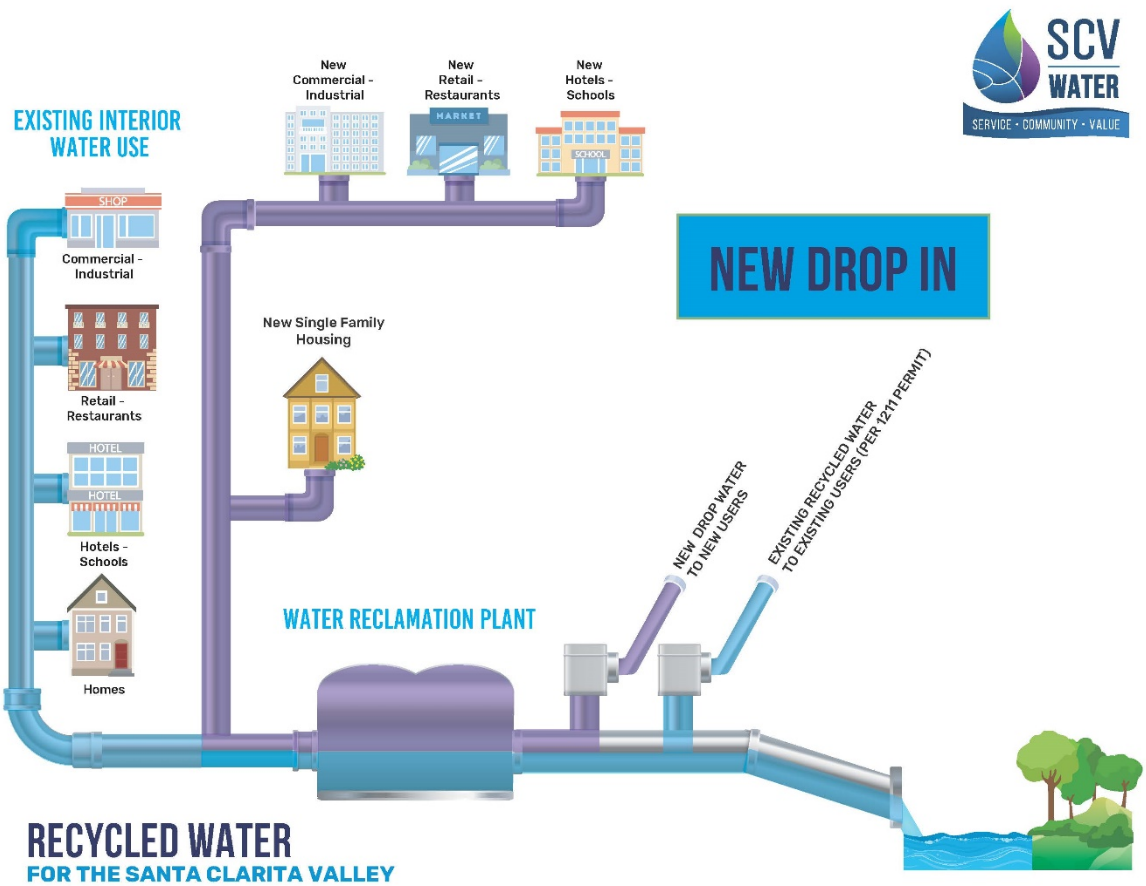
It is intended that the Vista Canyon WRP would not discharge recycled water into the Santa Clara River. Excess recycled water production from the Vista Canyon WRP would be sent to the Valencia WRP.

A fourth Santa Clarita Valley (Valley) reclamation plant, the Newhall Ranch WRP, is proposed as part of the Newhall Ranch project. This proposed facility would be located near the western edge of the development project along the south side of State Route 126. The Newhall Ranch WRP would serve the Newhall Ranch Specific Plan and will be owned and operated by the Newhall Ranch Sanitation District. Prior to Newhall Ranch WRP being available, Newhall Ranch Specific Plan generated wastewater would be temporarily treated at the Valencia WRP, based on the need to build up an adequate, steady flow of wastewater before constructing the initial increment of capacity at Newhall Ranch WRP. The Valencia WRP has sufficient capacity to tertiary-treat wastewater from the Newhall Ranch Specific Plan during this interim period, consistent with the Interconnection Agreement approved by SCVSD in 2002 and the Joint Sewerage Services Agreement entered between SCVSD and NRSD in 2017. The Newhall Ranch WRP currently has a permitted capacity of 2.0 MGD (approximately 2,200 AFY) but is anticipated to produce 4,200 AFY at ultimate buildout. Recycled water from the Valencia WRP would be used to meet the remainder of the non-potable demands there, to the extent available in accordance with the Interconnection Agreement. If for any reason, however, recycled water supplies from the Valencia WRP and/or other local WRPs are not available in the amounts anticipated to meet the projected recycled water demands for that development, other sources of supply available to SCV Water as provided in the 2020 UWMP would be utilized to serve non-potable demands until such time as recycled water supplies may become available.

3.7.4 New Drop Program

As a means of developing additional recycled water supplies, without increasing the diversion of recycled water flows discharged to the Santa Clara River, SCV Water has developed the New Drop Program to utilize and account for “new” recycled water flows. These additional recycled water supplies would be derived from wastewater flows generated from new residential and commercial development. The New Drop Program accounts for the increase in wastewater flows associated with new development and separates these projected wastewater flows from existing flows discharged to the Santa Clara River. As new development occurs, potential additional recycled water supplies would be quantified through calculations and measurements. The New Drop Program is illustrated in Figure 3-1 below.

FIGURE 3-1   NEW DROP PROGRAM PROCESS



The use of recycled water under the New Drop Program does not constitute a reduction to a surface stream, specifically a reduction in flow in the Santa Clara River. As a result, a Section 1211 wastewater change petition is not required to implement the recycled water program. However, in order to utilize these recycled water supplies in accordance with SWRCB requirements, SCV Water has been working to obtain formal approvals. A Notice of Applicability under the General Order No. WQ 2016-0068-DDW, Water Reclamation Requirements for Recycled Water Use, was issued in April 2020 for SCV Water's use of recycled water from the Valencia WRP for non-irrigation uses as part of the New Drop Program. Upon review of the Title 22 Report and related project documentation, the LARWQCB and the SWRCB determined that the New Drop Program satisfies the general and specific conditions of the General Order and does not require a change of use permit under Water Code section 1211. SCV Water is also in the process of requesting expanded use of the New Drop Program recycled water from the Valencia WRP for irrigation uses, currently allowed under Order No. 97-072. An addendum to the original Title 22 Engineering Report was submitted in December 2020 for Phase 2D. The final revised Engineering report is scheduled to be submitted during the first half of 2022.

3.7.5 Instream Flow Requirements

In general, the use of recycled water from the WRPs is limited and can be affected by various state water laws, codes, and regulatory and court decisions, which are summarized in the RWMP Update. The production, discharge, distribution, and use of recycled water are subject to federal, state, and local regulations; the primary objectives of which are to protect public health. Appendix B of the RWMP summarizes the regulatory requirements and their administration, with an emphasis on regulations relating to the distribution and use of recycled water in California. Use of recycled water from the Valencia and Saugus WRPs is permitted under Los Angeles RWQCB Order Nos. 87-48 and 87-49, respectively and re-adopted by Order No. 97-072. Copies of these recycled water permits, along with SCVSD Ordinances and Requirements for Recycled Water Users in Santa Clarita Valley and Los Angeles County Department of Public Health (CDPH) guidelines and inspection requirements, are provided in the Santa Clarita Valley Rules and Regulations Handbook (Kennedy Jenks 2016b).

SCV Water has a contract with the SCVSD to use recycled water from the Valencia WRP, which was recently extended through 2026. The contract permits SCV Water to receive 1,600 AFY, corresponding to the amount of recycled water permitted for reuse by the SWRCB. However, as noted above that permit limited uses to specific approved sites and because demand at some of those sites has not materialized, current use is limited to only about 450 AFY.

The New Drop Program will generate additional supplies and those supplies will be available to multiple new use sites when and as they are connected to the expanding recycled water system.

At this time, SCVSD is not seeking an amendment to its SWRCB petition to increase the amount of recycled water it may deliver that has historically been discharged into the Santa Clara River. In the future, if SCV Water develops feasible projects to use recycled water in amounts greater than the New Drop Program supplies, it is anticipated that SCV Water and SCVSD would cooperate in obtaining any necessary permits from the SWRCB. Obtaining an approved petition will require compliance with CEQA. However, as indicated above and described in more detail below, SCVSD's previous evaluations of potential withdrawals of discharge from the Santa Clara River to use for recycled water have been the subject of litigation.

In October 2013, the SCVSD Board certified an EIR (2013 EIR) that included two components: (1) the Chloride Compliance Project to remove chloride from wastewater to meet the Chloride TMDL and (2) a Recycled Water Project to make treated wastewater available for reuse. The Chloride Compliance Project consists of 3 main elements that include ultraviolet disinfection at the Saugus and Valencia WRPs, AWT at Valencia WRP, and brine management and disposal. The Recycled Water Project was designed to support municipal reuse of recycled water and was solely focused on proposed future reductions in discharges of recycled water to the Santa Clara River.[11]

[11] No recycled water infrastructure, such as treatment, pump stations or pipelines, were included in the scope of the Recycled Water Project.

The 2013 EIR was subsequently challenged by the Affordable Clean Water Alliance (ACWA) on the grounds that the document failed to comply with CEQA. The LA Superior Court (the Court) did not find any deficiencies in the environmental analysis related to the Chloride Compliance Project; however, the Court found two aspects of the 2013 EIR did not fully comply with CEQA. First, the Court found that the 2013 EIR lacked substantial evidence to support the conclusion of no significant impacts on populations of the unarmored threespine stickleback fish (UTS) with respect to the reduced discharge to the Santa Clara River associated with the Recycled Water Project; and second, the 2013 EIR lacked a clear brine management alternative because of the "abandonment" of the deep well injection brine management method approved in the 2013 EIR, making the Chloride Compliance Project incomplete.

In an effort to move forward with the Chloride Compliance Project, SCVSD separated the Chloride Compliance Project from the Recycled Water Project and, in 2017, certified a Recirculated EIR evaluating the Chloride Compliance Project separate from the Recycled Water Project.

SCVSD proceeded with the Recycled Water Project on a separate, but parallel path. SCVSD retained a consultant and engaged in consultations with CDFW. SCVSD released a Notice of Preparation (NOP) in August 2016. In response to the NOP, CDFW wrote a letter indicating that they could not conclude that the project would not result in take of UTS and recommended that SCVSD do additional studies and consider applying for an Incidental Take Permit under the California Endangered Species Act prior to implementing the project. Further, in summer 2018, CDFW requested additional review to analyze potential impacts to groundwater and surface water levels because of the proposed reduction in discharge from the Valencia WRP. At the time, a comprehensive model needed to evaluate surface water and groundwater level impacts did not exist. Given that the SWRCB defers to CDFW in matters related to habitat when considering petitions for reduction in discharges and the positions expressed by CDFW, SCVSD determined that obtaining a 1211 petition from the SWRCB for a reduction in discharge would be very difficult.

By resolution dated February 2019 SCVSD stated it had no current intent to proceed with an EIR related to the support of additional recycled water development by reducing existing discharge to the Santa Clara River. The decision by SCVSD to remove the recycled water component and approve the modified chloride compliance project has been challenged in separate lawsuits filed in Los Angeles Superior Court from 2017-2019 and the case is ongoing.

SCV Water would undertake thorough and careful evaluation of effects on the Santa Clara River and would consult with California Department of Fish and Wildlife (CDFW) before proposing any project to reduce existing discharges and supply additional recycled water within the SCV service area.

3.7.6 Other Potential Sources of Recycled Water

Oilfield produced water is a by-product of oil production generated when oil is extracted from the oil reservoir. It is generally of poor quality and unsuitable for potable, industrial, or irrigation use without treatment. Because of the poor water quality, reinjection has often been the most cost-effective disposal option. Treatment processes can produce potable quality water; yet, because of the poor initial water quality and the organic constituents, it is often more appropriate for treated oilfield produced water to be used for irrigation or industrial purposes to offset potable water demand. The economics of oil production are market-driven and are different from those of drinking water supplies. As oil prices rise or drop, oilfield production is increased or decreased as dictated by economics. Also, oilfields are eventually depleted of supply and abandoned. Therefore, while oilfield produced water should be considered as long-term, it is not a completely firm supply and is not permanent.

Berry Petroleum has expressed interest in the past in treating oilfield produced water from the Placerita Oilfield for sale to SCV Water for non-potable uses. Studies of the potential reuse of treated oilfield produced water from the Placerita Oilfield have indicated that approximately 44,000 barrels per day (1.8 MGD or 2,016 AFY) of treated oilfield produced water may be available. Pilot studies performed at the Placerita Oilfield have indicated that, even with reverse osmosis (RO) treatment, some organic compounds such as naphthalene, 2-butanone and ethylbenzene can be detected in the RO effluent. For irrigation reuse, the produced water would need to be cooled and treated to remove hardness, silica, total dissolved solids (TDS), boron, ammonia, and total organic carbon (TOC).

Due to water reliability and water quality issues, the use of oilfield produced water for a source of recycled water was not considered in the 2016 Salt and Nutrient Management Plan (SNMP) or in the RWMP Update and was not included as a supply opportunity in the 2020 UWMP.

3.7.7 Recycled Water Supply and Demand

Recycled water has the potential to play a critical role in meeting a portion of future water demands in the Valley, as the population grows. SCV Water is in various stages of planning and constructing its Phase 2 projects. SCV Water has included Phase 2 projects in its capital program. Phase 2B and 2D are currently under construction Further, Phase 2C is currently under design. Additionally, Five Point's Westside development projects are proceeding with construction of the Mission Village project currently underway. A summary of demands anticipated from these activities are shown in Table 3-10.

TABLE 3-10 EXISTING AND PROJECTED RECYCLED WATER DEMAND

Phase/Project	Demand (AFY)	Timeframe for Coming Online	Source of Recycled Water	Location of Use/Water Service Area
Phase 1	450	Existing	Valencia WRP	VWD
Phase 2A	560	2029	Valencia WRP	NCWD, VWD
Phase 2B	300	2021-2023	Vista Canyon WRP	SCWD
Phase 2C	759	2021-2023	Valencia WRP	NCWD, VWD
Phase 2C – Golf Course[(a)]	600	2023	Valencia WRP	Valencia Golf Course
Phase 2D	221	2021-2023	Valencia WRP	VWD
Five Point[(b)]	5,174-6,505	2021-2043	Newhall Ranch/ Valencia WRP	Newhall Ranch/Five Point
Total	**8,064-9,395**	2050	As shown above	As shown above
Total w/ CC	**8,368-9,749[(c)]**	2050		

Notes:
(a) Raw water conversion to recycled water (not an existing potable offset).
(b) Range reflects estimated demand using MEWLO and observed over watering of 25.6% in recently developed irrigation systems.
(c) Assumes 3.77% demand increase due to climate change.

As previously discussed, aside from the existing 450 AFY of recycled water supply, planned recycled water supplies from the Valencia, Newhall Ranch, and Vista Canyon WRPs would come from the New Drop Program. Importantly, as indicated above, water from these New Drop Program sources would not be required to maintain environmental discharges to the Santa Clara River. As a result, it would be available to meet a considerable portion of the total projected long-term recycled water demands.

Total projected recycled water use projections through 2050 are summarized in Table 3-11. As annual demands discussed above exceed supplies, recycled water usage is based on available supplies. In later years, it is projected that seasonal storage may be needed to store recycled water during the winter months to help meet peak summer demands. Additionally, potable make-up water will be needed to help meet summer peaking demands in the non-potable irrigation system.

TABLE 3-11 PROJECTED RECYCLED WATER USE

	2025	2030	2035	2040	2045	2050
Existing Recycled Water Use	450	450	450	450	450	450
New Recycled Water Use	1,849	3,696	5,091	6,498	7,499	8,511
Total Projected Recycled Water Use[(a)]	**2,299**	**4,146**	**5,541**	**6,948**	**7,949**	**8,961**
Total Potential Recycled Water Demand[(b)]	**4,559**	**6,514**	**8,441**	**9,191**	**9,469**	**9,749**

Notes:
(a) Total projected water use is equal to total projected recycled water supply as total potential recycled water demand exceeds total projected supply.
(b) Difference in recycled water supply and total potential recycled water demand will be made up by potable water supplies, i.e., make-up water.

In accordance with the UWMP Act, the 2020 UWMP describes and quantifies the potential uses of recycled water in the Valley based on the substantial wastewater flows and recycled water generated by the local WRPs. However, as noted above, if recycled water supplies from the local WRPs are not available in the amounts identified in Table 3-11 to meet potential uses because of regulatory or other constraints, other sources of supply available to SCV Water as provided in the 2020 UWMP would be utilized to meet non-potable demands until such time as recycled water supplies may become available.

3.7.8 Recycled Water Demand

Currently, an average of 450 AFY of recycled water is served to landscape irrigation customers, including The Oaks Club golf course (formerly known as the Tournament Players Club Golf Course). Potential recycled water users have been identified through several sources including:

- 1993 Recycled Water Master Plan
- Water consumption records for SCV Water and LACWWD 36
- Land use maps
- General Plans and Specific Plans for the City of Santa Clarita and County of Los Angeles
- Discussions with City, County, SCV Water, LACWWD 36 and land developer staff
- On-site surveys of the SCV Water service area

- 2002 Recycled Water Master Plan
- 2016 Recycled Water Master Plan Update (in development)

To be considered as a potential recycled water user, the user has to be located within SCV Water's service area and have a potential non-potable water demand of at least 50,000 gallons per day. At this time no specific or Valley-wide ordinance(s) or other enactments are proposed that would require the installation of dual distribution systems for recycled water, or that would require the use of recycled water for recirculating uses. A total existing demand of approximately 12,000 AFY (based on current non-potable uses from irrigation meters) and a future demand of 8,511 AFY (based on planned developments), totaling approximately 21,000 AFY. The majority of recycled water uses are projected to be landscape irrigation.

As noted above, Phase 1 of the RWMP has been constructed and begins with a 4,000-gpm pump station at the Valencia WRP that connects to a 1.5 MG reservoir in the Westridge area with 15,600 linear feet of 24- and 20-inch pipeline. It serves landscape customers along The Old Road and The Oaks Club at Valencia.

Four projects planned to expand recycled water use within Santa Clarita Valley, which are collectively known as Phase 2.

Phase 2A, 2C and 2D would use recycled water from the Valencia WRP and Phase 2B would use recycled water produced at the Vista Canyon WRP, which will treat flows from the planned Vista Canyon Development. Phase 2A would serve Central Park and customers along the path from the Valencia WRP to the park. Phase 2B would serve the proposed Vista Canyon Development and nearby irrigation customers. Phase 2C would serve Valencia Country Club, Vista Valencia Golf Course, College of the Canyons, California Institute of the Arts, Hart High School, and Newhall Elementary School. Phase 2D would serve West Ranch High School, Ranch Pico Junior High School, Oak Hills Elementary School, and customers along the way.

Anticipated annual demands and completion dates for Phase 2 components are listed below:

- Phase 2A: 560 AFY in 2029

- Phases 2B, 2C, 2D: 1880 AFY between 2021 and 2023 (1,200 AFY would consist of raw water conversion to non-potable at the Valencia golf course by 2023). Phase 2D and 2B are under construction.

In addition, the FivePoint project is anticipated to result in 5,174 AFY of demand between 2021 and 2043. These Phase 2 and FivePoint anticipated demands take into account demand adjustment factors over the planning period.

Future recycled water use expansion beyond Phase 2 was explored as part of the RWMP Update and could potentially include extensions of the Phase 2 alignments to utilize any additional available recycled water resulting from a decrease in discharges from the Valencia WRP. However, as discussed above there are no current plans to pursue reduction of discharges from the Valencia WRP to the Santa Clara River. Current plans call for reliance on the SCV Water's New Drop Program. Consistent with the New Drop Program there is currently no plan to use recycled water from the Saugus WRP since the majority of the effluent is committed to meeting discharge requirements in the Santa Clara River.

The RWMP Update also included a high-level assessment of opportunities for potable reuse within the Santa Clarita Valley via groundwater recharge, surface water augmentation and direct potable reuse and the development of seasonal storage (Woodard and Curran 2021). In general, due to the seasonal variability of recycled water demand, SCV Water has an excess of recycled water supply during the winter months. Excess recycled water flows are currently discharged to the Santa Clara River. These excess flows could be better utilized by constructing seasonal storage facilities which can store recycled water during winter months when the demands are low and feed the system with the stored supply in the summer months when demands exceed the operational supply. These opportunities would be evaluated further in future UWMP updates.

- **Groundwater recharge ("indirect potable reuse") via surface spreading** at an off-stream location near the Santa Clara River could provide for recharge of excess available recycled water in the winter and off-peak irrigation months. A more detailed feasibility study would be required to confirm the volume of recycled water that could be recharged and recovered based on current regulations, source water quality, operational and cost considerations.

- **Surface Water augmentation** at Castaic Lake would require full advanced treatment of the recycled water from SCVSD, brine disposal and significant conveyance requirements at a very high cost. It is also unknown at this time whether a surface water augmentation project would be able to meet applicable regulatory criteria and how much water could be augmented.

- **Direct potable reuse (DPR)**, though not currently permitted in California, would involve the purposeful introduction of highly purified recycled water into a drinking water supply, immediately upstream of a drinking Water treatment plant or directly into the potable water supply distribution system downstream of a water treatment plant. A DPR concept could potentially utilize recycled water not already allocated or planned for non-potable reuse or determined necessary for instream use and would require full advanced treatment of the recycled water from SCVSD, brine disposal and only minimal conveyance requirements. SCV Water intends to track direct potable reuse developments in California and revisit the feasibility of DPR in the future.

3.7.9 Recycled Water Comparison

The 2015 UWMP projected a total recycled water demand of 1,015 AFY by the year 2020. Actual data shows 468 AF was served in 2020 which reflects the existing golf course and landscape demands. 2020 demand is lower than originally predicted because the recycled water distribution system expansion did not occur as anticipated. Table 3-12 provides a comparison of the projected versus the actual 2020 demand. Based on current estimates, recycled water demand over the next five years is anticipated to increase 10-fold as shown in Table 3-12.

TABLE 3-12 RECYCLED WATER USES - PROJECTION COMPARED WITH ACTUAL USE (AFY)

User Type	2015 Projection for 2020	2020 Actual Use
Landscape	622	99
Golf Course Landscape	393	375
Total	**1,015**	**468**

3.7.10 Methods to Encourage Recycled Water Use

Currently, to the extent feasible SCV Water is offering recycled water as available at a lower rate to encourage the use of recycled water and to help offset some of the conversion costs. SCV Water is considering pricing options to encourage participation in the recycled water program. In addition to pricing incentives SCV Water is committed to a Valley-wide messaging regarding recycled water benefits and costs. At its March 2, 2021, Board Meeting, SCV Water authorized the General Manager to implement a Purple PREP (Planning Readiness and Effectuating Program) Pilot to facilitate conversion of the Phase 2B and 2D customer irrigation systems to recycled water. Under the program customers can choose either direct installation of required retrofit materials or receive a financial incentive up to the actual cost of the retrofit. Other incentives may include financial assistance to offset the costs to convert (or retrofit) potable water systems or the development of a Valley-wide recycled water ordinance, which would require the use of recycled water if available, rather than relying solely on pricing incentives and voluntary connections.

It is important to note that SCV Water's New Drop Program is a critical component for optimizing recycled water use across the service area. As described above, this program allows SCV Water to develop additional recycled water supplies from wastewater flows generated from new residential and commercial development, without increasing the diversion of recycled water flows discharged to the Santa Clara River.

3.7.11 Optimization Plan for Recycled Water

Currently, the amount of recycled water available from the WRPs is not adequate to meet the total demands of the completed recycled water system, which relates to both infrastructure and regulatory factors. Notably, however, as potable water demands increase in the Valley over time, wastewater flows will increase and the amount of recycled water production to meet future system demands would also increase. Therefore, SCV Water anticipates that construction of the recycled water system will be phased to utilize the increases in WRP production. A detailed discussion of the recommended phasing plan was provided in the RWMP Update.

Phasing implementation of the recycled water system is recommended for the following reasons:

- A number of the potential recycled water users are future users that do not yet need recycled water.
- The current amount of recycled water available from the local WRPs is not yet adequate to meet the total demands of all the existing *and* planned future identified recycled water users.
- Capital funding requirements would be spread over the current planning period through 2050.

The implementation phases are prioritized based on the status of the potential recycled water users (existing or future), the anticipated construction schedule of future users and the proximity of the users to the non-potable water source (e.g., Valencia WRP, Vista Canyon WRP and Newhall Ranch WRP).

Phase 2A, 2B, 2C and 2D are planned for construction over the next 10 years and would increase recycled water deliveries by approximately 2,440 AFY. These projects are being prioritized to take advantage of available funding for recycled water projects under Proposition 1 and to align with the construction schedule for the Vista Canyon Development.

The Newhall Ranch/Five Point project represents the next major increase in recycled water use and is anticipated to be constructed over the next 20 to 25 Years. These facilities will be paid for by the developer.

As these uses come are on-line, recycled water demand may exceed supplies particularly during the summer months, thus the distribution to future users would be based on the following considerations:

- Service area boundaries,
- Ease or willingness of customers to connect to recycled water,
- Capital and operational costs,
- Funding availability,
- Community impacts and development requirements,
- Supply reliability and system flexibility considerations, and
- Availability of recycled water supplies due to regulatory or other legal constraints.

3.7.12 Additional Considerations Relating to the Use of Recycled Water

Additional information relating to recycled water concerning the SCVSD Chloride Compliance Plan, and the groundwater basin's Salt and Nutrient Management Plan are in the 2020 UWMP.

3.7.13 Capital Outlay Program

Financing the delivery of water supplies for SCV Water's customers, including this project, are set forth in SCV Water's Biennial Budget for FY 2021/22 and FY 2022/23. Water operations and new projects are paid from various funds as described below:

- General Fund – Fund used to account for and report all financial resources not accounted for and reported in another fund
- Capital Project Fund – Capital projects that are financed
- State Water Contract Fund – Funds received from ad valorem property taxes for payment of DWR fixed and variable costs
- Facility Capacity/Connection Fees – Funds that are collected from development or developers

The Biennial Budget describes anticipated revenues from various sources such as water sales, taxes, and fees along with anticipated expenditures associated with these funds including those to pay for existing and new sources of water supply.

Further, the budget contains a Capital improvement section (pg. 131) that identifies near term capital expenditures and their funding sources. SCV Water plans to invest $84 million in FY 21/22 and $86 million in FY 22/23. (pg. 133). These include projects described in this section such as installation of treatment facilities for Perchlorate and PFAS impacted wells, construction of new Saugus Formation wells, and construction of recycled water facilities.

The capital budget also contains expenditures for planning efforts for new projects such as additional extraction capacity from new banking programs and Sites Reservoir planning costs. A summary of expenditures and revenues are shown on the Tables on page 136 and 137 of the budget, with individual project summaries on the following pages. Some of the future water projects will be the subject of future budgets to be adopted by the SCV Waters Board of Directors.

Section 4: Supply Reliability Planning and Accounting for Uncertainties Associated with Groundwater Contamination, and other Factors

Planning for water supplies in California inherently involves the management of risks and uncertainties. Changes in public policy, regulatory requirements, and advancement of scientific knowledge can all affect future water supplies. This section addresses some of these risks and uncertainties that SCV Water is managing. Specifically, this section addresses risk and uncertainties associated with water quality, specifically restoration of existing wells and proposed wells given ongoing groundwater contamination, how climate change may impact various sources of supplies and demand for water, and how ongoing development of new water use efficiency may impact water supplies and demands. Finally, this section discusses how analysis undertaken by SCV Water in its Water Supply Reliability Plan Report, supplements the analysis performed in the 2020 UWMP and demonstrates how SCV Water can manage risk should the path to implementing certain future water supplies are blocked.

A key factor to meeting future demands is restoring existing groundwater supplies that are currently contaminated with Perchlorate, PFAS, and VOCs. This section provides a detailed discussion based primarily on Section 6 of the 2020 UWMP, regarding water quality and steps necessary to recover these supplies as well as access additional groundwater supplies from the Saugus Formation. The discussion in this report, however, contains certain updates regarding the schedules relating to recovery of existing well capacity impacted by contaminates.
Further, anticipated climate change is projected to impact nearly all of SCV Water's water supplies. While Sections 1.7 of the 2020 UWMP provides a summary of potential effects of climate change on California and the Santa Clarita Valley, this WSA provides additional discussions on how climate change information, based largely on State provided information, was incorporated into the water demands and water supplies analyzed in the 2020 UWMP and this WSA. This information was incorporated into SCV Water's 2021 Water Supply Reliability Plan Update that analyzed not only the proposed UWMP water resource mix, but alternative scenarios to achieve water supply reliability.

Additionally, the State is in the process of implementing two policy bills enacted by the California Legislature, Assembly Bill 1668 (AB1668, Friedman) and Senate Bill 606 (SB606, Hertzberg) that will provide new water efficiency standards that will eventually lead to enforceable urban water use objectives. Although these standards have not yet been adopted, implications to recycled water availability and urban water demand are discussed below.

4.1 Water Quality

The quality of any natural water is dynamic in nature. This is true for both the imported and local groundwater of the Basin. During periods of intense rainfall or snowmelt, routes of surface water movement may change resulting variable quantities of constituents being mobilized. The quality of water changes over the course of a year. These same basic principles apply to groundwater. Depending on water depth, groundwater will pass through different layers of rock and sediment and potentially dissolve different materials from those strata, change concentrations due to oxidation or reduction reactions or precipitate constituents due to oversaturation. Water depth is a function of recharge from local rainfall and from adjacent basins due to subsurface inflow and withdrawal from groundwater pumping. Water quality is not a static feature of surface water and groundwater, and these dynamic variables must be recognized.

Water quality regulations also change. This is the result of the discovery of new contaminants, updated understanding of the health effects of previously known as well as new contaminants, development of new analytical technology and the introduction of new treatment technology. Most water suppliers in California are subject to drinking water standards set by the United States Environmental Protection Agency (USEPA) and the SWRCB DDW, formerly the DPH. Additionally, each year prior to July 1st, a Consumer Confidence Report or Water Quality Report (WQR) is made available to all Valley residents who receive water from SCV Water. That report includes detailed information about the results of quality testing of the groundwater and treated SWP Water supplied during the preceding year (2020 WQR). Water quality is also addressed in the annual Santa Clarita Valley Water Report, which describes the current water supply conditions in the Valley and provides information about the water requirements and water supplies of the Santa Clarita Valley.

The quality of water received by individual customers will vary depending on whether they receive imported water, groundwater, or a blend. Some will receive only imported water at all times, while others will receive only groundwater. Others may receive water from one well at one time, water from another well at a different time, different blends of well and imported water at other times, and only imported water at yet other times. These times may vary over the course of a day, a week, or a year.

This section provides a general description of the water quality of the supplies within the Valley, aquifer protection and a discussion of potential water quality impacts on the reliability of these supplies.

4.2 Water Quality Constituents of Interest

SCV Water is committed to providing its customers with high quality water that meets all federal and state primary drinking water standards. Some contaminants are naturally occurring minerals and radioactive material. In some cases, the presence of animals or human activity can contribute to the constituents in the source waters. The following sections address constituents reported in the 2020 WQR and the 2019 Santa Clarita Valley Water Report (July 2020) that may impact water quality.

4.2.1 Perchlorate

Perchlorate, a chemical used in making rocket and ammunitions propellants as well as flares and fireworks, has been a water quality concern in the Santa Clarita Valley since 1997 when it was originally detected in four wells operated by SCV Water in the eastern part of the Saugus Formation, near the former Whittaker-Bermite facility. In late 2002, the contaminant was detected in a fifth well, this one located in the Alluvial Aquifer (Stadium Well) but also located near the former Whittaker-Bermite site, and which was immediately taken out of service. Of those wells, two (Well 157 and Stadium Well) were sealed and replaced by new wells (201 and Valley Center), and two others (Saugus 1 and 2) were returned to service with treatment by 2011. Well N-11 was taken out of service and remains out of service.

Perchlorate was detected again in early 2005 in a second Alluvial well (Well Q2) near the former Whittaker-Bermite site, and in 2006 in very low concentrations (below the detection limit for reporting) in a fifth Saugus well (Well N13) near one of the originally impacted wells.

In response to the detection of perchlorate at alluvial Well Q2, it was removed from active service, and the preparation of an analysis and report assessing the impact of, and response to, the perchlorate contamination of that well was commissioned. A capture zone analysis utilizing the numerical groundwater flow model was conducted to assess the potential risk of perchlorate migration to Well Q2 and other nearby alluvial wells. This analysis determined that there was a low risk of perchlorate migration to Well Q2. The response for Well Q2 was to obtain permitting for installation of wellhead treatment, followed by the installation of treatment facilities, and returning the well to water supply service in October 2005. After nearly two years of operation with wellhead treatment, including regular monitoring specified by the DPH, all of which resulted in no detection of perchlorate in Well Q2, it was requested that DPH allow treatment to be discontinued. DPH approved that request in August 2007, and treatment was subsequently discontinued. In 2019, perchlorate was detected again in Well Q2. In response, a treatment system for Well Q2 was completed in early 2021, and the well is expected to be back online by summer 2022. Additional details on DDW permitting and associated operational timeline for Well 201 are provided in Section 4.7.2.

Well N-13 has remained in service with regular sampling per DDW requirements. Perchlorate concentrations in Well N13 (and Well N12) are currently below the detection limit for reporting (DLR). In 2007, the DPH (currently the DDW) established a maximum contaminant level (MCL) for perchlorate of 6 micrograms per liter (µg/L). However, in 2021 DDW lowered the MCL for perchlorate to 2 ug/L and subsequently is in the process of lowering the MCL to 1 ug/L by 2024. Additional details on DDW permitting and associated operational timeline for Well 205 are provided in Section 4.7.2. It is currently assumed that, if required due to changes in future regulations, a centralized treatment system will be installed for Wells N12 and N13 at the Well N12 location.

For Wells Saugus 1 and Saugus 2, DDW has imposed a requirement that perchlorate levels be below the Detection Level for Reporting (DLR) of 2 µg/L. These wells are in active service utilizing approved perchlorate treatment and will be treated for VOC's at the Saugus Perchlorate Treatment Facility by 2024.

In August 2010, perchlorate was detected in a sixth Saugus Formation well (Well 201) and was removed from service. Confirmation sampling in the months that followed confirmed the detection of perchlorate at concentrations that ranged from 5.7 to 12 µg/L. A perchlorate treatment system is currently installed for Well V-201 and SCV Water recently determined it will also install treatment for VOCs at Well 201. SCV Water is working with DDW to finalize a permit for operation of that treatment systems for both perchlorate and VOCs. Based on the current schedule, the well may come back online by 2024.

Following the detection of perchlorate in Well 201 in 2010, pumping from a nearby Saugus Formation well (Well 205) was minimized to reduce potential perchlorate migration. In April 2012, Well 205 was voluntarily taken out of service entirely when perchlorate was detected in low concentrations below the DLR (<4.0 µg/L). As of the date of this report, planning and CEQA activities for Well 205 treatments are in progress. This planning includes provisions for treatment of VOCs should testing determine those constituents are present in concentration sufficient to warrant treatment. The completion of a treatment system for Well 205 is anticipated to occur by early 2024. To date, perchlorate has been detected in a total of nine wells, seven located in the Saugus Formation and two in the Alluvium. Table 4-1 summarizes the current remediation status of all wells where perchlorate has been detected.

Long-term efforts toward the remediation of perchlorate contamination since first detected in 1997 continue to this day. The objective of the perchlorate restoration and containment plan has been to stop the migration of the contaminant plume and restore lost well capacity through pump and treat methods and replacement wells. The following discussion is provided to illustrate the work that has occurred over the last 20 years to reactivate the impacted Saugus 1 and Saugus 2 groundwater supply wells, and that has been expanded to include Wells 201 and 205. SCV Water's Saugus Perchlorate Treatment Facility has been online since 2011, treating Wells Saugus 1 and Saugus 2.

A second Perchlorate Treatment Facility came online in 2017 at Well 201. Until the facility is permitted, treated Water from Well 201 is blended with other SCV Water sources to meet sulfate discharge standards then discharged to the Santa Clara River, under a National Pollutant Discharge Elimination System (NPDES) discharge permit, where it recharges the alluvial aquifer. In 2021 the facility was taken off-line while maintenance was performed. The well and perchlorate treatment facility is anticipated to be placed back into service once the availability of blend water is assessed for 2022, and discharges to the Santa Clara River would then be resumed until DDW approval is acquired for both perchlorate and VOCs. The well is anticipated to be returned to service by early 2024.

The groundwater model that was developed for use in analyzing the operating yield and sustainability of groundwater in the Basin was also used to analyze the capture and control of perchlorate contamination in the originally impacted Saugus wells. As part of the evaluation of the containment system's effectiveness, the Basin groundwater model was updated and recalibrated using actual pumping data (see LSCE & GSI, 2009). The updated model was also utilized in 2014 and 2015 to evaluate restoration and containment options and select the preferred approach to contain the migration of perchlorate downgradient of the Whittaker-Bermite site and restore Wells 201 and 205 to service (GSI and LSCE, 2014).

In addition to the offsite containment and restoration activities, significant work has continued at the Whittaker-Bermite facility to advance a Saugus Aquifer Containment and Extraction Program. To date the following efforts have been made. A Work Plan, Saugus Aquifer Pilot Remediation Well Network, OU7 was approved on December 31, 2008; and subsequently, implementation of the Work Plan started. A multi-layer groundwater flow model was developed to simulate various groundwater pumping scenarios for capture of impacted groundwater in the Saugus Aquifer beneath the site and the surrounding areas. The optimum number and locations of extraction wells were determined based on the modeling scenarios, and the extraction wells and performance monitoring wells were installed.

Construction of the Saugus Aquifer Treatment Plant (SATP) was completed and operation of the pump and treatment system started in August 2017. The SATP includes liquid granular activated carbon (LGAC) for removal of VOCs and a fluidized bed reactor (FBR) for biological treatment of perchlorate in extracted groundwater. The treated water is discharged to the Santa Clara River, in full compliance with provisions of the NPDES permit issued by the Los Angeles RWQCB. Treated water discharged to river percolates through the riverbed and recharges the alluvial aquifer beneath the riverbed.

Approximately 446,741,200 gallons of water have been treated and discharged since start-up.

TABLE 4-1 STATUS OF IMPACTED WELLS

Year Perchlorate Detected	Well	Groundwater Aquifer	Status
1997	Saugus 1	Saugus	DPH (now DDW) approved well return to service in January 2011; well in active service utilizing approved perchlorate treatment.
1997	Saugus 2	Saugus	DPH (now DDW) approved wells return to service in January 2011; well in active service utilizing approved perchlorate treatment.
1997	Well 157	Saugus	Sealed and capacity replaced by new well.
1997	Well N11	Saugus	Out of service.
2002	Stadium Well	Alluvium	Sealed and capacity replaced by new well.
2005	Well Q2	Alluvium	Due to perchlorate detection again in 2019, a treatment system was completed in early 2021 and the well is expected to be back online by summer 2021.
2006	Well N13	Saugus	Regular DDW monitoring, concentrations currently below DLR; well remains in service.
2010	Well 201	Saugus	A perchlorate treatment system was installed in 2017 and treated water discharged to Santa Clara River beginning in 2018. Design for VOC treatment facility underway. The treated groundwater from the well may be used for supply by the end of 2024.
2012	Well 205	Saugus	Voluntarily out of service. Planning for treatment at Well 205 in progress with estimated well restoration by 2024.
2022	N-Well	Alluvium	Due to perchlorate detection in 2022, the existing PFAS treatment facility will require an amendment to the Operation Permit. No physical changes to the treatment facility will be required; well remains in service.

Saugus 1 and Saugus 2

In 2002 SCV Water and the U.S. Army Corps of Engineers (ACOE) signed a cost-sharing agreement for a feasibility study of the area. Under federal and state law, the owners of the Whittaker-Bermite property have the responsibility for the groundwater cleanup. SCV Water and the Department of Toxic Substances Control (DTSC) signed an oversight agreement in 2003 (amended in 2012) regarding studies of treatment technologies for removing perchlorate from water supplies, and also worked with DDW to obtain the necessary permits for these treatment processes. Treatment method pilot studies were conducted during 2003, and in 2004 SCV Water and the purveyors selected ion exchange as the preferred treatment method for removing perchlorate.

Although that agreement expired in January 2005 the parties, under DTSC oversight, jointly developed a plan to “pump and treat” contaminated water from two of the purveyors’ impacted wells to stop migration of the contaminant plume and to partially restore the municipal well capacity that had been impacted by perchlorate. The containment plan specified that wells Saugus 1 and Saugus 2 operate at an initial continuous pumping rate of 1,100 gpm (1,772 AFY) at each well, for a combined total of 2,200 gpm (3,544 AFY) from the two wells. The annual pumping volume of 1,772 AFY per well assumes that pumping will occur continuously, except for occasional maintenance purposes.

A final settlement to fund, remediate and treat the contaminated water was completed and executed by the parties in April 2007. Construction of the treatment facility and pipelines began in November 2007 and treatment of the water began in 2010. Water from Wells Saugus 1 and Saugus 2 was initially treated and discharged into the Santa Clara River. DDW issued an amendment to the Operating Permit in December 2010, and the wells were placed back in water supply service in January 2011. Since then, SCV Water has included this water as part of its supply and has been delivering this water to purveyors.

Wells 201 and 205

While a recommendation plan was submitted to restore Well 201 to service that utilized funding from the Whittaker Corporation and its insurer for installing wellhead treatment for contaminated water from Well 201, it has subsequently been determined that treatment for VOCs at well 201 is necessary. SCV Water has initiated design of this additional treatment at Well 201 as well as initiating design for perchlorate treatment and VOC treatment at Well 205. During the time Wells 201 and 205 have been removed from service, the temporary loss of capacity was made up for from the remaining, non-impacted Saugus production facilities and imported water supplies. Restoration of Well 201, operation of Well 205, and new Saugus well construction to replace lost capacity and to expand production capacity from the Saugus Formation are planned to achieve target Saugus Formation capacity through single and multiple dry years as discussed in Section 3.3.

Returning the impacted Saugus well (Well 201) to municipal water supply service after installing treatment requires DDW approval before the water can be considered potable and safe for delivery to customers. The permit requirements are contained in Process Memo 97-005 for direct domestic use of impaired water sources.

Before issuing a permit to a water utility for use of an impaired source as part of the utility’s overall water supply permit, DDW requires that studies and engineering work be performed to demonstrate that pumping the well and treating the water will be protective of public health for users of the water. The Process Memo 97-005 requires that DDW review the water utility’s plan, establish appropriate permit conditions for the wells and treatment system, and provide overall approval of returning the impacted wells to service for potable use.

The Process Memo 97-005 requires, among other things, the completion of a source water assessment for the impacted well intended to be returned to service. The purpose of the assessment is to determine the extent to which the aquifer is vulnerable to continued migration of perchlorate and other contaminants of interest from the Whittaker-Bermite site. The assessment was completed and initially submitted to DDW for approval in 2015. The assessment includes the following:

- Delineation of the groundwater capture zone caused by operating the impacted wells.

- Identification of contaminants found in the groundwater at or near the impacted wells.
- Identification of chemicals or contaminants used or generated at the Whittaker-Bermite facility.
- Determination of the vulnerability of pumping the impacted wells to these contaminant sources.

A perchlorate treatment system is currently installed for Well 201 and planning for VOC treatment has been initiated. The well is expected to be back online for domestic use by early 2024. Well 205 is also subjected to Process Memo 97-005 and planning for treatment at Well 205 is in progress with an estimated well restoration date by 2024, as shown in Table 4-1. Additional details on DDW permitting and associated operational timeline for Wells 201 and 205 are provided in Section 4.7.

Ultimately, restoration plans and the DDW requirements are intended to ensure that the water introduced to the potable water distribution system has no detectable concentration of perchlorate and all water currently discharged from the potable water distribution system complies with all applicable drinking water standards.

4.2.2 Per- and Polyfluoroalkyl Substances (PFAS)

Per- and polyfluoroalkyl substances (PFAS) are a group of man-made chemicals that have been utilized in a wide array of industrial processes, including among others, production of stain- and water-resistant fabrics, cookware, food packaging, and fire-fighting foams. Among the nearly 5,000 types of PFAS, the two long-chained PFAS, perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) have been produced in the largest amounts. While the use of PFAS has been reduced since the early 2000s, PFOS and PFOA are persistent in the environment and resistant to typical environmental degradation processes which has led to their accumulation and widespread contamination of natural resources, including groundwater supplies.

Recently, the United States Environmental Protection Agency (USEPA) implemented a new lifetime health advisory level of 70 parts per trillion (or 70 nanogram per liter [ng/L]) for the combined concentrations of PFOA and PFOS in drinking water. In August 2019, DDW set a notification level (NL) of 5.1 and 6.5 ng/L for PFOA and PFOS, respectively. Subsequently, in February 2020, the DDW set a response level (RL) of 10 ng/L for PFOA and 40 ng/L for PFOS, based on a running annual average (RAA). RL is the concentration at which DDW recommends that a well is taken out of service, pending treatment. If a chemical concentration is greater than its NL (but below the RL) in drinking water that is provided to consumers, DDW recommends that the utility inform its customers and consumers about the presence of the chemical, and about health concerns associated with exposure to it. Potential regulatory limits for several short chain PFAS compounds are currently undecided.

On February 22, 2021, USEPA published a notice in the federal register that the agency is in the process of developing a MCL for PFAS under the federal Safe Drinking Water Act. At this time, it is unclear whether the federal MCL will match the health advisory level of 70 parts per trillion, or if it will be a lower level, similar to the RL adopted DDW. SCV will monitor EPA’s regulatory decisions and comply with all applicable requirements. Groundwater delivered by SCV to ratepayers will need to be treated to ensure it meets Safe Drinking Water Act standards, if the groundwater contains PFAS at levels that exceed the MCL

In accordance with an Order issued by DDW in March 2019, SCV Water was required to sample 15 wells for four consecutive quarters for PFAS. Initial quarterly samples were collected in May

2019 and one well (Valley Center), exceeded the EPA RL of 70 ng/L for combined levels of PFOA and PFOS and the well was immediately taken out of service. In addition, 10 of the initial 15 wells sampled exceeded one or both NLs for PFOS and PFOA. Public notification was provided to the SCV Water Board of Directors, the Santa Clarita City Council and Los Angeles County Board of Supervisors. At this time, SCV Water decided to voluntarily sample all wells quarterly for PFAS. PFOA and/or PFOS levels higher than NLs and RLs were observed in over 60% of the wells. Subsequent public notifications were provided to SCV Water customers, and one well that was found to exceed the RL was immediately taken out of service. In response to the revised RL from February 2020, SCV Water proactively shutdown numerous wells that were anticipated to exceed the RAA for either PFOA or PFOS.

The preparation of a Groundwater Treatment Implementation Plan was initiated in 2020 with the purpose of evaluating the feasibility and costs of PFAS and perchlorate treatment options (Kennedy Jenks 2021). A total of 28 existing SCV Water wells were identified to be impacted by PFAS, being wells showing representative values of PFOA and PFOS above 80% of the DDW RLs. Based on preliminary results of the alternatives analysis, ion exchange was identified as the preferred treatment option. According to the plan, out of the 28 wells requiring treatment, five wells would have wellhead treatment system and groundwater from the remaining wells would be treated at eight centralized treatment locations. To date, one centralized treatment system was completed for the three N-wells (N, N7 and N8). Restoration of the remaining wells is estimated to occur between 2022 and 2030 as described further in Section 3 and the Santa Clarita Valley Water Agency, Groundwater Treatment Implementation Plan Technical Memorandum (Kennedy Jenks 2021).

4.2.3 Metals and Salts

Metals and salts are tested in wells at least every three years and in Castaic Lake water every month. Concentrations of arsenic at levels less than the drinking water standard of 0.01 milligrams per liter that occur naturally from geologic materials are found in Castaic Lake and in a few wells. Inorganic compounds such as salts and metals can be naturally occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming. Arsenic levels in the Santa Clarita Valley have regularly been below the MCL (10 ug/L) and oftentimes below the DLR (2 ug/L), as was the case during 2019 monitoring (LSCE, 2020).

Nitrate in drinking water at concentrations above 45 mg/L is a health risk for infants less than six months of age due to the possibility of methemoglobinemia. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. Principal sources of nitrogen to a watershed typically include discharges from water reclamation plants, septic systems, and recharge from agricultural activities. Nitrates are tested at least annually, and the drinking water meets federal and state MCL standards (2020 WQR).

A TMDL for chloride in the Upper Santa Clara River (Reaches 5 and 6) was adopted by the Los Angeles RWQCB and became effective on May 5, 2005. The Basin Plan Amendment for the chloride TMDL in the Upper Santa Clara River was unanimously adopted by the Los Angeles RWQCB on December 11, 2008. The TMDL identifies the Valencia and Saugus WRPs as the largest sources of chloride to the Upper Santa Clara River and established waste load allocations of 100 mg/L for the Saugus and Valencia WRPs. In 2014, the Los Angeles RWQCB adopted the most recent version of the USCR Chloride TMDL, Resolution R4-2014-010, which incorporated special study findings and assigned waste load allocations of less than 150 mg/L

as a 3-month rolling average at the Saugus, and less than 100 mg/L as a 3-month rolling average for the calculated "combined effluents" of the Saugus and Valencia WRPs.
In response to the adopted chloride TMDL, the SCVSD developed a chloride compliance plan that includes source control, construction of UV disinfection facilities at the Saugus and Valencia WRPs, and construction of the AWTF at the Valencia WRP. The AWTF will help meet the chloride TMDL and is anticipated to be completed by 2022.

4.2.4 Disinfection By-Products

SCV Water uses ozone and chloramines to disinfect its water supply. Disinfection By-Products (DBPs), which include Trihalomethanes (THMs) and Haloacetic Acids (HAA5), are generated by the interaction between naturally occurring organic matter and disinfectants such as chlorine and ozone. THMs and HAA5 are measured at several points throughout the distribution system. Each location is averaged once per quarter and reported as a running annual average.

Ozone is a very powerful disinfectant that not only kills organisms that no other disinfectant can, but also destroys organic chemicals that cause unpleasant tastes and odors. However, ozone can also interact with bromide, a naturally occurring salt, to produce bromate. Bromate is measured weekly in the surface water treatment plant and compliance is based on a running annual average.

4.2.5 Total Trihalomethanes

Total Trihalomethanes (TTHMs) are byproducts created when chlorine is used as a means for disinfection. The Stage 2 Disinfectants and Disinfection Byproducts Rule, implemented by EPA in 2005, requires water systems to apply an MCL of 80 ug/L for TTHM at each compliance monitoring location (instead of as a system-wide average as in previous rules). SCV Water implements a combination of chlorination (using calcium hypochlorite) and chloramination across its system and maintains TTHM levels below the MCL, as documented in the 2020 WQR.

4.2.6 Microbiological

Microbial contaminants, such as viruses and bacteria, can be naturally occurring or result from urban stormwater runoff, sewage treatment plants, septic systems, agricultural livestock operations and wildlife. Water is tested throughout the systems weekly for Total Coliform bacteria and testing for *Escherichia coli* (*E. coli*) occurs when coliform testing is positive. No *E. coli* was detected in any drinking waters in 2019. The MCL for total coliforms is 5 percent of all monthly tests showing positives for larger systems. Bacteriological tests met federal and state requirements. Additional microbiological tests for the water-borne parasites *Cryptosporidium parvum* and *Giardia lamblia* were performed on Castaic Lake water, and none were detected.

4.2.7 Radiological Tests

Radioactive compounds can be found in both ground and surface waters and can be naturally occurring or be the result of oil and gas production and mining activities. Testing is conducted for two types of radioactivity: alpha and beta. If none is detected at concentrations above five picoCuries per liter no further testing is required. If it is detected, the water must be checked for uranium and radium. Although naturally occurring radioactivity can be detected, existing monitoring data indicate that alpha and beta levels are below the federal and state MCL standards.

4.2.8 Organic Compounds

Organic chemical contaminants, including synthetic and volatile organic chemicals, are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff and septic systems. Organic compounds also include pesticides and herbicides, which may come from a variety of sources such as agriculture, urban storm water runoff and residential uses. Water is tested for two types of organic compounds, volatile organic compounds (VOCs) and non-volatile synthetic organic compounds (SOCs). These organic compounds are synthetic chemicals produced from industrial and agricultural uses. Castaic Lake water is checked annually for VOCs and SOCs.

Although VOCs tend to escape from surface water through volatilization (evaporation) into the air, once dissolved in groundwater they are more persistent. Local wells are tested at least annually for VOCs and periodically for SOCs. Saugus 1, Saugus 2 and 201 wells are tested up to weekly for VOCs. VOCs have been measured in trace levels in some of the SCV Water wells. Trichloroethylene (TCE) represents the major VOC constituent detected in these wells. Tetrachloroethylene (PCE) has also been detected in a few samples. However, the measured levels of these constituents in these wells are well below their respective MCLs.

SCV Water's Water Supply Permit for Wells Saugus 1 and 2 sets an operational goal of no VOCs above the DLR (0.5 ug/L) in its distribution system and SCV Water. Over the last 5 years, the operational goal has been achieved in more than 95% of the samples collected. When there are detections, they are well below the MCL and just slightly above the DLR. SCV Water performed a VOC source identification study in July 2015 which concluded that the likely source was the Whittaker-Bermite site. SCV Water is currently working with DTSC to develop additional monitoring requirements for both sites. Supplemental VOC treatment of Saugus 1 and 2 wells is currently in design.

During startup of the Well 201 perchlorate treatment facility, TCE was detected slightly above the DLR. Detections of TCE in Well 201 have ranged from a high of 1.3 ug/L to <DLR. Average detections are slightly above the DLR at around 0.6 ug/L. SCV Water has determined it will supplement the perchlorate treatment facility at Well 201 with a GAC based treatment facility. This additional treatment component is currently under design. In order to bring Well 201 back into potable production, SCV Water will be subject to Process Memo 97-005 requirements. SCV Water anticipates construction and permitting to be completed by 2024 Recognizing the potential for similar challenges at Well 205, initial design incorporates the potential need for treatment of VOCs and the need to meet Process 97-005 requirements. Well 205 is anticipated to become available in 2024

In order to address contamination at the Whittaker-Bermite site, a remedial action plan (RAP) and associated CEQA document were approved by DTSC on December 2, 2014. The RAP presents an evaluation of identified remedial alternatives for containment and cleanup of impacted groundwater at the Whittaker-Bermite site. In accordance with the RAP, a Saugus Aquifer Treatment Plant was constructed and began operation in August 2017. The treatment plant includes a fluidized bed reactor (FBR) system which provides biological treatment of perchlorate and liquid granular activated carbon which is used to remove VOCs in groundwater. Approximately 446,741,200 gallons of water have been treated since start-up.

4.3 Imported Water Quality

SCV Water provides SWP and other imported water to the Valley. The source of SWP water is rain and snow of the Sierra Nevada, Cascade, and Coastal Mountain ranges. This water travels to the Delta through a series of rivers and various SWP structures. From there it is pumped into a series of canals and reservoirs, which provide water to urban and agricultural users throughout the San Francisco Bay Area and central and southern California. The most southern reservoir on the West Branch of the SWP California Aqueduct is Castaic Lake. SCV Water receives water from Castaic Lake and distributes it to its customers following treatment.

SCV Water operates two water treatment plants, the Earl Schmidt Filtration Plant located near Castaic Lake and the Rio Vista Water Treatment Plant located in Saugus. SCV Water produces water that meets drinking water standards set by the U.S. EPA and DDW. SWP Water has different aesthetic characteristics than groundwater, with lower dissolved mineral concentrations (total dissolved solids) of approximately 250 to 400 mg/L, and lower hardness (as calcium carbonate) of about 105 to 135 mg/L. Historically, the chloride content of SWP Water varies widely from over 100 mg/L to below 40 mg/L, depending on Delta conditions. In addition, changes in SWP operations, as described below, can also result in water quality variations.

Historically, the SWP delivered only surface water from the Sacramento-San Joaquin River Delta. However, SCV Water along with other SWP contractors have integrated water supply programs also include "water banking" programs where SWP Water is stored or exchanged during wet years and withdrawn in dry years. Withdrawn water can either be delivered by exchange with SWP supplies allocated to others, or by pumping it into the SWP system. During dry periods, a greater portion of water in the SWP includes banked water supplies. The banked water has met all water quality standards established by DWR under its pump-in policy for the SWP. Source water from SCV Water's Semitropic Bank can require treatment for 123 TCP and arsenic prior to introduction into the Aqueduct depending on the mix of wells used for recovery. To date Semitropic has successfully treated its source water through blending methods and meets DWR pump-in policy. Supplies from SCV Water's Rosedale Bank have also met DWR pump-in criteria. In general, pumped-in water serves to reduce the chloride concentration in SWP Water. The SWP water chemistry may fluctuate and is influenced by its passage through the Delta, where large amounts of organic material are present and where mixing with salt water from the San Francisco Bay, which contributes bromide and chlorides, may occur. Chloride levels from the Delta elevate chloride locally resulting in concern for local agriculture that grows chloride sensitive crops. Additionally, bromide and TOC may react with disinfectants such as ozone, chlorine, or DBPs. All constituents met the federal and state MCL levels as reported in the 2020 WQR.

4.4 Surface Water Quality

SCV Water does not deliver and treat water from the Santa Clara River as a source of supply; however, this supply is a source of recharge to the underlying groundwater basin.

The Los Angeles RWQCB Basin Plan (Basin Plan, 1994) provides water quality objectives for surface water in the USCR. These objectives were established to protect the various beneficial uses for that particular water body or reach. The water bodies of the USCR Watershed, which include streams, natural lakes, and reservoirs, span a wide variety of existing, potential and/or intermittent beneficial uses. The following is a list of the beneficial uses identified in the USCR:

- Municipal and Domestic Supply
- Industrial Service Supply
- Industrial Process Supply
- Agricultural Supply
- Groundwater Recharge
- Freshwater Replenishment
- Hydropower Generation
- Water Contact and Non-contact Water Recreation
- Warm and Cold Freshwater Habitat
- Wildlife Habitat
- Rare, Threatened, and Endangered Species
- Spawning, Reproduction, and/or Early Development

All of the surface water bodies in the USCR Watershed support the designated beneficial uses (either existing or intermittent) of municipal and domestic supply, agricultural supply, groundwater recharge, water contact recreation, non-contact water recreation, wildlife habitat, and warm freshwater habitat. In addition, many water bodies (such as Bouquet, San Francisquito, and Soledad Canyons) support the designated beneficial uses (either existing or intermittent) of rare, threatened, or endangered species; wetland habitat; and/or spawning, reproduction, and/or early development.

Regional reservoirs that support hydropower generation include Elderberry Forebay, Castaic Lake, Dry Canyon Reservoir, Bouquet Reservoir, and Pyramid Lake. Local surface waters are not a direct source of drinking water supply in the Region, but they are a continual source of recharge to groundwater which is used to meet municipal water demands.

Based on the 2014 and 2016 California Integrated Report and related Clean Water Act Section 303(d) list, there are a number of impairments identified for Reaches 5, 6 and 7 of the Santa Clara River, and for Lake Hughes, Lake Elizabeth, and Munz Lake, all of which are within the Upper Santa Clara River Watershed.

The Santa Clara River currently has two approved TMDLs due to non-attainment of water quality objectives, one pertaining to chloride (see Section 4) and another pertaining to bacteria. Another TMDL is in place for three lakes within the Region that are impaired with trash. Other pollutants impacting local surface waters include nutrients, metals, pesticides, and others.

Surface water quality is monitored in numerous locations throughout the Valley. Continuous sampling records are taken at two gaging stations at the Old Highway 99 Bridge and at the Los Angeles-Ventura County Line (“Blue Cut”).

4.5 Groundwater Quality

The groundwater basin has two sources of groundwater, the Alluvial Aquifer whose quality is primarily influenced by recharge from rainfall and stream flow, and the Saugus Formation, which is a much thicker aquifer and recharged primarily by a combination of rainfall and deep percolation from the partially overlying Alluvium. A larger part of the Valley’s groundwater supply is from the Alluvial Aquifer, between 30,000 to 40,000 AFY; and a smaller portion of the Valley’s water supply is drawn from the Saugus Formation, with a target production level between 7,500 and 15,000 AFY in normal water years.

Local groundwater does not have microbial water quality problems. Parasites, bacteria, and viruses are filtered out as the water percolates through the soil, sand, and rock on its way through the vadose zone to the water table (the top of the aquifer). Even so, disinfectants (hypochlorite) are added to local groundwater when it is pumped by wells to protect public health. Local groundwater has very little TOC and generally has very low concentrations of bromide, minimizing potential for DPB formation. Taste and odor problems from algae are not an issue with groundwater.

The mineral content of local groundwater is very different from SWP water. The groundwater is very "hard," and it has high concentrations of calcium and magnesium (approximately 250 to 600 mg/L total hardness as $CaCO_3$). Groundwater may also contain higher concentrations of nitrates and sulfates when compared to SWP water. However, all groundwater meets drinking water standards.

4.5.1 Water Quality - Alluvium

Groundwater quality is a key factor in assessing the Alluvial Aquifer as a municipal and agricultural water supply. Groundwater quality details and long-term conditions, examined by integration of individual records from several wells completed in the same aquifer materials and in close proximity to each other, have been discussed previously in the annual Water Reports and in the 2020 UWMP. Historical groundwater quality as represented by TDS (which is a measure of the amount of dissolved minerals and salts in water expressed in mg/L) from representative wells in the Valley have been reviewed relative to DDW Secondary Maximum Contaminant Levels (SMCL) (Recommended, Upper and Short-term Levels). While concentrations of TDS generally respond to wet periods by exhibiting a downward trend, followed by an increasing trend during a dry period, the historical TDS data does not exhibit a long-term increasing trend and, therefore, no long-term decline in Alluvial groundwater quality. In general, groundwater quality exhibits a "gradient" from east to west, with lowest dissolved mineral content to the east, increasing in a westerly direction; and periodic fluctuations in some parts of the basin, where groundwater quality has inversely varied with recharge from precipitation and stream flow. Those variations are typically characterized by increased mineral concentrations through dry periods of lower stream flow and lower groundwater recharge, followed by lower mineral concentrations through wetter periods of higher stream flow and higher groundwater recharge.

Overall, water quality analyses demonstrate that, with the exception of occasional variances above the SMCL for TDS, groundwater of the Alluvium meets acceptable drinking water standards. The presence of long-term consistent water quality patterns, although intermittently affected by wet and dry cycles, supports the conclusion that the Alluvial aquifer is a viable ongoing water supply source in terms of groundwater quality.

The most notable groundwater quality issue in the Alluvium is PFAS contamination, described in Section 4.2.2.

4.5.2 Water Quality - Saugus Formation

As discussed above for the Alluvium, groundwater quality is a key factor in also assessing the Saugus Formation as a municipal and agricultural water supply. Long-term Saugus groundwater quality data is not sufficiently extensive to permit any sort of basin-wide analysis or assessment of pumping-related impacts on quality. However, integration of individual records from several wells has been used to examine general water quality trends. Based on those records, water quality in the Saugus Formation has not historically exhibited the precipitation-related fluctuations seen in the Alluvium. Based on available data over the last fifty years, groundwater quality in the Saugus has exhibited a slight overall increase in dissolved mineral content. Between 2000 and 2005, several wells within the Saugus Formation exhibited an increase in TDS concentrations, similar to the short-term changes in the Alluvium, possibly as a result of recharge to the Saugus Formation from the Alluvium. Between 2006 and 2010, these concentrations steadily declined, followed by an increasing trend through 2016 and decreasing trend through 2019, except for Well N12 which remained stable.

TDS concentrations in the Saugus Formation remain within the range of historic concentrations and below the (aesthetic) MCL upper level. Groundwater quality within the Saugus will continue to be monitored to ensure that degradation which could present concern relative to the long-term viability of the Saugus as an agricultural or municipal water supply does not occur.

The most notable groundwater quality issues in the Saugus Formation are perchlorate and VOC contamination.

4.6 Water Quality Impacts on Reliability

Three 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 known contamination, or provisions for treatment in the event of contamination. The resolution of contamination for aquifer protection is addressed below.

Among the main constituents of concern with potential to impact groundwater availability are perchlorate, VOCs and PFAS. Based on the low levels of detection and blending practices with imported water supplies, VOCs are not anticipated to impact groundwater supply availability or reliability. Additionally, TCE detected at the Well 201 perchlorate treatment facility will be addressed as part of the Process Memo 97-005 DDW drinking Water permitting process. New standards for PFAS and subsequent testing results have indicated groundwater impacts in the Alluvial Aquifer from this constituent group and resulted in SCV Water's decision to shut down several wells in the recent past.

Perchlorate has been a water quality concern in the Valley since 1997 and long-term efforts are ongoing for the containment and remediation of perchlorate contamination. Currently, efforts are focused on stopping the migration of the contaminant plume and restoring the lost well capacity through pump and treat methods. SCV Water has sealed and replaced the capacity of some perchlorate impacted wells with new wells, and it has treated some of the wells and brought them back online. Some impacted wells are subjected to impaired water (97-005) compliance requirements, while others are currently in operation with a DDW approved monitoring program. Additionally, other perchlorate-impacted wells are currently offline awaiting installation (or permit) of treatment process. As noted above, two perchlorate treatment facilities have come online since 2011 and a third system was completed in early 2021.

Recognizing the existing water quality issues that affect the local groundwater, from perchlorate and VOCs, and more recently PFAS, SCV Water has developed a groundwater treatment and implementation plan (Kennedy Jenks 2021) to improve the reliability of its local groundwater supplies and ensure suitable water quality for meeting its customer potable demands. It is understood that groundwater treatment and implementation must be developed consistent with SCV Water's GSP, such that any relevant information pertaining to the adequacy, availability, and sustainability of supplies be consistent with the GSP and GSP implementation Plan.

Overall, the plans being developed for groundwater operation will allow SCV Water to meet near term and long-term demand within the SCV Water service area. The loss of capacity of wells impacted by water quality issues and removed from service in the near term will be met by near-term excess capacity in non-impacted wells, other water sources including imported water supplies, and/or through the installation of replacement well(s), if necessary, until remediation alternatives, including wellhead treatment, and DDW approval is obtained for restoration of the impacted supply. Therefore, no anticipated change in reliability or supply due to water quality is anticipated based on the present data, as is shown in Table 4-2.

TABLE 4-2 CURRENT AND PROJECTED WATER SUPPLY CHANGES DUE TO WATER QUALITY (PERCENTAGE CHANGE)

Water source	2020	2025	2030	2035	2040	2045	2050
Groundwater							
Alluvial[(a)]	63%	25%	0%	0%	0%	0%	0%
Saugus[(b)]	25%	0%	0%	0%	0%	0%	0%
Imported Water	0%	0%	0%	0%	0%	0%	0%
Recycled Water	0%	0%	0%	0%	0%	0%	0%
Banking Programs	0%	0%	0%	0%	0%	0%	0%

Notes:

(a) Based on 24,170 AFY and 25,660 AFY being available to SCV Water in 2020 and 2025 respectively and calculated for normal years. Net reduction in Alluvial pumping is 15,270 and 6,420 in 2020 and 2025, respectively. Full Alluvial well capacity is restored by 2030 per groundwater treatment and implementation plan (Kennedy Jenks 2021). As discussed, this interim reduction in supply does not result in an overall supply shortfall.

(b) Based on forgone pumping capacity of 5,950 for well 201 and 205 per Table 4-8C (provided in the 2020 UWMP and at total pumping capacity of 23,930 AFY (14,980 existing capacity + 5,950 of recovered capacity). As discussed, this interim reduction in supply does not result in an overall supply shortfall.

4.7 Review of Pending Water Quality Permitting for Saugus Wells

Based on the anticipated process for water quality permitting and current status, this section provides information supporting the proposed timeline for operation of existing Saugus wells 201, 205, and future additional Saugus wells (Saugus 3 and 4, Saugus 5 and 6, and Saugus 7 and 8) following DDW water quality permitting requirements as summarized in Table 4-3.

TABLE 4-3 ANTICIPATED SCHEDULE FOR PERMITTING AND OPERATION OF SAUGUS WELLS

Well	Well Status	Treatment Status	DDW Permit Requirements	DDW Permit Status	Anticipated Schedule
201	Existing and operating (discharge to surface water)	Perchlorate treatment since 2017	97-005 Process Memo	- Pending revised 97-005 documentation sections (most information from previous submittal is applicable) and DDW sequential review - Pending water supply permit amendment application and public hearing - Pending revised CEQA	- 2021: CEQA - December 2021: Treatment design completed - Q12022: draft 97-005 documentation sections 1-5 and sequential DDW review/approval - 3Q2022 – 4Q2023: System construction - 3Q-4Q2023: Startup testing and submittal of testing data to DDW - 1Q2024: DDW review and approval of 97-005 draft documentation and ancillary documents - 2Q2024: Water supply permit application - 3Q2024: Public Hearing - 4Q2024: Water supply permit application Amended Water Supply Permit and Operation (as applicable)

Well	Well Status	Treatment Status	DDW Permit Requirements	DDW Permit Status	Anticipated Schedule
205	Existing and not operating	Preliminary design complete	97-005 Process Memo	- Pending draft 97-005 documentation sections (most information from Well 201 documentation is applicable) and DDW sequential review - Pending water supply permit amendment application and public hearing - Pending CEQA	- 2022: CEQA - 2022: Treatment design - 2023: draft 97-005 documentation sections 1-5 and sequential DDW review/approval - 1Q2023 – 1Q2024: System construction - 1Q-4-Q2024: Startup testing and submittal of testing data to DDW - 1Q2024-2Q2024: DDW review and approval of 97-005 draft documentation and ancillary documents - 1Q2024-Q22024: Water supply permit application - 3Q2024: Public Hearing - 4Q2024: Water supply permit application Amended Water Supply Permit and Operation (as applicable)
Saugus 3 and 4	Designed and drilling pending DDW permit	Not applicable, it is anticipated that technical documents to address some elements of 97-005 process memo may be required by DDW because of proximity of abandoned oilfield but	Drinking Water Source Assessment Plan	- Preliminary Drinking Water Source Assessment Plan complete - Pending submittal and DDW review of Drinking Water Source Assessment Plan - CEQA completed and approved in 2005	- 4Q2021-2Q2022: Draft Drinking Water Source Assessment Plan and DDW review and drilling approval - Q12022-Q2022 CEQA - 3Q2022 – 3Q2024: Well installation and testing - 2025: Amended Water Supply Permit

Well	Well Status	Treatment Status	DDW Permit Requirements	DDW Permit Status	Anticipated Schedule
		treatment will not be required			
Saugus 5 and 6	Locations identified and secured	Anticipated not applicable	Drinking Water Source Assessment Plan	- Pending draft Drinking Water Source Assessment Plan and DDW review (anticipated that wells are not subject to Process Memo 97-005) - Pending CEQA	- 2022-2023: Draft Drinking Water Source Assessment Plan, and DDW review and drilling approval - 2023: CEQA - 2024: Wells installation and testing - 2025-2027: Amended Water Supply Permit
Saugus 7 and 8	Locations TBD	Anticipated not applicable	Drinking Water Source Assessment Plan	- Pending draft Drinking Water Source Assessment Plan and DDW review (anticipated that wells are not subject to Process Memo 97-005) - Pending CEQA	- 2021-2023: Location identifications - 2024 Draft Drinking Water Source Assessment Plan and DDW review and drilling approval - 2024: CEQA - 2025-2026: Wells installation and testing - 2027-2030: Amended Water Supply Permit
N-Well	Existing and Operating	Treated for PFAS since 2020	Operating Permit Amendment	- Processing Amendment to Operating Permit to include perchlorate treatment at the existing PFAS Treatment Facility	- 2022: Operating Permit Amended

4.7.1 Process Memo 97-005 Requirements

Operation of Saugus wells 201 and 205 for drinking water supply will require an amended Water Supply Permit subjected to Process Memo 97-005 for direct domestic use of extremely impaired sources. Based on the revised Process Memo 97-005-R2020 issued by DDW in September 2020, the following studies and documents are required prior to DDW issuance of the water supply permit:

- Process Memo 97-005 documentation, including the following elements:
  - Drinking Water Source Assessment and Contaminant Assessment
  - Full Characterization of Raw Water Quality
  - Drinking Water Source Protection
  - Effective Treatment and Monitoring
  - Evaluation of Human Health Risks Associated with the Failure of the Proposed Treatment
  - Operations Maintenance and Monitoring Plan
- CEQA documentation
- Water supply permit application
- Treatment facility compliance/startup testing plan
- Startup testing data and documentation
- Public hearing

The process outlined by DDW in the revised Process Memo 97-005-R2020 is as follows:

- The water purveyor prepares and submits draft Process Memo 97-005 documentation sections to DDW
- DDW review and provide written approval of the draft Process Memo 97-005 documentation sections sequentially
- The water purveyor completes startup testing of the treatment facility and submits testing data for DDW review and approval
- The Process Memo 97-005 documentation is deemed complete by DDW, including written approval of each section
- The water purveyor applies for an amended Water Supply Permit
- The Process Memo 97-005 documentation and ancillary documents are provided for public review
- DDW and the water purveyor hold a public hearing
- DDW determine whether to issue the amended Water Supply Permit for the extremely impaired source

The anticipated schedule for operation of the Saugus wells has been determined based on the requirements and process outlined above and the current status.

4.7.2 Existing and Future Saugus Wells

4.7.2.1 Saugus Well 201

SCV Water had completed the draft Process Memo 97-005 documentation for Saugus well 201, including collection and documentation of operational data since the system started operating with discharge to surface water in 2017, however a review of submitted information in light of SCV Water’s decision to incorporate VOC treatment is underway. While CEQA has been completed for the original project, supplemental documentation may need to be provided to DDW for the additional VOC treatment for the well. Well 201 is anticipated to return to service in 2024.

4.7.2.2 Saugus Well 205

Well 205 is located in the vicinity of Well 201, and evaluation of the anticipated capture zone under different operating conditions has been completed (GSI and LSCE 2014). Because of the close proximity of Well 205 to Well 201 and the similarity of the anticipated wellhead treatment, it can be assumed that significant portions of the draft Process Memo 97-005 documentation for Well 201 will be applicable to Well 205, including:

- Drinking Water Source Assessment and Contaminant Assessment
- Drinking Water Source Protection
- Effective Treatment and Monitoring
- Operations Maintenance and Monitoring Plan

The preliminary design for the treatment system is complete and the final design is anticipated to be completed by the end of 2022. Following completion of the final design, it is anticipated that SCV Water will prepare the draft Process Memo 97-005 documentation in 2023 in close collaboration with DDW, including sequential review of draft sections and requirement of written approval. Treatment system construction and testing is anticipated in 2023-2024, and completion of Process Memo 97-005 documentation, DDW review, and public hearing is anticipated in 2024.

4.7.2.3 Saugus Wells 3 and 4

Sites for Saugus wells 3 and 4 have been identified and secured. The sites are located within approximately 2,500 feet of abandoned oilfield wells. SCV Water has been in communication with DDW about these well locations. Based on these communications and the descriptions of “extremely impaired source” in the revised Process Memo 97-005-R2020, it is not anticipated that Saugus wells 3 and 4 will be subject to Process Memo 97-005. SCV Water has provided the following information to DDW to confirm this assumption:

- Description of the local hydrogeology and drinking water well design information
- Drinking Water Source Assessment Plan
- Water quality data from monitoring wells located within the anticipated capture area

Drilling approval has been given by DDW, well installation and testing are anticipated in late 2022-early 2024 with permits in late 2024. Wells are anticipated to return to service in 2025.

4.7.2.4 Saugus Wells 5 and 6

Sites for Saugus wells 5 and 6 have been identified and secured in the Castaic Junction area. Based on the descriptions of “extremely impaired source” in the revised Process Memo 97-005-R2020, it is not anticipated that Saugus wells 5 and 6 will be subject to Process Memo 97-005. Similar to Saugus wells 3 and 4, it is anticipated that SCV Water will provide the following information to DDW prior to well installation:

- Description of the local hydrogeology and drinking water well design information
- Drinking Water Source Assessment Plan
- Water quality data from monitoring wells located within the anticipated capture area

Following review and drilling approval by DDW, well installation and testing are anticipated in 2027.

4.7.2.5 Saugus Wells 7 and 8

Sites for Saugus wells 7 and 8 have not been identified. Therefore, the schedule for operation of those wells for drinking water supply is anticipated for 2030.

4.7.2.6 N-Well

SCV Water is in the process of having the Operation Permit for the existing PFAS Treatment Facility for the N-Well amended by DDW to include monitoring and language to include perchlorate treatment. The current ion exchange treatment for PFAS treats for perchlorate as well and only minor operational changes are needed. There will be no changes to the Facility.

4.8 Potential Effects of Climate Change

A topic of increasing importance for water planners and managers is climate change and the potential impacts it could have on California's future water supplies. With a range of potential scenarios and impacts, climate change increases uncertainty of future demand conditions and local and imported water supply conditions thereby posing additional water management challenges.

California is described as one of the most "climate-challenged" regions in North America, in the Fourth Climate Change Assessment (Climate Assessment)(https://nca2018.globalchange.gov/), completed in 2018 in coordination with the CEC, CNRA and State Office of Planning and Research. This Climate Assessment includes updated climate projections and supports findings that the State will experience greater impacts from climate change in the future, including shifting hydrology. Among the technical reports prepared for the Climate Assessment is a report on the *Mean and Extreme Climate Change Impacts on the State Water Project* (Wang et al., 2018).

Primary climate change impacts projected by global climate models to impact the State and Santa Clarita Valley region include warming air temperatures and changes in precipitation patterns, with more frequent and intense heavy precipitation events on the one hand and more frequent and more severe droughts on the other hand, among other impacts. While studies related to the region are conclusive regarding the anticipated increase in extreme events, there is disagreement whether average precipitation changes will be towards wetter or drier conditions. Impacts outside the Santa Clarita Valley, but nevertheless of high importance include rising sea levels and declining snowpack. These conditions impact the availability and reliability of both local and imported water supplies.

Recent findings indicate that higher temperatures will lead to dryer conditions, and an increased occurrence of dry years and multiple dry years resulting in more frequent and more intense droughts. Drought risks are anticipated to be some of the greatest vulnerabilities to water supplies and demands, resulting in among other things reductions in groundwater recharge, reduced runoff, and surface water flows, and reduced local and imported water supply reliability. Additionally, warmer temperatures and changes in precipitation patterns are anticipated to result in increasing water needs as discussed in the following reports:

- Upper Santa Clara River Integrated Regional Water Management Plan
- City of Santa Clarita Climate Action Plan
- Los Angeles Countywide Sustainability Plan
- State Water Project Delivery Capability Report
- California's Fourth Climate Change Assessment
- SCV-GSA Groundwater Sustainability Plan

Climate Change was incorporated into the 2020 UWMP and reflected in this WSA. To accomplish this, an estimate of how 2050 climate is likely to differ compared to baseline normal climate. These estimates are obtained from the climate change scenarios and supporting data that DWR has made available for assessing groundwater basin sustainability to support implementation of the Sustainable Groundwater Management Act (SGMA). This is the same information that GSI Water Solutions used in preparing the GSP. (GSI Water Solutions, Inc. (2020) and the development of a Numerical Groundwater Flow Model for the Santa Clara River Valley East Groundwater Subbasin. These estimates were selected to remain consistent with climate change scenarios used for evaluating supply impacts as recommended by the DWR UWMP Guidebook. Climate change conditions for SWP supplies were incorporated consistent with DWR's 2019 SWP Delivery Capability Report.

Section 2 of the 2020 UWMP present demands used in this WSA. A more detailed discussion regarding demand development including climate change can be found in UWMP's Appendix F: Population and Demand Technical Memorandum (Maddaus) with the climate change methodology presented in Appendix F of the Maddaus report.

The approach uses the Department of Water Resources (2018a) Guidance for Climate Change Data Use During Groundwater Sustainability Plan Development. In the resource, DWR provides downscaled, gridded information about expected percentage changes in reference ETo and precipitation for two different time horizons (i.e., year 2030 and 2070). Each grid is roughly 6 kilometers by 6 kilometers in area, allowing for a granular assessment of local conditions. These change factors are derived as the average of 20 climate model predictions for each horizon year. These 20 climate models were selected by DWR's Climate Change Technical Advisory Group in 2015 as best representing California.

The gridded change factors are provided as a climatological time series by month and year between 1915 and 2011. It is meant to capture how historical weather during the 1915-2011 period in a grid would have been different under expected climate conditions in 2030 and 2070. This format allows groundwater modelers to simulate water budgets under alternative scenarios, such as actual historical weather, or historical weather modified by the change factors to reflect expected 2030 or 2070 weather conditions.

This simulation approach preserves historical inter-annual weather variability, allowing for an apples-to-apples comparison across the simulation of alternative scenarios. To capture expected future weather conditions in the Santa Clarita Valley, change factors for reference ETo and precipitation were downloaded for the two grids that cover the SCV Water service area and averaged.

Figure 4-1 shows monthly factors by which reference ETo is expected to be relatively higher in both the year 2030 and year 2070. Figure 4-2 shows the same for precipitation. Change factors are multipliers; thus, a factor of 1.0 would mean no change.

FIGURE 4-1
MONTHLY DISTRIBUTION OF ETo COMPARED TO BASE LINE

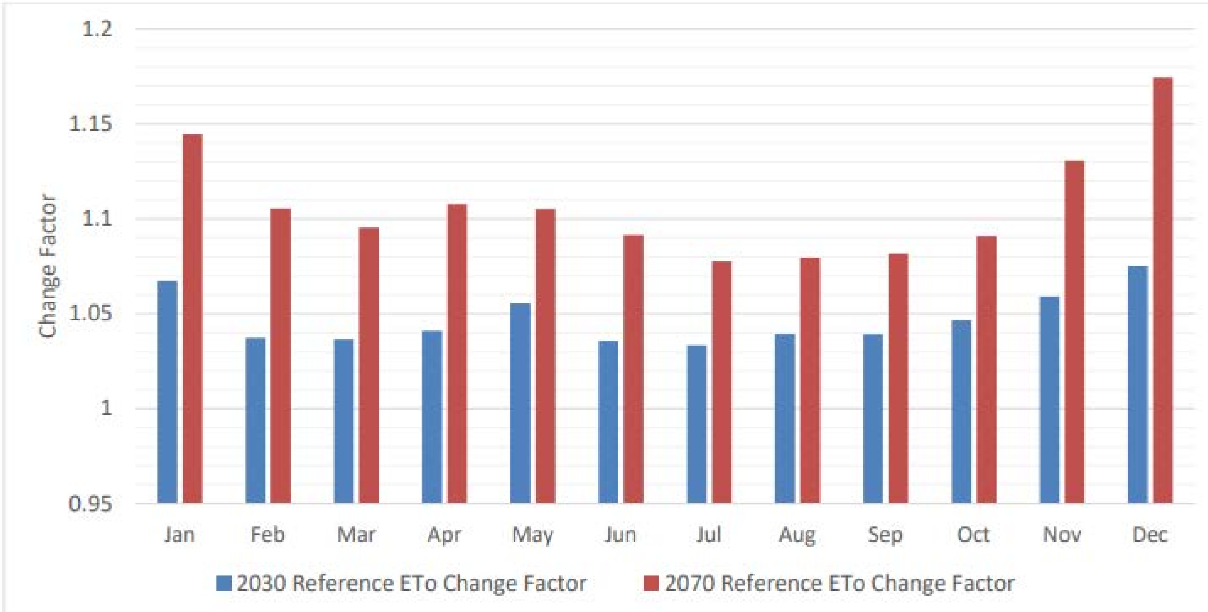
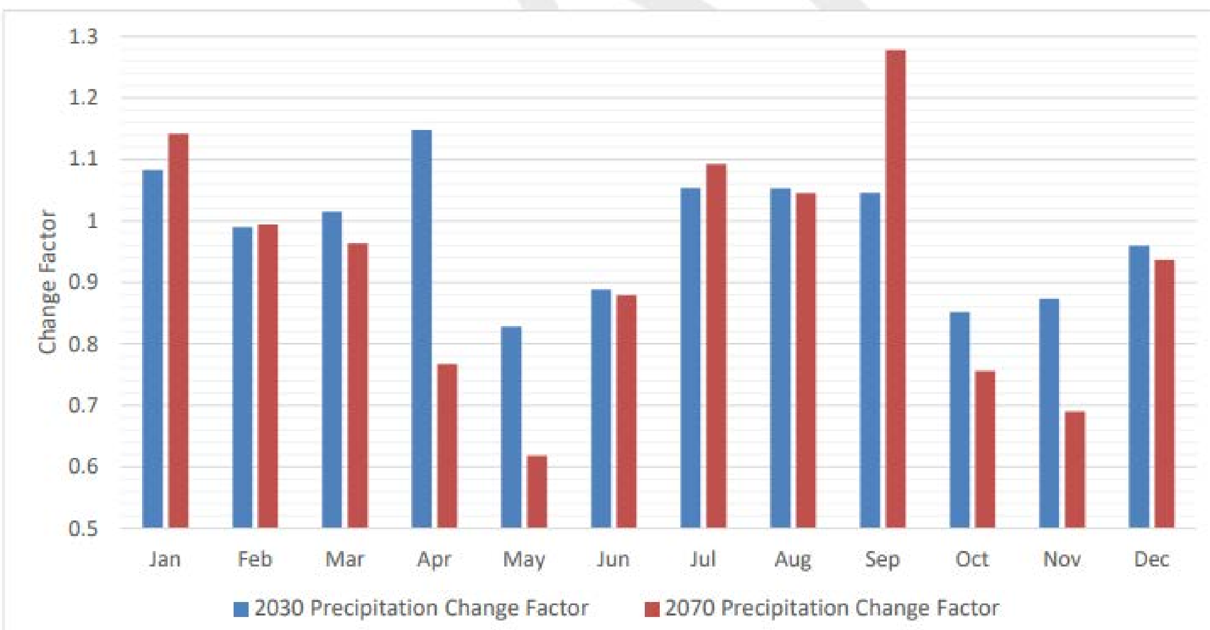


FIGURE 4-2
MONTHLY DISTRIBUTION OF PRECIPITATION COMPARED TO BASELINE



These climate change factors suggest that the monthly reference ETo in the Santa Clarita Valley is expected to be higher by approximately 5% in 2030, and 10% in 2070. Although by 2070, winter months would have experienced sharper warming than other months. With respect to precipitation, climate change is not expected to have much effect on the primary rainy months in the Santa Clarita Valley (December-March).

Overall, climate change is expected to have a more material impact on reference ETo than precipitation. To develop a climate change scenario that represents the land-use analysis' endpoint of 2050 the change factors for 2030 and 2070 were averaged since the midpoint of this period coincided with 2050.

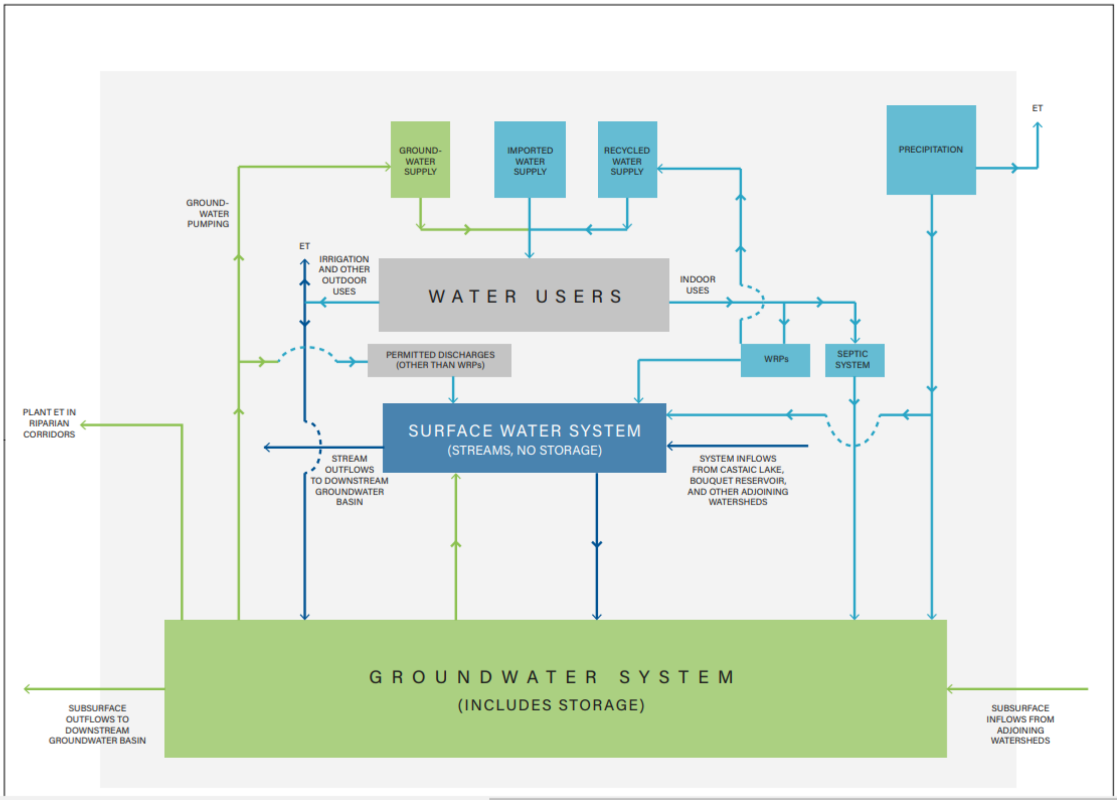
This exercise yielded 12 monthly change factors each for reference ETo and precipitation. The econometric demand model was constructed at a monthly time step and used reference ETo and precipitation to model the impact of weather. These change factors were fed into the demand study's econometric model to forecast what demand would have been in demand study's base period of 2018 and 2019. The difference worked out to a projected increase of 3.77% on total production. This is lower than the increase in ETo as this increase is only applied to outdoor water use not to interior water use.

This climate change increase in demand is expected to arrive gradually over time, essentially starting with a 0% impact in 2020 rising to 3.77% in 2050. Between these two bracketing years (2020 and 2050) the impact of climate change is layered linearly on to the baseline demand forecast.

Both Groundwater and State Water Project water are impacted by climate change and these impacts are described below.

Groundwater

As described in Section 6 of the GSP, it incorporates several water balance analyses with three climate conditions, existing conditions, 2030 conditions, and 2070 conditions. These analyses incorporate the changes in ETo and precipitation that are identified above. Section 6 and Appendix I of the GSP documents how various components of water balance analyses interact with changes in ETo and precipitation. As demonstrated in the following diagram these interconnections are relatively complex.



Changes in precipitation impact both surface and groundwater systems. Changes in ETo impact water needed by water users for irrigation as well as water used by Riparian Corridors. At the same time increases in imported supplies have the potential to increase flows to reclamation plants and discharges into surface water and the transfer of surface water to groundwater. The GSP utilized a numeric groundwater flow model (MODFLOW-USG) to account for these interactions and determine if the basin was being operated in a manner that resulted in the chronic lowering of groundwater levels or groundwater storage.

The projected water budgets, in Figures 6.1-9 through 6.1-11 in the GSP, show that the cumulative change curve for groundwater storage may shift slightly downward with climate change, the onset of slightly reduced precipitation and greater ET in the Basin. However, chronic declines in groundwater levels are not projected to occur over long periods, which indicates that SCV Water's operating plan for the Basin is unlikely to cause an overdraft condition in the local groundwater system (i.e., it is unlikely to exceed the basin yield) in the future under the assumed climatic conditions.

State Water Project Supplies

To determine water supplies available from the SWP, SCV Water relies on computer modeling performed by DWR and reported in the DCR. The 2019 DCR was the basis for SWP supplies reported in the 2020 UWMP. While the Draft 2021 DCR became available on December 31, 2021, it does not contain updated information on future SWP water supply availability. In absence of updated information use of the 2019 data continues to represent the most appropriate estimate future SWP availability.

To evaluate SWP supply availability under future conditions, the 2019 DCR included a model study representing hydrologic and sea level rise conditions in the year 2040. The future condition study used all of the same model assumptions as the study under existing conditions, but reflected changes expected to occur from climate change, specifically, projected temperature and precipitation changes centered around 2035 (2020 to 2049) under a higher emissions assumption and more conservative (45 cm) sea level rise. For the long-term planning purposes of this WSA and the 2020 UWMP, the long-term average allocations reported for the future conditions study from 2019 DCR is the most appropriate estimate of future SWP water supply availability.

The following text from the 2019 DCR Appendix B: Future Condition with Climate Change and 45 cm Sea Level Rise Scenario, provides a more thorough explanation on development of the 2040 modeling conditions.

The DCR 2019 Future Conditions scenario uses the same climate change hydrology inputs of the Incidental Take Permit (ITP)1climate change studies. ITP climate change scenario was developed centered around 2035 (2020-2049). This is the best available climate change input hydrology to be used for DCR planning horizon (year 2040). DWR (2020) explains how the climate change projections conditions were developed:

> "The climate projections were derived from the ensemble of 20 Coupled Model Intercomparison Project 5 (CMIP5) global climate projections selected by the California Department of Water Resources (DWR) Climate Change Technical Advisory Group (CCTAG) as the most appropriate projections for California water resources evaluation and planning (DWR CCTAG, 2015). The 20 climate projections, selected by CCTAG, were generated from 10 global climate models run with two emission scenarios, one optimistic (Representative Concentration Pathway [RCP] 4.5) and one pessimistic (RCP 8.5), identified by the Intergovernmental Panel on Climate Change (IPCC) for the Fifth Assessment Report (AR5) (2014)."

Two Sea Level Rise (SLR) projections were evaluated before establishing the final Future Conditions SLR. Below, we explain how the final Future Conditions SLR was selected between the 1 foot (ft) and 1.5 ft SLR projections. The Ocean Protection Council released the latest Sea-Level Rise Guidance in 2018 (OPC 2018). Table B-1 (OPC 2018) presents the three levels of risk aversion: low, medium-high, and extreme. The DCR 2019 scenarios included SLR projections in between: medium (1ft SLR) and near-high risk (45 centimeter or 1.5 ft SLR) which are summarized in Table B-2. The high emissions, 2040 row (Table B-1) was selected because of the 20-year "project lifespan" of DCR Future Conditions scenarios and due to the Incidental Take Permit's March 31, 2040, expiration date. The 1.0 ft SLR has a 1-in-20 chance or 5% exceedance probability while the 45 cm (1.476 ft) SLR has less than 0.5% exceedance probability (Table B-2).

Table B-1. Projected SLR (ft) for San Francisco (OPC 2018)

		Probabilistic Projections (in feet) (based on Kopp et al. 2014)					
		MEDIAN	LIKELY RANGE			1-IN-20 CHANCE	1-IN-200 CHANCE
		50% probability sea-level rise meets or exceeds…	66% probability sea-level rise is between…			5% probability sea-level rise meets or exceeds…	0.5% probability sea-level rise meets or exceeds…
					Low Risk Aversion		Medium - High Risk Aversion
High emissions	2030	0.4	0.3	-	0.5	0.6	0.8
	2040	0.6	0.5	-	0.8	1.0	1.3

Table B-2. DCR 2019 Preliminary Future Conditions (1 ft and 1.5 ft SLR projections for High Emissions, 2040)

Aversion projection (High emissions, 2040)	SLR (ft) projection
Low risk	0.8
Medium risk **(DCR 19 1 ft SLR)**	1.0
Medium-high risk	1.3
High risk **(DCR 19 1.5 ft SLR)**	1.476
Extreme risk	1.8

Between the 1 ft and 1.5 ft SLR, the 1.5 ft SLR Future Conditions scenario was chosen after feedback from management and some State Water Project Contractors.

The Appendix further provides annual water allocation for the period from 1922 through 2003. The model results in the 2019 DCR reflect a reduction in average SWP water supplies for 2020 conditions of 58% to future conditions average reliability of 52%. As discussed in Section 3.2.7 supply values between 2020 and 2040 are interpolated between these values and supplies beyond 2040 are assumed to be the same as 2040. Further the climate adjusted annual water allocation information for 2040 was used in SCV Water's 2020 Updated Water Reliability Report.

4.9 Pending Water Use Efficiency

Recognizing the water supply challenges that California faces moving forward, in 2018, two policy bills were enacted by the California Legislature, Assembly Bill 1668 (AB1668, Friedman) and Senate Bill 606 (SB606, Hertzberg). Provisions of this legislation provide for the setting of long-term water efficient standards for 1) indoor residential use, 2) outdoor residential use,3) outdoor irrigation used from dedicated irrigation meters and equivalent for large commercial, industrial, and institutional (CII-DIM) use, 4) water loss, 5) certain variances and incentives for potable reuse. Further, water users will be required to establish urban water use objectives no later than January 1, 2024, incorporating these standards.

Regarding indoor residential water use, DWR is tasked in coordination with the SWRCB to conduct studies and prepare a report to the legislature with recommendations to potentially revise existing standards. This report, “Results of the Indoor Residential Water Use Study,” pursuant to Water Code Section 10609, has been submitted to the Legislature. It recommends the current standards be adjusted as indicated in the following Table 4-4.

TABLE 4-4 RECOMMENDED INDOOR WATER USES STANDARDS

Year	Current Standard (GCPD)	Recommended Standard (GCPD)
2020	55	55
2025	52.5	47
2030	50	42

As interior water use is the source of future recycled water, this has implications regarding availability of this water source. As previously discussed in Section 3, SCV Water intends to develop recycled water supplies from new development. As detailed in the Maddaus Water Demand Study, it was assumed interior water use of 50 gcpd. The recommended standard represents a 16% reduction in the availability of new recycled water supplies or from 8,511 to 7,149 AFY. When added to the existing 450 AFY this totals 7,599 AFY, a potential reduction of 912 AFY or about 1% of total water demand.

On the other hand, provisions of the legislation concerning irrigation water use efficiency will likely offset this potential reduction in supply. Under the legislation, DWR is to conduct studies and make recommendations to the SWRCB regarding outdoor water use and variances and incentives and the SWRCB shall adopt standards by June 30, 2022. The legislation specifically calls for outdoor water use standards to incorporate the principles of the MWELO (Model Water Efficient Landscape Ordinance). This will have implications for both existing and future water users.

Regarding future water users, the 2020 UWMP based future outdoor water use on MWELO plus an overwatering factor. As noted in Appendix F of the 2020 UWMP, exterior water demands for future development are based on 2015 MWELO plus 25.6% overwatering factor. This increase in exterior water use was based on a technical study that compared actual irrigation demand from properties developed after 2015 MWELO took effect. (2020 UWMP Appendix F – Population and Demand Technical Memorandum, Maddaus, April 2021 Appendix F – (Residential and Non-Residential outdoor Water Use Study pg. 11). Overall water demand attributed to new users is approximately 30 TAF and 60% of which is for outdoor water. Thus, assuming SCV Water adopts measures and or regulations that require future customers to meet MWELO requirements, water demands would be reduced by approximately 3,800 AFY. This more than offsets the reduction in supply of 1,362 AFY.

Determining the application of the MWELO principles relating to existing customers outdoor water use will be more complex. This involves producing credible data to determine landscape area while accounting for the age of existing installations and its inherent limits of design efficiency, along with a number of other factors. A draft report has been released to the stakeholders for comments but at this time DWR has not produced its report on outdoor water efficiency standards. SCV Staff following this process anticipate application of expected standards will likely require further reductions in outdoor water use.

Thus, while changes in efficient water use requirements may result in the shifting of the resource mix used to achieve water reliability standards it does not appear that such changes would result in a less reliable water supply portfolio. Refinement of water use efficiency standards and the implied reductions in demand will be forth coming, however, until a more thorough analysis can be conducted, it is reasonable and likely conservative to use the assumptions in the 2020 UWMP for conservation and recycled water.

4.10 Water Supply Reliability Modeling

SCV Water's strategy for achieving water supply reliability has involved the development of a diverse water supply portfolio that can accommodate the variability of wet and dry-periods endemic to California's climate. The variability in SWP supplies has the largest effect on overall supply reliability. In any given year, SWP supplies may be reduced due to dry weather conditions or regulatory factors. During such an occurrence, the remaining water demands in the SCV Water service area would be met by SCV Water's diverse alternate water supplies. The alternate supplies that would make up for any reductions in SWP supplies include a combination of supplies, such as return water from SCV Water's water storage accounts in the Semitropic Groundwater Storage Bank and the Rosedale-Rio Bravo Water Banking and Exchange Program, deliveries from SCV Water's flexible storage account in Castaic Lake Reservoir, local groundwater pumping from the Saugus Formation, short-term water exchanges, and participation in DWR's dry-year water purchase programs, among other sources. The diversity of such alternative supplies adds to the reliability because factors that may impact one supply source, such as drought, may not directly impact other sources, such as banked water.

The available water supplies and demands for SCV Water's service area were analyzed in the 2020 UWMP to assess the region's ability to satisfy demands during the following variable periods: (1) an average water year; (2) a single-dry year; and (3) multiple-dry years. The 2020 UWMP summary tables demonstrate that existing and planned supplies are available and sufficient to meet existing and projected demand under all such conditions for the projected planning period through 2050. The analysis also accounts for the water needed to serve the Project because SCV Water included the Project demand in SCV Water's current and projected water deliveries data provided as part of the adopted 2020 UWMP. Furthermore, the 2020 UWMP concludes that SCV Water's current and proposed groundwater supplies from the Alluvial Aquifer and the Saugus Formation are sustainable, and that current and future pumping levels, when combined with non-purveyor pumping, for average year, single-dry year, and multiple-dry years, remain within the basin yield.[12]

In addition to the above-mentioned UWMP reliability assessment, SCV Water periodically updates its Water Supply Reliability Plan (Plan) to identify current and future storage capacity and emergency storage needs and options for managing its water supplies. The 2019 Water Supply Reliability Plan Update (Geosyntec 2021) is the most current Plan.

This Plan evaluates six supply scenarios driven by varying assumptions regarding projected local supply availability and reliability, with each supply scenario evaluated against two demand sets (projected demands with and without active conservation).

The Plan uses an analytic spreadsheet model developed for SCV Water by MBK Engineers and updated by Geosyntec Consultants in 2021 to assess the reliability of SCV Water's water supplies. The model performs annual water operations for the SCV Water service area over a specified study period (2021 through 2060), using projected increases in demands to reflect the

[12] 2020 UWMP, p. 7-2.

uncertainty in the hydrology over this period, using supplies that would be available under multiple hydrologic sequences. For each hydrologic sequence, the model steps through each year of the study period, comparing annual supplies to demands and operating SCV Water storage programs as needed, adding to storage in years when supplies exceed demand, and withdrawing from storage when demand exceeds supplies. Results from the multiple hydrologic sequences are then compiled and summarized to provide a statistical assessment of the reliability of SCV Water's supplies and storage programs to meet its projected demands over the study period.

In addition to the hydrologic reliability of the Santa Clarita Valley's overall water supply, the Plan also discusses the physical reliability of the water delivery system in place to deliver its groundwater, imported water, and recycled water supplies. Deliveries of these supplies are dependent on an extensive network of SWP facilities used to pump, store, and convey SWP and other imported supplies, and SCV Water and purveyor facilities to treat, pump, and distribute supplies. Supply delivery can be interrupted or constrained in a number of ways, and the Plan includes an assessment of the ability to meet demands during an extended 12-month outage.

For this Plan update, the study period analyzed is 2021 through 2060 (which is 10 years after the assumed development buildout in the SCV Water's service area assumed in the 2020 Urban Water Management Plan (UWMP)). The analysis starts with a Base Scenario and evaluates five additional scenarios, with and without active conservation. This analysis builds on information contained in the 2019 DWR DCR as it incorporates 2040 climate change conditions discussed above in this Section and uses the same hydrologic sequence from the CALSIM 2 model. A further description of the model and the scenarios are contained in Section 7.45 of the 2020 UWMP and the 2019 Plan.

The reliability analysis conducted in the Plan is more rigorous and conservative than that contained in the 2020 UWMP and in Section 5.1. The Plan models the operation of SCV Water's supply portfolio through the full 82-year historical hydrologic period and incorporates projected storage balances when determining the quantity of water available from a banking program to meet water demands during dry periods. Further, while UWMP Section 5.2 incorporated a gradual decline in SWP reliability between 2020 and 2040 due to climate change, the Plan's modeling is based on SWP hydrology adjusted to reflect 2040 climate change, being applied to all years in the study period.

These scenarios represent 12 different views of future supply situations. Each supply scenario is evaluated in the Plan to determine the reliability of that scenario in meeting projected demands in SCV Water's service area. The reliability for all future scenarios (1 through 5) is greater than 95 percent.

The Plan analyzed various scenarios, which analyses can be used to answer several questions including:

1. How long current facilities could be relied upon to achieve reliability?

2. If the mix of existing and proposed facilities in the UWMP achieved reliability through 2050?

3. If certain future facilities were not constructed, (specifically some or all of the new Saugus Formation wells were either not constructed or otherwise unavailable) would alternative programs that SCV Water is investigating be able to achieve reliability?

A summary of the scenarios studied are shown in Table 4-5.

TABLE 4-5 VARIOUS SCV WATER SUPPLY SCENARIOS

	Base	1	2	3	4	5
Alluvial Pumping	✓	✓	✓	✓	✓	✓
Existing Saugus	✓	✓	✓	✓	✓	✓
SWP and BVRRB	✓	✓	✓	✓	✓	✓
Existing Banking Programs	✓	✓	✓	✓	✓	✓
Saugus Wells 3 and 4		✓	✓	✓		
Saugus Wells 5 - 8		✓				
New Rosedale Bank Capacity		✓	✓	✓	✓	
Sites Reservoir				✓	✓	✓
AVEK High Desert Bank			✓		✓	✓
McMullin GSA Aquaterra Bank						✓

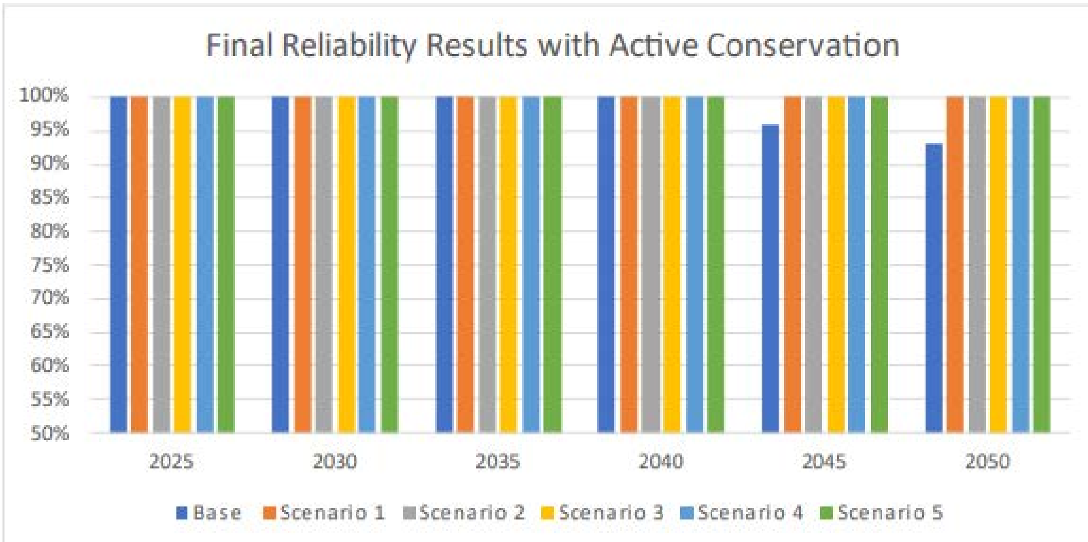
The Base represents those elements of the SCV Water's portfolio that currently exist. This includes existing and restored groundwater supplies. As the analysis moves through the study period restoration of well capacity temporarily taken out for water quality concerns takes place consistent with Table 4-6B, Table 4-6C, Table 4-8B, and Table 4-8C in the 2020 UWMP. Imported supplies include SWP supplies based on 2040 climate conditions pursuant to DWR's CALSIM modeling for the 2019 Delivery Capability Report, the firm Buena Vista Rosedale Transfer, and if necessary, in dry years, SWP Flexible Storage, Nickel Water (after 2035), Yuba Accord water. The Base case also includes the existing banking programs, specifically existing Rosedale Banking supplies at the existing 10,000 AFY of recovery, SCV Water Semitropic and access to the Newhall Land and Farming withdrawal capacity (after 2035), that are drawn on during years when the other previously mentioned supplies are insufficient to meet demands.

Scenario 1 adds Saugus Formation wells 3-8 and 10,000 AFY of additional extraction capacity from the Rosedale Banking Program as provided for in the 2020 UWMP.

Scenarios 2-5 were designed to analyze if in the event of the removal of some or all future Saugus Formation Wells (and in one case the expansion of the Rosedale Bank) could reliability be achieved through other programs that SCV Water is considering participating in, specifically Sites Reservoir, AVEK's High Desert Bank and the McMullin's Aquaterra Water Bank.

Figure 4-3 summarizes the modeling results.

FIGURE 4-3 FINAL RELIABILITY RESULTS WITH ACTIVE CONSERVATION



With respect to the first question above, the analysis shows that current supplies (including recovered groundwater capacity) along with active conservation will be sufficient through at least 2040.

Regarding the second question, to achieve reliability in subsequent years, additional investments in those programs and facilities identified in the UWMP (Scenarios 1) would be sufficient to achieve reliability through 2050.

As to the third question, Scenarios 2-5 demonstrate that alternative programs to those contained in the UWMP could offer different paths to achieve reliability or if implemented in addition to the UWMP could provide additional supplies in excess of demand.

Conclusions

As discussed above, the analysis contained in the Plan represents a more robust and conservative analysis than that contained in the 2020 UWMP. Nevertheless, the conclusions related to the ability of SWC Water to reliably meet water demands are consistent. If SCV Water continues to implement active water conservation measures, conjunctively use its imported water, groundwater, and water banking facilities, and invests in future water supply facilities as identified in the 2020 UWMP it will reliably meet water demands in its service area through 2050. The ability to implement other alternative water supply programs identified in the Plan's analysis bolsters this conclusion as alternatives exist should some of the future water supplies identified in the 2020 UWMP become unattainable.

4.11 Water Conservation and Water Shortage Contingency Planning

Water supplies may be interrupted or reduced due to a number of factors, such as a drought which limits supplies, an earthquake which damages water delivery or storage facilities, a regional power outage, or a toxic spill that affects water quality. The 2020 UWMP describes in detail how SCV Water is responding to such water supply outages, reductions, and other emergencies so that customer needs are met adequately, promptly, and equitably. With the completion of the 2020 UWMP, SCV Water also completed a comprehensive Water Shortage Contingency Plan that outlines the states of action SCV Water will take depending on the severity of a particular shortage for each supply source available to SCV Water. In addition, prohibitions, penalties, and financial impacts of shortages have been developed by SCV Water and are summarized in both the 2020 UWMP and 2020 Water Shortage Contingency Plan.

In preparing this WSA, SCV Water considered the urban water shortage contingency planning analysis set forth in the 2020 UWMP and 2020 Water Shortage Contingency Plan in determining the sufficiency of water supplies for the proposed Project, in addition to all existing and planned future uses in SCV Water's service area within the Santa Clarita Valley. These documents also explain how SCV Water's reliability planning provisions of these adopted documents assist SCV Water in responding to drought conditions, including the severe drought conditions that currently exist.

Section 5: Water Supply Assessment

Consistent with the provisions of SB 610, neither this WSA nor its approval shall be construed to create a right or entitlement to water service or any specific level of water service, and shall not impose, expand, or limit any duty concerning the obligation of SCV Water to provide certain service to its existing customers or to any future potential customers.

The WSA does not constitute a will-serve, plan of service, or agreement to provide water service to the Project, and does not entitle the Project, Project Applicant, or any other person or entity to any right, priority or allocation in any supply, capacity, or facility. To receive water service, the Project will be subject to an agreement with SCV Water, together with any and all applicable fees, charges, plans and specifications, conditions, and any and all other applicable SCV Water requirements in place and as amended from time to time. Nor does anything in this WSA prevent or otherwise interfere with SCV Water's discretionary authority to declare a water shortage emergency in accordance with the Water Code.

SCV Water is implementing plans that include projects and programs to help ensure that the existing and planned water users within the Santa Clarita Valley have an adequate supply.

The analyses presented in the following tables verify the availability of water supply for the Entrada South and Valencia Commerce Center Project, in addition to all existing and planned future uses in the SCV Water service area over a 30-year horizon (exceeding the requirements of SB 610's 20-year planning horizon) in average/normal years, a single dry-year, and in multiple-dry years.

Furthermore, while not required by SB 610, as a conservative measure, this WSA demonstrates that sufficient water supplies will be available to meet the projected water demands associated with the proposed Project during normal, single-dry, and multiple-dry years over a 30-year horizon, in addition to existing and planned future uses (including agricultural, manufacturing, and industrial uses) throughout the entire Santa Clarita Valley.

5.1 Water System Operations and Reliability Planning

As discussed herein, SCV Water has implemented a number of projects that are part of an overall program to provide the facilities needed to ensure reliable imported and local water supplies during dry years. The program involves water conservation, surface and groundwater storage, water transfers and exchanges, water recycling, additional short-term pumping from the Saugus Formation, and increasing SCV Water's imported supply. This overall strategy is designed to meet increasing water demands while assuring a reasonable degree of supply reliability. Part of the overall water supply strategy is to provide a blend of groundwater and imported water to area residents to ensure consistent quality and reliability of service. The actual blend of imported water and groundwater in any given year and location in the Santa Clarita Valley is an operational decision and varies over time due to source availability and operational capacity SCV Water's facilities. The goal is to conjunctively use available water resources so that the overall reliability of water supply is maximized while utilizing local groundwater at a sustainable rate.

The available water supplies and demands for SCV Water's service area were analyzed in the 2020 UWMP to assess the region's ability to satisfy demands during the following variable periods: (1) an average water year; (2) single-dry year; and (3) multiple-dry years, which included an assessment of a five-year dry period. The supply and demand comparison tables 5-2,5-3 and 5-4 (shown in Sections 5.1.1 to 5.1.4 below) utilize demonstrate that existing and planned supplies are available to meet existing and projected demand under all such conditions for the projected planning period through 2050. These tables are consistent with the 7-2, 7-3 and 7-4 in the UWMP with the exception that Table 5.2 reflects updated SWP Table A Amounts consistent with the DWR's 2021 Draft DCR and Planned Future and Recovered Groundwater supplies reflect the adjusted planning, construction and planning schedules as discussed in Section 3.3.2.3 Available Groundwater Supplies.

While many of the Santa Clarita Valley's available supply sources have some variability, the variability in SWP supplies has the largest effect on overall supply reliability. In any given year, SWP supplies may be reduced due to dry weather conditions, regulatory restrictions, or other factors. As discussed above, during such an occurrence, the remaining water demands in the SCV Water's service area are planned to be met by a combination of alternate supplies such as return water from SCV Water's accounts in the Semitropic Groundwater Storage Program and the Rosedale–Rio Bravo Water Banking and Exchange Program, deliveries from SCV Water's flexible storage account in Castaic Lake Reservoir, local groundwater pumping, short-term water exchanges, and participation in DWR's dry-year water purchase programs.

As stated in the 2020 UWMP, water supply reliability for SCV Water has improved significantly with the development of conjunctive use and groundwater banking. Conjunctive use is the coordinated operation of multiple water supplies to achieve improved supply reliability. During dry periods, or when imported water supply availability is reduced, banked water can be recovered from groundwater storage to replace, or firm up, the imported water supply deliveries. SCV Water has been conjunctively utilizing local groundwater and imported water since SWP water was imported to the Santa Clarita Valley beginning in 1980. SWP and other imported water supplies have supplemented the overall supply of the Santa Clarita Valley, which previously depended solely on local groundwater supplies.

Drought periods may affect available water supplies in any single year and even for a duration that spans multiple consecutive years. Hydrologic conditions vary from region to region throughout the state. Dry conditions in northern California affecting SWP supply may not affect local groundwater and other supplies in southern California, and the reverse situation can also occur (as it did in 2002 and 2003). For this reason, SCV Water has emphasized developing a water supply portfolio that is diverse, especially in dry years. Diversity of supply is considered a key element of reliability planning, giving SCV Water the ability to draw on multiple sources of supply to ensure reliable service during dry years, as well as during average wet years.[13]

Provided below is a summary of historical water supplies used by SCV Water along with updated water supply projections presented in the 2020 UWMP that also address certain information required under SB 610 for the proposed Project.

[13] 2020 Santa Clarita Valley Water Report (June 2021).

TABLE 5-1
SCV WATER HISTORICAL SOURCES OF SUPPLY (AFY)

SOURCE	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021 (preliminary)
Alluvial	26,186	25,593	21,431	24,683	19,333	15,244	9,424	14,030	9,049	7,571	14067
Saugus	7,438	8,133	8,348	9,929	10,560	11,085	6,979	8,839	8,498	9,761	11478
TOTAL GROUNDWATER	**33,624**	**33,726**	**29,779**	**34,612**	**29,893**	**26,329**	**16,403**	**22,869**	**17,547**	**17,332**	**25,545**
Recycled Water	373	428	400	474	450	507	501	352	458	468	480
SWP %	80%	65%	35%	5%	20%	60%	85%	35%	75%	20%	5%
SWP Deliveries to SCV Water Service Area(a)	**20,445**	**36,153**	**33,126**	**13,097**	**15,196**	**31,888**	**47,912**	**36,835**	**41,111**	**14,871**	**10,934**
Table A	10,713	24,657	4,692	451	11,075	29,647	32,422	12,411	37,503	11,551	1,081
Carryover	9,332	11,496	28,434	7,743	4,121	2,241	15,490	24,424	3,608	3,036	6,523
Article 21	400	0	0	0	0	0	0	0	0	0	
Turnback Pool Water	0	0	0	0	0	0	0	0	0	0	
Yuba	0	0	0	445	0	0	0	0	0	284	1,170
Other DWR coordinated transfers	0	0	0	34	0	0	0	0	0	0	194
Flex Storage Withdrawals	0	0	0	4,424	0	0	0	0	0	0	1,966
SWP Deliveries to Out of Service Area Storage/Exchange(b)	**21,608**	**10,000**	**0**	**0**	**4,339**	**1,500**	**5,425**		**24,502**	**0**	**5,628**
RRBWSD Banking	1,006	6,031	0	0	0	0	0	0	0	0	
Semitropic WSD Banking	0	0	0	0	0	0	5,340	0	5,002	0	
Rosedale Exchange Program	15,602	3,969	0	0	0	0	0	0	11,000	0	
WKWD Exchange Program	5,000	0	0	0	0	0	0	0	0	0	
CCWA Exchange Program	0	0	0	0	0	1,500	0	0	0	0	
AVEK Exchange Program	0	0	0	0	0	0	0	0	7,500	0	
UWCD Exchange Program	0	0	0	0	0	0	0	0	1,000	0	
Flex Storage Refill	0	0	0	0	4,339		85	0	0	0	1,966
Back up San Luis Storage	0	0	0	0	0	0	0	0	0	0	3,662
Withdrawals from Out-of-Service Area Storage/Exchange (b)	0	0	0	9,774	2,998	0	0	0	750	22,957	21,323
RRBWSD Banking	0	0	0	2,824	2,998	0	0	0	0	1,600	16,323
Semitropic WSD Banking	0	0	0	0	0	0	0	0	0	5,000	5,000
Rosedale Exchange Program	0	0	0	0	0	0	0	0	0	14,451	
WKWD Exchange Program	0	0	0	2,000	0	0	0	0	0	500	
CCWD Exchange Program	0	0	0	0	0	0	0	0	750	0	
NLF Semitropic Banking	0	0	0	4,950	0	0	0	0	0	0	
AVEK Exchange Program	0	0	0	0	0	0	0	0	0	1,406	
UWCD Exchange Program	0	0	0	0	0	0	0	0	0	0	

Other Imported Deliveries to SCV Water Service Area(c)(d)	11,000	0	0	11,000	10,995	0	0	0	0	11000	9,685
Other Imported Deliveries to Out-of-Service Area Storage/Exchange(d) or Water Sale	2,188	19,569	28,629	0	0	11,000	11,370	5,062	10,282	0	1,315
Total Imported Supplies to SCV Water Service Area	**31,445**	**36,153**	**33,126**	**33,871**	**29,189**	**31,888**	**47,912**	**42,835**	**42,961**	**48,828**	**41,942**
Total Local and Imported Supplies Utilized in SCV Water Service Area	**65,442**	**70,307**	**63,305**	**68,957**	**59,532**	**58,724**	**64,816**	**66,056**	**60,966**	**66,628**	**67,967**
End of the year carryover supply (left over table A and carryover noted in text)	**41,651**	**48,809**	**21,482**	**18,048**	**21,899**	**51,571**	**42,788**	**39,211**	**9,013**	**13,466**	**13,633**

Sources: DWR Bulletin 132, Management of the California State Water Project; and DWR delivery files.

Notes:

(a) Includes deliveries of Table A supplies, carryover water, Article 21 water, Turnback Pool water, local supply (from West Branch reservoirs), Yuba Accord water and water purchased through DWR.

(b) Out-of-service area storage includes flexible storage refill in Castaic Lake, the SCV Water Semitropic Banking Program, NLF Semitropic Banking Program and the Rosedale-Rio Bravo Banking Program. Exchanges include programs with the Rosedale-Rio Bravo, West Kern Water District, Central Coast Water Agency, Antelope Valley East Kern, and United Water Conservation District.

(c) Deliveries from Buena Vista.

(d) Includes BVRRB water sales and deliveries to Devils Den service area. Also includes BVRRB deliveries to banking programs and exchanges, or San Luis backup storage.

5.1.1 Historical Operation of Santa Clarita Valley Water System

A review of the period from 2011 through 2021 is provided in Table 5.1. This table illustrates the previous discussion in this section. Add text with specific examples to support previous points in Section 5.1.

2011 was characterized as a wet year resulting in a high SWP Table A allocation of 80%. With wet conditions and surplus Table A water, SCV Water executed two 2:1 exchange programs totaling 20,602 AF and delivered 1,006 AF of water to be stored in the RRBWSD banking program in order to utilize as much water as possible for future years. Excess Table A and carryover supplies not utilized totaled 41,651 AF to be available as carryover in 2012.

2012 was characterized by an increase in water use attributed to unseasonably high temperatures and below normal rainfall in early 2012 resulting in a longer irrigation season. The water year ended up with average precipitation which resulted in a SWP Table A allocation of 65%. SCV Water started the year with 41,651 AF of Article 56 Carryover supply, of which 30,155 AF was reclassified due to reservoir levels filling up. With surplus water, SCV Water sold 16,500 AF of BVRRB water (annual supply plus banked supply) to West Kern County Agriculture Water Districts, banked 6,301 AF into RRBWSD banking program and further exchanged 3,969 AF in the RRBWSD 2:1 exchange program. SCV Water used 11,496 AF of carryover and ended the year with 2013 carryover supplies totaling 48,809 AF.

2013 was characterized with unseasonably high temperatures and below normal rainfall resulting in a lower SWP Table A allocation of 35%. The SCV Water service area grew rapidly in 2013 with 5% increased demands and 750 new service connections added. Imported carryover and Table A water were utilized to meet imported demands. 28,000 AF of supplies were sold to other agencies to bring in revenue and reduce loss of excess supplies. Even with previous years carryover water being reclassified due to wet hydrology, SCV Water was able to reserve 21,482 AF unused Table A into carryover for the start of 2014 in preparation of continued or worsening drought conditions.

2014 was characterized by extremely dry conditions locally and statewide resulting in a historically low SWP Table A allocation of 5%. To meet dry year imported demands SCV Water utilized 7,743 AF of carryover supplies, recovered 9,774 AF from banking and exchange programs, withdrew 4,424 AF from Castaic Flexible Storage, and received 445 AF from Yuba County Accord Water. In addition, state mandated conservation program regulations helped drive water demands down reserving 18,048 AF of unused carryover and Table A supplies for 2015 if drought conditions persisted.

2015 was characterized by a fourth year of drought with record high temperatures, record low precipitation and record low snowpack. 2015 was recorded as one of the driest and warmest winters since 1950 resulting in a SWP Table A allocation of 20%. In 2015 SCV Water entered into an agreement with Semitropic to participate in the Stored Water Recovery Unit (SWRU) as an additional source of dry-year water supply. SCV Water utilized Table A supply, carryover supply, BVRRB supply and recovered 2,998 AF from the RRB water banking program to meet imported demands. 4,339 AF of unused Table A supply were backfilled to the flexible storage account utilized in 2014. 2015 total unused carryover and Table A supplies available for 2016 totaled 21,892 AF.

2016 was characterized by average precipitation in northern California, an improvement to the previous four years of drought with enough precipitation to offset some of the large deficits in water storage reservoirs resulting in a SWP Table A allocation of 60%. SCV Water saw demands increase in 2016 from the easing of SWRCB emergency water conservation measures shifting from mandatory to voluntary. Imported demands were met with minimal carryover and Table A supplies. SCV Water exchanged 1,500 AF of Table A water and stored 5060 AF of BVRRB water into the Rosedale banking program. The remaining BVRRB supply was stored in San Luis reservoir and added to 2017 carryover supplies which totaled 51,571 AF at the end of the year.

2017 was characterized by the second largest statewide runoff and the end of the state's 5-year drought. 2017 snow water equivalent came in at 163% of April 1st average resulting in a large SWP Table A allocation of 85%. Of the 51,571 AF of carryover storage available in 2017, 15,490 AF was delivered to SCV Water service area and the rest was reclassified due to the wet hydrology. With surplus Table A SCV Water backfilled the remaining 85 AF to the Castaic flexible storage account and maximized deliveries to banking programs totaling 5,340 AF (storage space only available in Semitropic SWRU, RRBWSD program full). With plenty of Table A and carryover supplies, SCV Water sold BVRRB water supply to Kern County Westside Districts. Remaining Table A supplies totaled 42,788 in carryover for 2018.

2018 was characterized by dry conditions returning statewide with nearly all the state experiencing below-average precipitation and SCV Water receiving less than half its average annual precipitation. This resulted in a lower then average SWP Table A allocation of 35%. Imported demands were met with carryover and Table A supplies, with the remaining supplies being carried over into 2019 totaling 39,211 AF.

2019 was characterized by above average precipitation locally and statewide resulting in somewhat lower demands and an above average SWP Table A allocation of 75%. SCV Water started the year with 39,221 AF of Article 56 Carryover supply which 3,608 AF was delivered, and the remaining 35,603 AF was lost as a result of wet hydrology. The high allocation allowed for SCV Water to reduce local pumping of groundwater to maintain sustainable groundwater resources in dry-year and increase imported Table A deliveries to the service area. In addition, SCV Water executed three different 2:1 water exchanges with other State Water Contractors totaling 19,500 AF and delivered 5,000 AF to Semitropic SWRU banking reserves. Remaining unused Table A water was categorized as 2020 carryover supply totaling 9,013 AF.

2020 was characterized by below average precipitation locally and statewide resulting in higher water demands and a low SWP Table A allocation of 20%. SCV Water also faced an increased demand for imported water supplies due to significant loss of local groundwater wells impacted by updated regulations related to PFAS (Per and Polyfluoroalkyl Substances). Increased imported demands were met utilizing banking, exchanges, and transfer programs. The completion of the Drought Replacement Wells in 2019 at the Rosedale-Rio Bravo Water Banking Program (RRBWBP) increased recovery capacity from 3,000 AFY in 2014 and SCV Water was able to recover 16,501 AF from the RRB Banking and Exchange programs. An additional 5,000 AF was recovered from the Semitropic SWRU and 1,906 AF from exchange programs. SCV Water utilized 3,036 AF of 2020 carryover supplies, conserving unused carryover and Table A supplies for 2021 carryover which totaled 13,466 AF.

2021 was characterized as an extreme water year in terms of precipitation and temperature and ended up as California's second driest year on record based on statewide runoff resulting in a second lowest SWP Table A allocation of 5%. Santa Clarita experienced its driest water year on record only receiving 3.38 inches of precipitation all year. SCV Water continued to be impacted by loss of local groundwater wells related to PFAS, but successfully completed combined treatment facilities for three major alluvial wells which came online in 2021 adding critically needed water to local supplies to meet demands. In addition to maximizing groundwater production, SCV Water recovered about 25,000 AF of water from imported banking programs, 1,364 AF from dry year transfer programs, and utilized 1,966 AF from the Castaic flexible storage account to meet imported demands. In preparation of continued drought conditions, only 6,523 AF of carryover supplies were used, the Castaic flexible storage account was refilled, and excess banking, transfer water and Table A supplies not needed to meet demands were reserved as carryover for 2022, totaling 13,633 AF.

5.1.2 Average/Normal Year Supplies and Demand Comparison

Table 5-2 summarizes the supplies available to meet demands over the 30-year planning period during an average/normal year. As presented in the table, the water supply is broken down into existing and planned water supply sources, including wholesale (imported) water, local supplies, and banking programs. The demands shown include reductions from projected passive conservation savings, and both with and without active conservation savings. Future demands include that of the Project.

TABLE 5-2
PROJECTED AVERAGE/NORMAL YEAR SUPPLIES AND DEMANDS (AF)

	2025	2030	2035	2040	2045	2050
Existing Supplies						
Existing Groundwater[a]						
Alluvial Aquifer	8,900	8,180	7,300	7,300	7,300	7,300
Saugus Formation	14,440	7,110	7,110	7,110	7,110	7,110
Total Groundwater	**23,340**	**15,290**	**14,410**	**14,410**	**14,410**	**14,410**
Recycled Water[b]						
Total Recycled	**450**	**450**	**450**	**450**	**450**	**450**
Imported Water						
State Water Project[c]	52,360	51,410	50,460	49,500	49,500	49,500
Flexible Storage Accounts[d]						
Buena Vista-Rosedale	11,000	11,000	11,000	11,000	11,000	11,000
Nickel Water - Newhall Land[e]	-	-	1,607	1,607	1,607	1,607
Yuba Accord Water[f]	1,000	-	-	-	-	-
Total Imported	**64,360**	**62,410**	**63,067**	**62,107**	**62,107**	**62,107**
Existing Banking and Exchange Programs[g]						
Rosedale Rio-Bravo Bank[g]	-	-	-	-	-	-
Semitropic Bank[g]	-	-	-	-	-	-
Semitropic – Newhall Land Bank[g]	-	-	-	-	-	-
Antelope Valley West Kern Water Agency Exchange[g]	-	-	-	-	-	-
United Water Conservation District Exchange[g]	-	-	-	-	-	-
Total Bank/Exchange	**0**	**0**	**0**	**0**	**0**	**0**
Total Existing Supplies	**88,150**	**78,150**	**77,927**	**76,967**	**76,967**	**76,967**

Planned Supplies

Future and Recovered Groundwater[h]						
Alluvial Aquifer[i]	10,340	19,870	23,490	23,490	23,490	23,490
Saugus Formation[j]	3,010	2,790	2,790	2,790	2,790	2,790
Total Groundwater	**13,350**	**22,660**	**26,280**	**26,280**	**26,280**	**26,280**
Recycled Water[k]						
Total Recycled	1,849	3,696	5,091	6,498	7,499	8,511
Planned Banking Programs						
Rosedale Rio-Bravo Bank[h][l]	-	-	-	-	-	-
Total Banking	**0**	**0**	**0**	**0**	**0**	**0**
Total Planned Supplies	**15,199**	**26,356**	**31,371**	**32,778**	**33,779**	**34,791**
Total Supplies (Existing and Planned) [m]	**103,349**	**104,506**	**109,298**	**109,745**	**110,746**	**111,758**
Demands[n]						
Demands with passive conservation[m]	**82,100**	**89,300**	**97,600**	**104,300**	**109,600**	**115,100**
Demands with passive and active conservation[m]	**76,400**	**81,700**	**88,700**	**93,600**	**97,500**	**101,000**

Notes:

(a) Existing groundwater supplies represent the quantity of groundwater available to be pumped with existing wells. Declines from 2025 pumping levels reflect transfer of normal year pumping from existing wells to future and recovered wells.

(b) Existing Recycled Water is based on current average annual use.

(c) SWP supplies are based on average deliveries from DWR's 2019 DCR and 2021 draft DCR (56% - 52% at buildout due to climate change).

(d) Supplies not needed in average years.

(e) Existing Newhall Land supply committed under approved Newhall Ranch Specific Plan. Water is available from 2021 -2034 to meet supply shortfalls associated with the Newhall Ranch Specific Plan. Assumed to be transferred to SCV Water once Newhall Ranch development is completed around 2035.

(f) Supply available for purchase every year, however, shown is amount available in dry periods, after delivery losses. This supply would typically be used only during dry years and is available through 2025.

(g) Supplies not needed in average years.

(h) Future and Recovered groundwater supplies include recovered impacted wells and new groundwater well capacity that may be required by SCV Water's production objectives in the Alluvial Aquifer and the Saugus Formation. When combined with existing SCV Water and non-SCV Water groundwater supplies, total groundwater production remains within the sustainable ranges identified in Tables 4-10 and 4-11 and is within the groundwater basin yields per the 2020 SCV-GSA Water Budget Development Tech Memo (GSI 2020) and the updated Basin Yield Analysis(LSC & GSI 2009).

(i) Future Category includes all wells restored from PFAS and Perchlorate water quality issues, and other future alluvial wells including those associated with development under the Newhall Ranch Specific Plan. Schedule for recovered well capacity based on Groundwater Treatment Implementation Plan Technical Memorandum, Kennedy Jenks 2021 Appendix M. 2025 adjustments based on January 2022 engineering project schedule updates.

(j) Future and Recovered Saugus wells include perchlorate-impacted Well 205, two replacement wells (Saugus 3 & 4), and up to four new wells (Saugus 5-8) planned to provide additional dry-year supply. New dry-year wells would not typically be operated during average/normal years.

(k) Planned recycled water is the total projected recycled water use from Table 5-3 less existing use. Projections reflect demands that can be cost-effectively served with projected supplies. Refer to Section 5 for additional details on recycled water demands and supplies.

(l) Firm withdrawal capacity under existing Rosedale Rio-Bravo Banking Program to be expanded by 10,000 AFY by 2030 (for a combined total of 20,000 AFY).

(m) For completeness, LAWWD36 sales are included in demands and supplies. Breakdown of LACWWD 36 and SCV Water Demands are shown in Table 2-10. Further, LACWWD 36's Saugus groundwater supplies shown in TABLE 4-8A.

(n) Total demands with passive and active conservation from Table 2-10.

5.1.3 Single Dry-Year Supplies and Demand

The water supplies and demands for the water suppliers over the 30-year planning period were analyzed in the event that a single-dry year occurs, based on the worst single dry year on record. Table 5-3 summarizes the existing and planned supplies available to meet demands during a single-dry year. The demands shown include reductions from projected passive conservation savings, and both with and without active conservation savings. The demand during dry years was assumed to increase by 6 percent. Future demands include that of the Project.

TABLE 5-3 PROJECTED SINGLE-DRY YEAR SUPPLIES AND DEMANDS (AF)

	2025	2030	2035	2040	2045	2050
Existing Supplies						
Existing Groundwater[a]						
Alluvial Aquifer	7,300	6,330	5,590	5,590	5,590	5,590
Saugus Formation	17,880	17,880	17,880	17,880	17,880	17,880
Total Groundwater	**25,180**	**24,210**	**23,470**	**23,470**	**23,470**	**23,470**
Recycled Water[b]						
Total Recycled	**450**	**450**	**450**	**450**	**450**	**450**
Imported Water						
State Water Project[c]	4,760	4,760	4,760	4,760	4,760	4,760
Flexible Storage Accounts[d]	6,060	4,680	4,680	4,680	4,680	4,680
Buena Vista-Rosedale	11,000	11,000	11,000	11,000	11,000	11,000
Nickel Water - Newhall Land[e]	-	-	1,607	1,607	1,607	1,607
Yuba Accord Water[f]	1,000	-	-	-	-	-
Total Imported	**22,820**	**20,440**	**22,047**	**22,047**	**22,047**	**22,047**
Existing Banking and Exchange Programs						
Rosedale Rio-Bravo Bank[g]	10,000	10,000	10,000	10,000	10,000	10,000
Semitropic Bank[h]	5,000	5,000	5,000	5,000	5,000	5,000
Semitropic – Newhall Land Bank[h][i]	-	-	4,950	4,950	4,950	4,950
Antelope Valley East Kern Water Agency Exchange[j]	-	-	-	-	-	-
United Water Conservation District Exchange[j]	-	-	-	-	-	-
Total Bank/Exchange	**15,000**	**15,000**	**19,950**	**19,950**	**19,950**	**19,950**
Total Existing Supplies[p]	**63,450**	**60,100**	**65,917**	**65,917**	**65,917**	**65,917**

Planned Supplies						
Future and Recovered Groundwater[j]						
Alluvial Aquifer[k]	9,030	17,020	20,500	20,500	20,500	20,500
Saugus Formation[l]	9,090	15,920	15,920	15,920	15,920	15,920
Total Groundwater	**18,120**	**32,940**	**36,420**	**36,420**	**36,420**	**36,420**
Recycled Water[m]						
Total Recycled	1,849	3,696	5,091	6,498	7,499	8,511
Planned Banking Programs						
Rosedale Rio-Bravo Bank[n]	-	10,000	10,000	10,000	10,000	10,000
Total Banking	**0**	**10,000**	**10,000**	**10,000**	**10,000**	**10,000**
Total Planned Supplies	**19,969**	**46,636**	**51,511**	**52,918**	**53,919**	**54,931**
Total Supplies (Existing and Planned)[p]	**83,419**	**106,736**	**117,428**	**118,835**	**119,836**	**120,848**
Demands[o][p][q]						
Demands with passive conservation	**87,000**	**94,700**	**103,500**	**110,600**	**116,200**	**122,000**
Demands with passive and active conservation	**81,000**	**86,600**	**94,000**	**99,200**	**103,400**	**107,100**

Notes:

(a) Existing groundwater supplies represent the quantity of groundwater available to be pumped with existing wells. Dry-year production represents anticipated maximum dry year production. Declines from 2025 pumping levels reflect transfer of normal year pumping from existing wells to future and recovered wells.

(b) Existing recycled water is based on current average annual use.

(c) SWP supplies are based on driest SWP delivery on record, 5% in 2014. Deliveries from DWR's 2019 DCR state single dry year are (7% -11%).

(d) Includes both SCV Water and Ventura County entities flexible storage accounts. Extended term of agreement with Ventura County entities expires after 2025.

(e) Existing Newhall Land supply committed under approved Newhall Ranch Specific Plan. Water is available from 2021 - 2034 to meet supply shortfalls associated with the Newhall Ranch Specific Plan. Assumed to be transferred to SCV Water once Newhall Ranch development is completed around 2035.

(f) Supply shown is amount available in dry periods, after delivery losses. This supply would typically be used only during dry years and is available through 2025.

(g) Supplies shown are annual amounts that can be withdrawn using existing firm withdrawal capacity and would typically be used only during dry years.

(h) Existing Newhall Land supply. Assumed to be transferred to SCV Water during Newhall Ranch development by 2035.

(i) Supplies shown are totals recoverable under the exchange and would typically be recovered only during dry years with SWP allocation greater than 30%.

(j) Future and Recovered groundwater supplies include recovered impacted wells and new groundwater well capacity that may be required by SCV Water's production objectives in the Alluvial Aquifer and the Saugus Formation. When combined with existing SCV Water and non-SCV Water groundwater supplies, total groundwater production remains within the sustainable ranges identified in Tables 4-10 and 4-11 and is within the groundwater basin yields per the 2020 SCV-GSA Water Budget Development Tech Memo (GSI 2020) and the updated Basin Yield Analysis (LSC & GSI 2009).

(k) Future and Recovered Alluvial groundwater include PFAS, and perchlorate impacted alluvial wells, one replacement well (S 9), and future wells, including those for Newhall Ranch Specific Plan. Schedule for recovered well capacity based on Groundwater Treatment Implementation Plan Technical Memorandum, Kennedy Jenks 2021 Appendix M. 2025 adjustments based on January 2022 engineering project schedule updates).
(l) Future and Recovered Saugus wells include perchlorate impacted Well 205, two replacement wells (Saugus 3 & 4), and up to four new wells (Saugus 5-8) planned to provide additional dry-year supply. New dry-year wells would not typically be operated during average/normal years.
(m) Planned recycled water is the total projected recycled water use less existing use. Projections reflect demands that can be cost-effectively served with projected supplies. Refer to Section 3 for additional details on recycled water demands and supplies.
(n) Firm withdrawal capacity under existing Rosedale Rio-Bravo Banking Program to be expanded by 10,000 AFY by 2030 (for a combined total of 20,000 AFY).
(o) Demands assume a 6% increase above normal demand during dry years.
(p) For completeness, LAWWD36 sales are included in demands and supplies. Breakdown of LACWWD 36 and SCV Water Demands are shown in Table 2-2. Further, LACWWD36's Saugus groundwater supplies are shown in Table 3-4B.
(q) Future demands include that of the Entrada South and Valencia Commerce Center Project.

5.1.4 Multiple Dry-Year Supplies and Demand

The water supplies and demands over the 30-year planning period were analyzed in the event that a five-year dry period occurs, similar to the drought that occurred during the years 1988-1992. Table 5-4 summarizes the existing and planned supplies available to meet demands during a five-year dry period. Supply volumes shown represent averages for the consecutive five-year period, assuming each 5-year interval (2025, 2030, etc.) is the midpoint of the five-year period. The demands shown include reductions from projected passive conservation savings, and both with and without active conservation savings. As in the single-dry year scenario, demand during dry years was assumed to increase by 6 percent. Future demands include that of the Project.

TABLE 5-4 PROJECTED FIVE-YEAR DRY YEAR SUPPLIES AND DEMANDS (AF)

Supplies Available	2025	2030	2035	2040	2045	2050
Existing Supplies						
Existing Groundwater[(a)]						
Alluvial Aquifer	7,300	6,720	5,890	5,590	5,590	5,590
Saugus Formation	17,880	17,610	17,610	17,610	17,610	17,610
Total Groundwater	**25,180**	**24,330**	**23,500**	**23,200**	**23,200**	**23,200**
Recycled Water[(b)]						
Total Recycled	**450**	**450**	**450**	**450**	**450**	**450**
Imported Water						
State Water Project[(c)]	24,040	24,090	24,130	24,180	24,180	24,180
Flexible Storage Accounts[(d)]	4,980	4,680	4,680	4,680	4,680	4,560
Buena Vista-Rosedale	11,000	11,000	11,000	11,000	11,000	11,000
Nickel Water - Newhall Land[(e)]	-	-	964	1,607	1,607	1,607
Yuba Accord[(f)]	600	-	-	-	-	-
Total Imported	**40,620**	**39,770**	**40,774**	**41,467**	**41,467**	**41,347**
Banking and Exchange Programs						
Rosedale Rio-Bravo Bank[(g)]	10,000	10,000	10,000	10,000	10,000	10,000
Semitropic Bank[(h)]	5,000	5,000	5,000	5,000	4,929	1,859
Semitropic - Newhall Land Bank[(i)]	-	-	2,970	4,950	4,950	4,950
AVEK Exchange[(j)]	450	450	-	-	-	-
UWCD Exchange[(j)]	100	100	-	-	-	-
Total Bank/Exchange	**15,550**	**15,550**	**17,970**	**19,950**	**19,879**	**16,809**
Total Existing Supplies[(q)]	**81,800**	**80,100**	**82,694**	**85,067**	**84,996**	**81,806**

Planned Supplies						
Future and Recovered Groundwater[k]						
Alluvial Aquifer[l]	11,930	16,310	19,800	20,500	20,500	20,500
Saugus Formation[m]	5,750	8,020	8,020	8,020	8,020	8,020
Total Groundwater	**17,680**	**24,330**	**27,820**	**28,520**	**28,520**	**28,520**
Recycled Water[n]						
Total Recycled	**1,823**	**3,603**	**5,045**	**6,498**	**7,499**	**8,389**
Planned Banking Programs						
Rosedale Rio-Bravo Bank[o]	-	6,000	10,000	10,000	10,000	10,000
Total Banking	**0**	**6,000**	**10,000**	**10,000**	**10,000**	**10,000**
Total Planned Supplies	**19,503**	**33,933**	**42,865**	**45,018**	**46,019**	**46,909**
Total Existing and Planned Supplies	**101,303**	**114,033**	**125,559**	**130,085**	**131,015**	**128,715**
Demands[r]						
Demands with Passive Conservation[p][q]	**83,570**	**91,380**	**99,670**	**106,660**	**112,100**	**117,010**
Demands with Passive and Active Conservation[p][q]	**77,830**	**83,620**	**90,570**	**95,780**	**99,670**	**102,870**

Notes:

(a) Existing groundwater supplies represent the quantity of groundwater available to be pumped with existing wells. Dry-year production represents anticipated maximum dry year production. Declines from 2025 pumping levels reflect transfer of normal year pumping from existing wells to future and recovered wells.

(b) Existing recycled water is based on current average annual use.

(c) SWP supplies based on 1988-1992 hydrology from 2019 DCR interpolated from 2020-2040 from current to proposed future SWP supplies.

(d) Includes both SCV Water and Ventura County entities flexible storage accounts through 2025 and only SCV Water portion beyond 2025.

(e) Existing Newhall Land supply committed under approved Newhall Ranch Specific Plan. Water is available from 2021 -2034 to meet supply shortfalls associated with the Newhall Ranch Specific Plan. Assumed to be transferred to SCV Water once Newhall Ranch development is completed around 2035.

(f) 1,000 AFY assumed to be available during dry and critically dry years. Lower quantity in table reflects averaging of supply over the five-year period. This supply is only available through 2025.

(g) SCV Water has an existing firm withdrawal capacity of 10,000 AFY and a storage capacity of 100,000 AF. There is currently 98,800 AF of recoverable Water in storage.

(h) SCV Water has a maximum firm withdrawal capacity of 5,000 AFY and a storage capacity of 15,000 AF. Additionally, SCV Water has 40,270 AF of recoverable Water stored which may be recovered using this withdrawal capacity.

(i) Existing Newhall Land supply. Assumed to be transferred to SCV Water during Newhall Ranch development by 2035.

(j) Exchange recovery was assumed to occur one year during the five-year dry period, for an average annual supply of one-fifth of the total recoverable water available (total recoverable is 2,250 AF from Antelope Valley East Kern Water Agency (AVEK) and 500 AF from United Water Conservation District exchange programs).

(k) Future and Recovered groundwater supplies include recovered impacted wells and new groundwater well capacity that may be required by SCV Water's production objectives in the Alluvial Aquifer and the Saugus Formation. When combined with existing SCV Water and non-SCV Water groundwater supplies, total groundwater production remains within the sustainable ranges identified in Tables 4-9 and 4-10 and is within the groundwater basin yields per the 2020 SCV-GSA Draft Water Budget Development Tech Memo (GSI 2020) and the updated Basin Yield Analysis (LSC & GSI 2009).

(l) Future Category includes all wells restored from PFAS and Perchlorate water quality issues, and other future alluvial wells including those associated with development under the Newhall Ranch Specific Plan. Schedule for recovered well capacity based on Groundwater Treatment Implementation Plan Technical Memorandum, Kennedy Jenks 2021 Appendix M.

(m) This includes Saugus perchlorate impacted Well 205, two replacement wells (Saugus 3 & 4), and up to four new wells (Saugus 5-8) planned to provide additional dry-year supply. New dry-year wells would not typically be operated during average/normal years.

(n) Planned recycled water is the total projected recycled water use from Table 3-10 less existing use. Projections reflect demands that can be cost-effectively served with projected supplies. Refer to Section 3 for additional details on recycled water demands and supplies.

(o) Firm withdrawal capacity under existing Rosedale Rio-Bravo Banking Program to be expanded by 10,000 AFY by 2030 (for a combined total of 20,000 AFY).

(p) Demands are weather adjusted for dry 1988-1992 hydrology.

(q) For completeness, LAWWD36 sales are included in demands and supplies. Breakdown of LACWWD 36 and SCV Water Demands are shown in Table 2-2. Further, LACWWD 36's Saugus groundwater supplies are shown in Table 3-4B.

(r) Future demands include that of the Entrada South and Valencia Commerce Center Project.

5.2 Additional Water Supply Reliability Analysis

As discussed in Section 4.10, SCV Water has undertaken additional analysis of its water supply reliability beyond the Normal, Single Dry-Year and Multiple Dry-Year analysis provided for the 2020 UWMP, and this Water Supply Assessment. This was done with the 2021 update to its Water Supply Reliability Plan (Plan). The Plan uses an analytic spreadsheet model that incorporates the anticipated increase in demand due to growth and climate change (through 2050) and models the variability of hydrology both locally and from imported sources. For each hydrologic sequence, the model steps through each year of the study period, comparing annual supplies to demands and operating SCV Water storage programs as needed, adding to storage in years when supplies exceed demand, and withdrawing from storage when demand exceeds supplies. Results from the multiple hydrologic sequences are then compiled and summarized to provide a statistical assessment of the reliability of SCV Water's supplies and storage programs to meet its projected demands over the study period.

The reliability analysis conducted in the Plan is more rigorous and conservative than that contained in the 2020 UWMP and in Section 5.1 of this WSA. The Plan models the operation of SCV Water's supply portfolio through the full 82-year historical hydrologic period and incorporates projected storage balances when determining the quantity of water available from a banking program to meet water demands during dry periods. Further, while UWMP Section 5.2 incorporated a gradual decline in SWP reliability between 2020 and 2040 due to climate change, the Plan's modeling is based on SWP hydrology adjusted to reflect 2040 climate change, being applied to all years in the study period.

The Plan analyzed various scenarios analyses, which analysis can be used to answer several questions including:

4. How long current facilities could be relied upon to achieve reliability?

5. If the mix of existing and proposed facilities in the UWMP achieved reliability through 2050?

6. If certain future facilities were not constructed, (specifically some or all of the new Saugus Formation wells were either not constructed or otherwise unavailable) would alternative programs that SCV Water is investigating be able to achieve reliability?

With respect to the first question identified above, the analysis shows that current supplies (including recovered groundwater capacity) along with active conservation will be sufficient until 2040.

Regarding the second question, to achieve reliability in subsequent years, additional investments in those programs and facilities identified in the UWMP (Scenarios 1) would be sufficient to achieve reliability through 2050.

As to the third question, Scenarios 2-5 demonstrate that alternative programs to those contained in the UWMP could offer different paths to achieve reliability or if implemented in addition to the UWMP could provide additional supplies in excess of demand.

Supply Reliability

As discussed above, the analysis contained in the Plan represents a more robust and conservative analysis than that contained in Section 5.1. Nevertheless, the conclusions related to the ability of SWC Water to reliably meet water demands (including the Entrada South/VCC Project) are consistent. If SCV Water continues to implement active water conservation measures, conjunctively use its imported water, groundwater, and water banking facilities, and invests in future water supply facilities as identified in the 2020 UWMP it will reliably meet water demands in its service area through 2050. The ability to implement other alternative water supply programs identified in the Plan's analysis demonstrates a robustness to this conclusion as alternatives exist should some of the future water supplies identified in the 2020 UWMP become unattainable.

5.3 Conclusion

As set forth in this WSA, SCV Water has evaluated the long-term water needs (water demand) within its service area and has compared these needs against existing and planned water supplies. Demand projections are based on applicable population projections and county and city land use plans, and account for conservation as well as climate change impacts and other relevant factors. This WSA concludes that the total projected water supplies available to the SCV Water service area over the 30-year projection during normal, single-dry, and multiple-dry year (5-year drought) periods are sufficient to meet the projected demands associated with the proposed Entrada South and Valencia Commerce Center Project, in addition to existing and other planned future uses, including agricultural and industrial uses, throughout the Valley, provided that SCV Water continues to utilize available SWP Table A Amounts, and continues to incorporate conjunctive use (coordinated use of surface water and groundwater), water conservation, water transfers, recycled water, and water banking as part of the total water supply portfolio and management approach to long-term water supply planning and strategy.

Section 6: References Used or Relied Upon in Preparing this WSA

This WSA used or relied on information contained in the documents listed below. Documents may be available online at the links provided or by contacting the SCV Water - Water Resources Department at (661) 297-1600. The documents are part of SCV Water's record for the preparation of this WSA.

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APPENDIX A: ENTRADA SOUTH SITE PLAN

PARKING SPACE SUMMARY TABLE

PLANNING AREA	Lot No.	STREET FRONTAGE	No. of Buildings	RESIDENTIAL: No. of DU's	Required Resident Parking Spaces	Required Guest Parking Spaces	Total Parking Spaces Required	Resident Parking Spaces Provided	Guest Parking Provided	Total Parking Spaces Provided	COMMERCIAL: Retail Building S.F.	Office Building S.F.	Hotel Building S.F.	Total Building S.F.	Required Retail Parking Spaces (1/250 S.F.)	Required Office Parking Spaces (1/400 S.F.)	Required Hotel Parking Spaces (1/400 S.F.)	Total Parking Spaces Required	Retail Parking Spaces Provided	Office Parking Spaces Provided	Hotel Parking Spaces Provided	Total Parking Spaces Provided
1	15,17–24	MAGIC MOUNTAIN PKWY	5	–	–	–	–	–	–	–	86,400	200,800	–	287,200	346	502	–	848	346	711	–	1057
2	16,25,26,27	MAGIC MOUNTAIN PKWY	1	–	–	–	–	–	–	–	–	–	165,000	165,000	–	–	220	220	–	–	236	236
3	9,10,11,12,13,14	MAGIC MOUNTAIN PKWY	3	–	–	–	–	–	–	–	–	172,800	–	172,800	–	432	–	432	–	692	–	692
4a	37,38	"I" PRIVATE DRIVE	1	–	–	–	–	–	–	–	–	21,000	–	21,000	–	53	–	53	–	61	–	61
4b	41	"I" PRIVATE DRIVE	1	199	464	–	–	464	–	464	17,025	–	–	17,025	69	–	–	69	69	–	–	69
4c	40	"I" PRIVATE DRIVE	1	–	–	–	–	–	–	–	2,000	–	–	2,000	8	–	–	8	12	–	–	12
4d	39	"I" PRIVATE DRIVE	1	–	–	–	–	–	–	–	–	25,825	–	25,825	–	65	–	65	–	76	–	76
4e	44,45,46	"I" PRIVATE DRIVE	9	54	108	14	122	108	30	138	–	–	–	–	–	–	–	–	–	–	–	–
4f	47,50	"I" PRIVATE DRIVE	6	72	126	14	140	126	39	165	–	–	–	–	–	–	–	–	–	–	–	–
4g	48,49,51,52,53,54	"I" PRIVATE DRIVE	14	110	220	28	248	220	42	262	–	–	–	–	–	–	–	–	–	–	–	–
4h	55,56,57,58	"I" PRIVATE DRIVE	22	89	178	23	201	178	24	202	–	–	–	–	–	–	–	–	–	–	–	–
5a	81–86,88	"E" ST.	70	70	140	18	158	140	21	161	–	–	–	–	–	–	–	–	–	–	–	–
5b	89,90,91	"F" ST.	34	34	68	9	77	68	10	78	–	–	–	–	–	–	–	–	–	–	–	–
5c	92,93,94	"F" ST.	39	39	78	11	89	78	14	92	–	–	–	–	–	–	–	–	–	–	–	–
6a	97–102	"E" ST.	30	30	60	9	69	60	9	69	–	–	–	–	–	–	–	–	–	–	–	–
6b	103,104	"E" ST.	26	26	52	7	59	52	8	60	–	–	–	–	–	–	–	–	–	–	–	–
7a	123,127	"G" ST.	15	45	90	12	102	90	13	103	–	–	–	–	–	–	–	–	–	–	–	–
7b	124,125,126,128	"G" ST.	44	44	88	11	99	88	13	101	–	–	–	–	–	–	–	–	–	–	–	–
7c	129,130,131	"G" ST.	12	57	114	14	128	114	25	139	–	–	–	–	–	–	–	–	–	–	–	–
8a	113,114	"E" ST.	26	26	52	7	59	52	10	62	–	–	–	–	–	–	–	–	–	–	–	–
8b	111,112	"F" ST.	24	24	48	6	54	48	6	54	–	–	–	–	–	–	–	–	–	–	–	–
8c	115,116,117,118	"F" ST.	52	52	104	13	117	104	16	120	–	–	–	–	–	–	–	–	–	–	–	–
8d	119,120	"E" ST.	26	26	52	7	59	52	8	60	–	–	–	–	–	–	–	–	–	–	–	–
9a	141,142,143,146	"A" ST.	14	62	124	16	140	124	23	147	–	–	–	–	–	–	–	–	–	–	–	–
9b	147,148	"A" ST.	11	54	108	15	123	108	18	126	–	–	–	–	–	–	–	–	–	–	–	–
9c	144,145,151	"A" ST.	10	56	112	14	126	112	26	138	–	–	–	–	–	–	–	–	–	–	–	–
9d	149,150	"A" ST.	12	54	108	14	122	108	30	138	–	–	–	–	–	–	–	–	–	–	–	–
10a	61,62,65,68,69	"A" ST.	22	43	86	12	98	86	18	104	–	–	–	–	–	–	–	–	–	–	–	–
10b	63,64,66,67,70	"A" ST.	23	60	120	16	136	120	26	146	–	–	–	–	–	–	–	–	–	–	–	–
(Park Area)	161	"C" ST.	–	–	–	–	–	–	–	27	–	–	–	–	–	–	–	–	–	–	–	–
12a	186,187	"H" PRIVATE DRIVE	6	48	96	12	108	114	16	130	–	–	–	–	–	–	–	–	–	–	–	–
12b	184,185	"H" PRIVATE DRIVE	2	28	56	7	63	60	30	90	–	–	–	–	–	–	–	–	–	–	–	–
13a	171,172,173,174	"H" PRIVATE DRIVE	6	68	136	18	154	136	56	192	–	–	–	–	–	–	–	–	–	–	–	–
13b	175,179	"H" PRIVATE DRIVE	17	48	96	12	108	154	17	171	–	–	–	–	–	–	–	–	–	–	–	–
13c	176,177,178	"H" PRIVATE DRIVE	4	56	112	14	126	112	37	149	–	–	–	–	–	–	–	–	–	–	–	–
14	194	THE OLD RD.	1	–	–	–	–	–	–	–	–	39,150	–	39,150	–	94	–	94	–	113	–	113
TOTAL	197		590	1574	3196	353	3549	3276	585	3861	105,425	459,575	165,000	730,000	423	1146	220	1789	427	1653	236	2316

GENERAL NOTES

1. GRADE ELEVATIONS ON THE VESTING TENTATIVE TRACT MAP (VTTM) AND THE EXHIBITS MAP ARE APPROXIMATE. CHANGES IN THE ELEVATIONS DEPICTED ON THE VTTM WHICH WILL NOT SUBSTANTIALLY ALTER THE APPROVED GRADING PLAN OR RESULT IN PAD ELEVATION CHANGES OF MORE THAN 10 FEET ARE PERMITTED TO THE SATISFACTION OF DEPARTMENT OF PUBLIC WORKS (DPW) AND DEPARTMENT OF REGIONAL PLANNING (DRP).
2. PERMISSION IS REQUESTED FOR LOT LINES TO BE ADJUSTED TO THE SATISFACTION OF DRP AND DPW PROVIDED NO ADDITIONAL DEVELOPMENT LOTS ARE CREATED. THE DEGREE OF ADJUSTMENT SHALL BE CONSISTENT WITH THE INTENT OF THE SUBDIVISION MAP ACT.
3. ALIGNMENT AND GEOMETRICS OF STREETS AND TRAILS ARE APPROXIMATE. PERMISSION IS REQUESTED FOR ADJUSTMENTS TO STREETS TO BE MADE PROVIDED THE DPW AND DRP DETERMINE THAT THE ADJUSTMENTS ARE CONSISTENT WITH THE INTENT OF THE SUBDIVISION APPROVAL. ADJUSTMENTS TO TRAILS CAN BE MADE WITH APPROVAL BY DRP.
4. BUILDING FOOTPRINTS THAT ARE SHOWN ON THE VTTM OR THIS EXHIBIT MAP ARE ONLY FOR ILLUSTRATIVE PURPOSES. ACTUAL BUILDING LOCATIONS AND FOOTPRINTS MAY VARY. APPROVAL IS REQUESTED DURING PLOT PLAN REVIEW PROVIDED THE PROPOSED BUILDINGS SATISFY ALL EXISTING CODES AND ORDINANCES. THIS MINOR CHANGE DOES NOT, HOWEVER, INCLUDE: A CHANGE IN PROPOSED LAND USE OR A CHANGE OF MORE THAN 5 FEET IN BUILDING HEIGHT.
5. PERMISSION IS REQUESTED TO FILE "LARGE LOT" PARCEL MAPS OF 20 ACRES OR MORE (WITHOUT IMPROVEMENTS) OR 5 ACRES OR MORE (WITH IMPROVEMENTS) AS THE FIRST UNIT FINAL MAP. RECORDATION OF A LARGE LOT PARCEL MAP SHALL BE CONSIDERED THE FILING OF THE FIRST UNIT MAP FOR THE PURPOSES OF TIME EXTENSIONS PURSUANT TO THE SUBDIVISION MAP ACT BUT SHALL NOT REQUIRE THE OBLIGATION OF FEES, DEDICATIONS (EG. RIGHTS OF WAY OR PARKS) EXACTIONS OR INFRASTRUCTURE EXCEPT AS MAY BE REQUIRED BY CHAPTER 21.32 OF THE SUBDIVISION MAP ACT.
6. PERMISSION IS REQUESTED FOR UNIT MAP PHASING.
7. PERMISSION IS REQUESTED TO COMBINE LOTS.
8. PERMISSION IS REQUESTED TO RECORD ADDITIONAL OPEN SPACE LOTS.
9. PERMISSION IS REQUESTED TO ADD NON-DEVELOPABLE LOTS FOR UTILITIES AND/OR PRIVATE DRIVEWAY PURPOSES.
10. THE LOCATIONS OF APPURTENANT STRUCTURES (E.G., PASEOS, PEDESTRIAN BRIDGES,TRANSIT SHELTERS, SEWER LIFT STATIONS) MAY BE RELOCATED IF DETERMINED TO BE CONSISTENT WITH THE APPROVED VTTM BY DRP AND DPW.
11. PERMISSION IS REQUESTED TO RECORD JOINT ACCESS EASEMENTS (20' WIDE) AS LOTS.
12. PERMISSION IS REQUESTED TO MASS GRADE.
13. PROPOSED STREET GRADING IS APPROXIMATE ONLY AND SUBJECT TO ADJUSTMENTS PENDING DETERMINATION OF FINAL DEVELOPMENT LAYOUT AND PLANS.
14. PERMISSION IS REQUESTED TO PROVIDE RIGHT OF WAY RETURN RADII OF 13 FT. AT ALL LOCAL STREET INTERSECTIONS AND 27 FT WHERE ALL PLANNED HIGHWAYS INTERSECT OR WHERE ONE OF THE ROADS SERVES A COMMERCIAL OR INDUSTRIAL DEVELOPMENT.
15. STANDARD STREET CROSS-SECTIONS AS SHOWN ON VESTING TENTATIVE TRACT MAP ARE PROPOSED.
16. ALL DIMENSIONS SHOWN ARE APPROXIMATE.
17. TOPO COMPILED FROM DATA FLOWN SEPTEMBER 15, 2011.
18. ADDITIONAL RIGHT OF WAY MAY BE DEDICATED AS REQUIRED TO THE SATISFACTION OF PUBLIC WORKS.
19. RELATED ENTITLEMENTS:
    - TENTATIVE MAP NO. 53295
    - CONDITIONAL USE PERMIT NO. –
    - OAK TREE PERMIT NO. –
    - ZONE CHANGE NO. –
    - PARKING PERMIT NO. –
20. PERMISSION IS REQUESTED TO ALLOW OFFICE & RETAIL SPACE TO BE INTERCHANGEABLE PROVIDED THE REQUIRED PARKING IS SATISFIED.
21. FIRE ACCESS TO BE PROVIDED TO WITHIN 150' OF ALL EXTERIOR WALLS.
22. MODIFICATIONS OF REQUIRED STREET FRONTAGE IS REQUESTED PER SECTION 21.24.040 OF THE LOS ANGELES COUNTY CODE.
23. GUEST PARKING PROPOSED ON PRIVATE DRIVES PER COUNTY PRIVATE DRIVE MANUAL.
24. PRIVATE DRIVES DESIGNED PER THE COUNTY PRIVATE DRIVE MANUAL.
25. SHARED AND RECIPROCAL PARKING SHOWN PER REQUESTED PARKING PERMIT.
26. WITHIN COMMERCIAL PLANNING AREAS 1–3, AND MIXED USE PLANNING AREAS 4–14 FLEXIBILITY IN FUTURE DESIGN IS PERMITTED, INCLUDING BUT NOT LIMITED TO CHANGING RESIDENTIAL TO COMMERCIAL AND COMMERCIAL TO RESIDENTIAL (EXCEPT PA1–3), COMMERCIAL TO OFFICE AND OFFICE TO COMMERCIAL, CHANGING APARTMENTS TO CONDOMINIUMS AND CONDOMINIUMS TO APARTMENTS, CHANGING FROM ATTACHED TO DETACHED UNITS AND DETACHED TO ATTACHED UNITS, CHANGES TO BUILDING TYPES AND LOCATION, LOT CONFIGURATIONS AND RELOCATION OF DRIVEWAYS, DRIVE ENTRIES, DRIVEWAY ALIGNMENT AND OPEN SPACE AND LANDSCAPE AREA LOCATIONS AFFECTED AS A RESULT OF DESIGN CHANGES, PROVIDED THE CHANGES DO NOT EXCEED THE APPROVED TOTAL RESIDENTIAL UNIT COUNT, TOTAL COMMERCIAL/OFFICE SQUARE FOOTAGE AND DOES NOT RESULT IN A REDUCTION OF TOTAL OPEN SPACE. CHANGES SHALL BE DEPICTED ON A REVISED EXHIBIT MAP.
27. THE ABOVE MENTIONED GENERAL NOTES (THAT ADDRESS MINOR MODIFICATION) MAY REQUIRE REVIEW AND APPROVAL OF A REVISED EXHIBIT MAP.
28. GRADING OF VTTM 53295 MAY BE DONE IN SUB-PHASES OVER TIME BUT SUCH GRADING WILL STILL BE BALANCED WITHIN THE GRADING LIMITS IDENTIFIED ON THE TENTATIVE TRACT MAP. ALL GRADING OF SLOPES WILL BE PERFORMED AS ENGINEERED GRADING. THE LIMIT OF A GRADING SUB-PHASE WILL BE ESTABLISHED TO ACHIEVE A BALANCED EARTHWORK FOR THAT SUB-PHASE AND MAY EXTEND BEYOND THE LIMITS OF A PARTICULAR FINAL UNIT MAP BOUNDARY IN ORDER TO ACHIEVE A PHASED OF GRADING BALANCED. AN INTERIM HYDROLOGY REPORT WILL BE PROVIDED TO SUPPORT THE PHASED GRADING. DRAINAGE AND EROSION CONTROL FACILITIES WILL BE PROVIDED TO THE SATISFACTION OF DPW.
29. A BLANKET EASEMENT FOR COVERED STORM DRAIN, APPURTENANT STRUCTURES, AND INGRESS AND EGRESS PURPOSES SHALL BE DEDICATED TO THE LACFCD OVER NECESSARY PRIVATE DRIVEWAYS AND FIRELANES TO THE SATISFACTION OF PUBLIC WORKS.
30. PLANNING AREAS 1–3 ARE MIXED USE COMMERCIAL/OFFICE/BUSINESS PARK PLANNING AREAS.
31. LOT EASEMENTS INTENDED TO BE GRANTED TO A CONSERVATION ENTITY IN WHICH THE EASEMENT IS GRANTED SUBSEQUENT TO VTTM OR FINAL MAP APPROVAL, MAY BE ACCEPTED TO THE SATISFACTION OF DPW AND DRP WITHOUT AN AMENDED OR REVISED MAP.
32. ALL SANITARY SEWER EASEMENTS SHALL BE LOCATED WITHIN PUBLIC RIGHT OF WAY OR A MINIMUM 10' WIDE SANITARY SEWER EASEMENT.

SPECIAL NOTES:

1. WATER QUALITY BASINS AND CATCH BASIN FILTERS WILL PROVIDE FOR TREATMENT OF STORM WATER RUN OFF
2. THE WATER QUALITY BASINS SHALL BE DEDICATED TO THE COUNTY WHEN COMPLETED AND ACCEPTED.
3. PROPOSED RECLAIMED WATER LINES WILL BE LOCATED IN PUBLIC STREETS AND TRAILS.

PROJECT SUMMARY:

GROSS AREA	– 382.3 Acres
TOTAL LOTS	– 197
TOTAL D.U.	– 1,574
EXISTING ZONING	– R1 (328.4 AC), C-3 (52.4 AC) C-R (1.5 AC)
PROPOSED ZONING	– C-3 (57.9 AC), MXD C-R (1.5 AC)
EXISTING LAND USE	– H5 (328.4 AC), CM (52.4 AC), OS-PR (1.5 AC)
PROPOSED LAND USE	– H5 (328.4 AC), CM (52.4 AC), OS-PR (1.5 AC)
SCHOOL DISTRICT	– SAUGUS UNION SCHOOL DISTRICT NEWHALL SCHOOL DISTRICT

UTILITY PROVIDERS:

SEWER: L.A. COUNTY SANITATION DIST. 32
WATER: SANTA CLARITA VALLEY WATER AGENCY
ELECTRICAL: SOUTHERN CALIFORNIA EDISON
GAS: SOUTHERN CALIFORNIA GAS CO.
TELEPHONE: AT&T
CABLE TV: TIME WARNER CABLE

SURVEY NOTES:

VERTICAL DATUM:

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS BENCHMARK DESCRIBED AS FOLLOWS:
LACDPW L5402 RND HD SPK IN LOWER CONC HDWL @ N END 24 FT W/O C/L THE OLD RD (W RDWY) AND 0.6 MI S/O HENRY MAYO DR @ MI MKR #6.25 NEWHALL QUAD
1995 ADJUSTMENT (NAVD 1988) ELEVATION = 1031.951

THERE IS APPROXIMATELY 2.3 FEET DIFFERENCE BETWEEN PREVIOUS COUNTY OF LOS ANGELES DATUMS BASED UPON NAVD 1929 AND NAVD 1988 (NAVD 1988 IS 2.3 FEET HIGHER THAN NAVD1929).

AERIAL PLANIMETRY:

THIS SURVEY WAS PREPARED BY PHOTOGRAMMETRIC PROCESSES, UTILIZING AERIAL PHOTOGRAPHY DATED SEPTEMBER 15, 2011. THE OUTLINE OF BUILDINGS AND OTHER ROOFED IMPROVEMENTS, MAY INCLUDE EAVES, CANOPIES AND BALCONIES, SINCE BUILDINGS BELOW THESE ITEMS ARE NOT VISIBLE TO THE CAMERA.

TOPOGRAPHY:

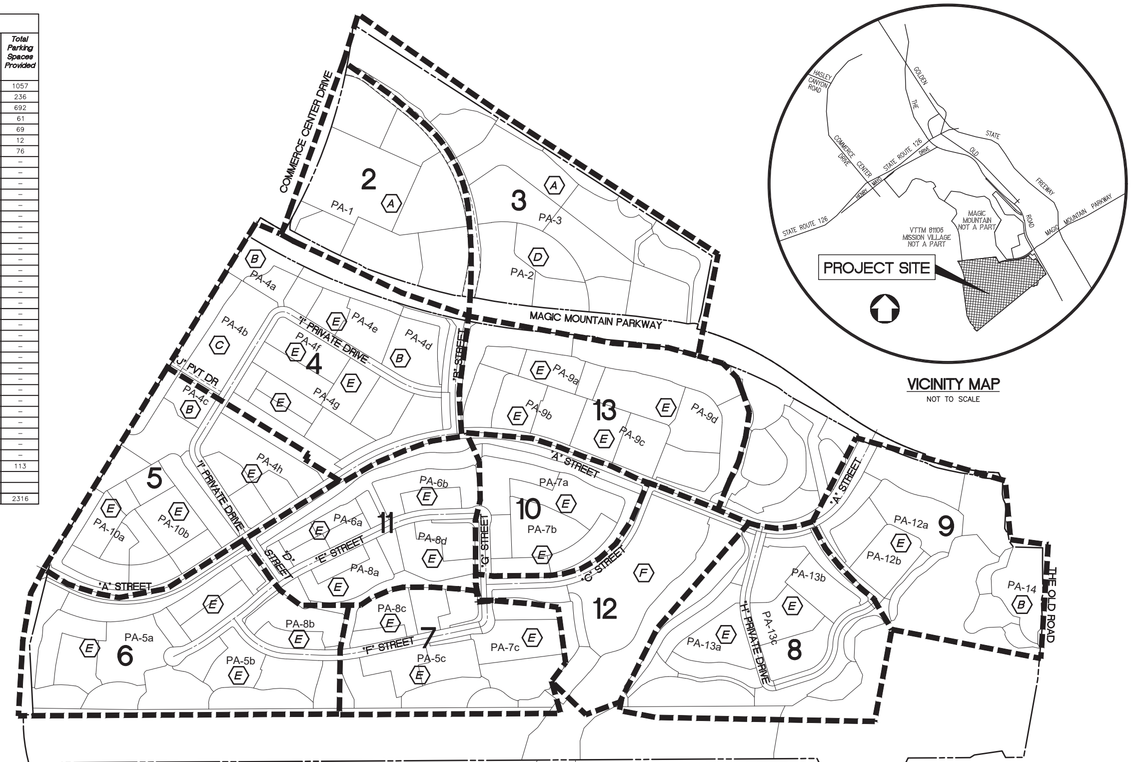
BY PHOTOGRAMMETRIC PROCESSES FROM LIDAR IMAGING DATED SEPTEMBER 15, 2011, AND COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS.

CONTOUR INTERVAL:

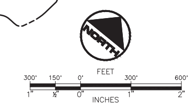
5 FOOT, UNLESS OTHERWISE NOTED.

PUBLIC STREETS

"A" STREET
"B" STREET
"C" STREET
"D" STREET
"E" STREET
"F" STREET
"G" STREET
MAGIC MOUNTAIN PARKWAY



INDEX MAP

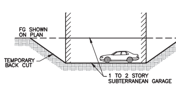


VICINITY MAP

NOT TO SCALE

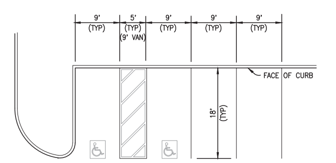
LEGEND

12 SHEET NUMBER (REVISED SHEETS)
(A) MIXED USE - COMMERCIAL/BUSINESS PARK
(B) MIXED USE - COMMERCIAL
(C) MIXED USE - RESIDENTIAL
(D) HOTEL
(E) MULTI FAMILY CONDOMINIUM
(F) PRIVATE PARK



SUBTERRANEAN GARAGE EXCAVATION DETAIL

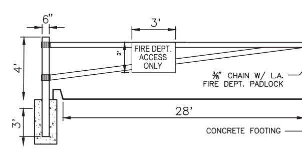
NTS



90° PARKING SPACE W/ HANDICAP

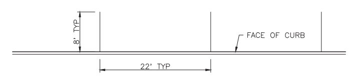
SCALE: 1" = 10'

NOTE: ALL HANDICAP PARKING SHALL BE PER CODE.



EMERGENCY ACCESS GATE DETAIL

NTS



TYP. PARALLEL PARKING SPACE DETAIL

SCALE: 1" = 10'

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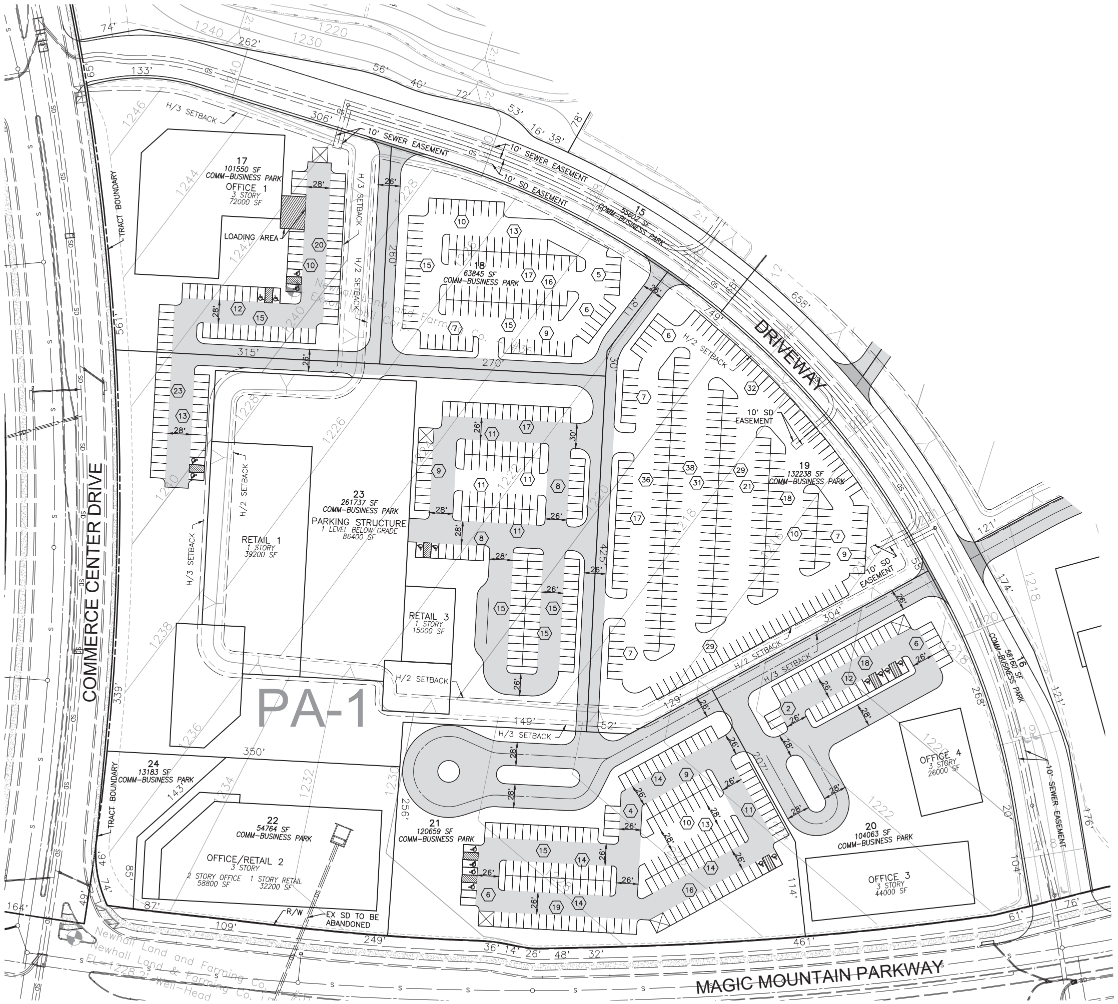


PA-1

LOTS 15, 17-24	
COMMERCIAL/OFFICE-RETAIL	
Land Use:	MU-COMM
Total Site Acreage:	20.9 Acres
Total Retail Sq. Ft.:	86400 s.f.
Total Office Sq. Ft.:	200800 s.f.
Total Sq. Ft.:	287200 s.f.
Number of Buildings:	6 Buildings
Max Height:	55'
Parking Required Retail:	346
Parking Required Office:	502
Total Parking Required:	848 Spaces
Total Parking Provided*:	1057 Spaces
Handicap Parking**: (Per CBC Table 11B-208.2)	18 Spaces
Handicap Van-Accessible: (1 Space/6 Handicap SP)	2 Space

* Note: Additional 230 parking spaces provided in parking structure.
** Note: ADA parking is included in open parking stall count.

LEGEND

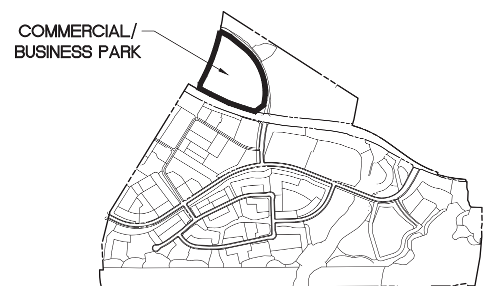
100	LOT NO.
PA-4a	PLANNING AREA NUMBER
	VTTM 53295 BOUNDARY
	RIGHT OF WAY
225'	PROPOSED LOT LINE
	PROPOSED EASEMENT
	EXISTING EASEMENT
SD	PROPOSED STORM DRAIN
S	PROPOSED SEWER
	H/2 & H/3 SETBACK LINE
950	PROPOSED CONTOUR
	DAYLIGHT LINE
310'	LINE OF SIGHT / LINE OF SIGHT EASEMENT
	PROPOSED DRIVEWAY
	PRIVATE DRIVE AND FIRE LANE
	EXISTING OIL WELL
X	PARKING COUNT
	TRASH ENCLOSURE
SD	STORM DRAIN MANHOLE
3	COVERED PARKING (NUMBER OF SPACES IN BOX)

NOTES:

1. ALL PERIMETER WALLS SHALL HAVE PEDESTRIAN ACCESS GATES LOCATED TO SATISFACTION OF THE FIRE DEPARTMENT.

2. ALL DRIVE AISLES SHALL PROVIDE A MINIMUM OF 32 FOOT CENTERLINE TURNING RADIUS.

3. FIRE ACCESS WILL BE PROVIDED TO WITHIN 150' OF ALL EXTERIOR WALLS.



INDEX MAP
SCALE: 1" = 800'

NORTH

FEET 60' 30' 0' 60' 120'
INCHES 1" 1/2" 0" 1" 2"

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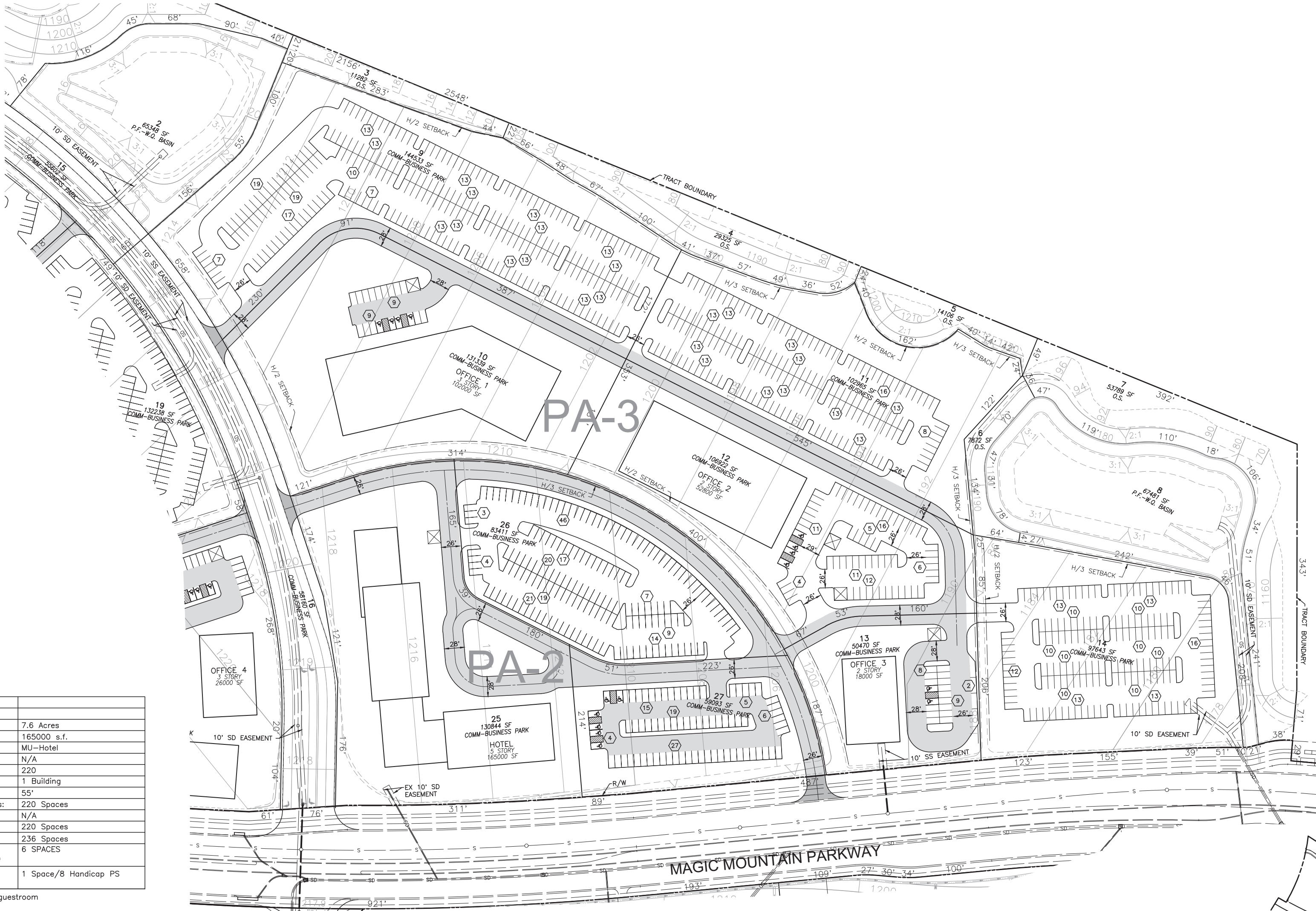


LEGEND

100	LOT NO.
PA-4a	PLANNING AREA NUMBER
	VTTM 53295 BOUNDARY
	RIGHT OF WAY
225'	PROPOSED LOT LINE
	PROPOSED EASEMENT
	EXISTING EASEMENT
SD	PROPOSED STORM DRAIN
S	PROPOSED SEWER
	H/2 & H/3 SETBACK LINE
950	PROPOSED CONTOUR
	DAYLIGHT LINE
310'	LINE OF SIGHT LINE OF SIGHT EASEMENT
	PROPOSED DRIVEWAY
	PRIVATE DRIVE AND FIRE LANE
	EXISTING OIL WELL
X	PARKING COUNT
	TRASH ENCLOSURE
SD	STORM DRAIN MANHOLE
3	COVERED PARKING (NUMBER OF SPACES IN BOX)

PA-2

LOTS 16, 25-27	
HOTEL	
Total Site Acreage:	7.6 Acres
Total Site Area:	165000 s.f.
Land Use:	MU-Hotel
Total Retail Sq. Ft.:	N/A
Total Keys:	220
Number of Buildings:	1 Building
Max Height:	55'
Parking Req. Guest Rooms:	220 Spaces
Parking Required Retail:	N/A
Total Required Parking:	220 Spaces
Total Parking Provided*:	236 Spaces
Handicap Parking: (2% of Parking Provided)	6 SPACES
Handicap Van-Accessible: (1 Space/8 Handicap SP)	1 Space/8 Handicap PS

Assumption: 1 space per guestroom

PA-3

LOTS 9-14	
COMMERCIAL/OFFICE-RETAIL	
Land Use:	MU-COMM
Total Site Acreage:	14.6 Acres
Total Retail Sq. Ft.:	
Total Retail Units:	
Total Office Sq. Ft.:	172800 s.f.
Total Office Units:	
Number of Buildings:	3
Max Height:	55'
Total Required Parking: (1 Space/400 SF Building)	432 Spaces
Total Parking Provided:	692 Spaces
Handicap Parking: (Per CBC Table 11B-208.2)	10 Spaces
Handicap Van-Accessible: (1 Space/6 Handicap SP)	2 Space

NORTH

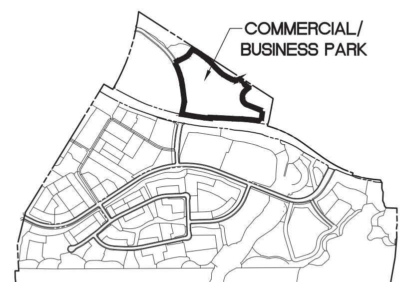
FEET 60' 30' 0' 60' 120'
INCHES 1" ½" 0" 1" 2"

NOTES:

1. ALL PERIMETER WALLS SHALL HAVE PEDESTRIAN ACCESS GATES LOCATED TO SATISFACTION OF THE FIRE DEPARTMENT.

2. ALL DRIVE AISLES SHALL PROVIDE A MINIMUM OF 32 FOOT CENTERLINE TURNING RADIUS.

3. FIRE ACCESS WILL BE PROVIDED TO WITHIN 150' OF ALL EXTERIOR WALLS.



INDEX MAP

SCALE: 1" = 800'

NORTH

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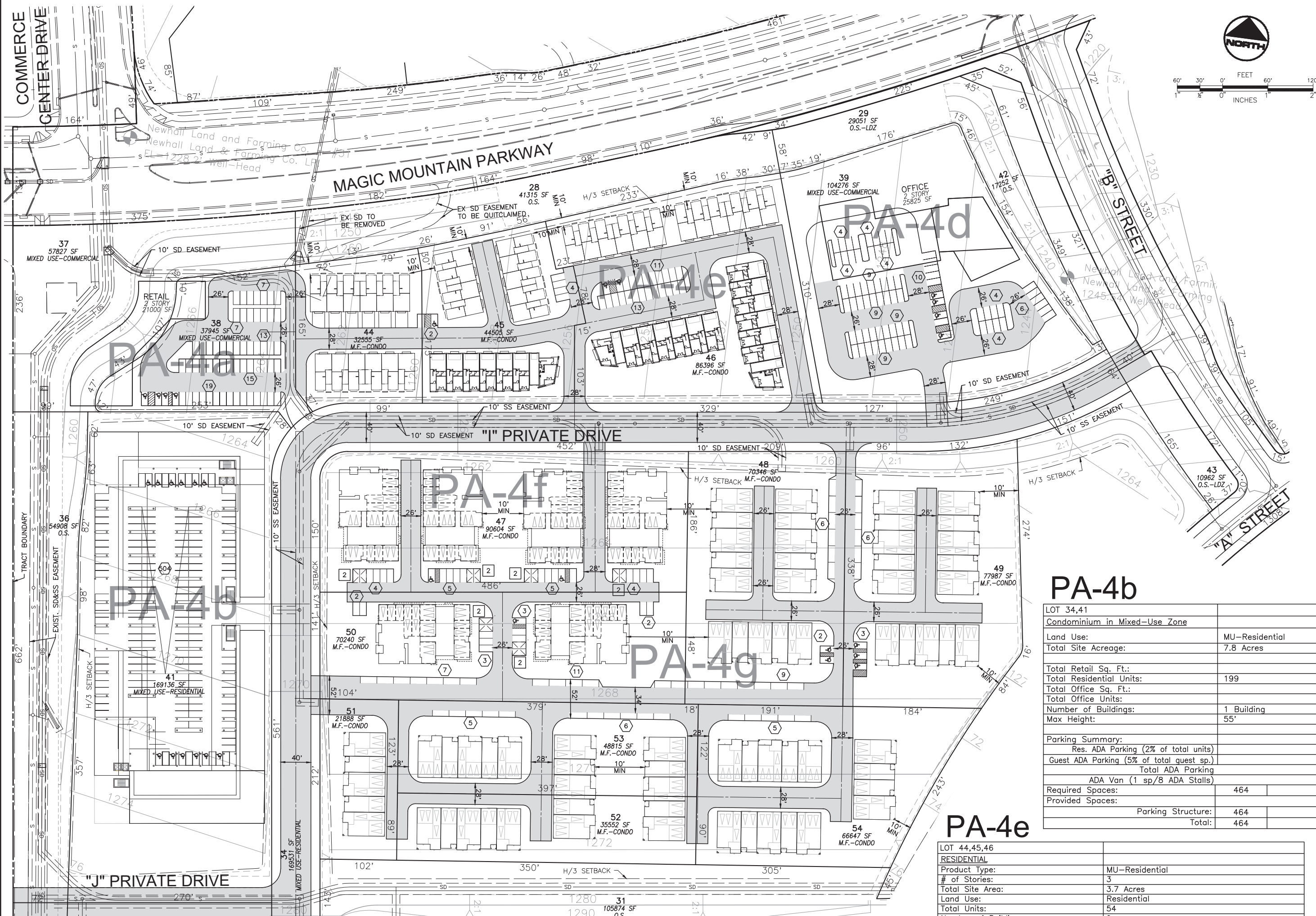
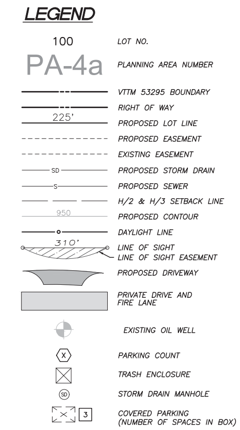


PA-4a

LOT 37,38	
COMMERCIAL	
Land Use:	MU–COMM
Total Site Acreage:	2.2 Acres
Total Sq. Ft.:	21,000 s.f.
Total Retail Units:	
Total Office Sq. Ft.:	
Total Office Units:	
Number of Buildings:	1 Building
Max Height:	55'
Parking Required Commercial:	53 Spaces
Total Required Parking:	53 Spaces
Total Parking Provided*:	61 Spaces
Handicap Parking:	4 Spaces Per CBC Table 11B–208.2
Handicap Van–Accessible:	1 Spaces 1 Space/6 Handicap PS

PA-4b

LOT 41	
COMMERCIAL	
Land Use:	MU–COMM
Total Site Acreage:	3.9 Acres
Total Sq. Ft.:	17,025 s.f.
Total Retail Units:	
Total Office Sq. Ft.:	
Total Office Units:	
Number of Buildings:	1 Building
Max Height:	55'
Parking Required Commercial:	69 Spaces
Total Required Parking:	69 Spaces
Total Parking Provided*:	69 Spaces
Handicap Parking**:	7 Spaces Per CBC Table 11B–208.2
Handicap Van–Accessible**:	2 Spaces 1 Space/6 Handicap PS



NOTES:

1. ALL PERIMETER WALLS SHALL HAVE PEDESTRIAN ACCESS GATES LOCATED TO SATISFACTION OF THE FIRE DEPARTMENT.
2. ALL DRIVE AISLES SHALL PROVIDE A MINIMUM OF 32 FOOT CENTERLINE TURNING RADIUS.
3. FIRE ACCESS WILL BE PROVIDED TO WITHIN 150' OF ALL EXTERIOR WALLS.

PA-4g

LOT 48,49,51,52,53,54					
RESIDENTIAL					
Product Type:	MU–Residential				
# of Stories:	4				
Total Site Area:	7.3 Acres				
Land Use:	Residential				
Total Units:	110				
Number of Buildings:	14				
Max Height:	55'				
Parking Summary:					
Bedroom Count	Units	Covered @ 1.5 spaces/unit	Uncov @ 0.5 spaces/unit	Guest @ 0.25 spaces/unit	Total
1 bed					
2 bed					
3 bed	110	165	55	28	248
4 bed					
Total	110	165	55	28	248
Res. ADA Parking (2% of total units)					3
Guest ADA Parking (5% of total guest sp.)					2
Total ADA Parking					5
ADA Van (1 sp/8 ADA Stalls					1
Required Spaces:	248				
Provided Spaces:					
Garage:	220				
Carport:	0				
* Open	42				
Total:	262				

* Note: Some ADA parking is included in open parking stall count.

PA-4b

LOT 34,41		
Condominium in Mixed–Use Zone		
Land Use:	MU–Residential	
Total Site Acreage:	7.8 Acres	
Total Retail Sq. Ft.:		
Total Residential Units:	199	
Total Office Sq. Ft.:		
Total Office Units:		
Number of Buildings:	1 Building	
Max Height:	55'	
Parking Summary:		
Res. ADA Parking (2% of total units)		8
Guest ADA Parking (5% of total guest sp.)		2
Total ADA Parking		10
ADA Van (1 sp/8 ADA Stalls)		1
Required Spaces:	464	
Provided Spaces:		
Parking Structure:	464	
Total:	464	

PA-4e

LOT 44,45,46					
RESIDENTIAL					
Product Type:	MU–Residential				
# of Stories:	3				
Total Site Area:	3.7 Acres				
Land Use:	Residential				
Total Units:	54				
Number of Buildings:	9				
Max Height:	55'				
Parking Summary:					
Bedroom Count	Units	Covered @ 1.5 spaces/unit	Uncov @ 0.5 spaces/unit	Guest @ 0.25 spaces/unit	Total
1 bed					
2 bed					
3 bed	54	81	27	14	122
4 bed					
Total					
Res. ADA Parking (2% of total units)					2
Guest ADA Parking (5% of total guest sp.)					1
Total ADA Parking					3
ADA Van (1 sp/8 ADA Stalls					1
Required Spaces:	122				
Provided Spaces:					
Garage:	108				
Carport:	0				
* Open	30				
Total:	138				

* Note: Some ADA parking is included in open parking stall count.

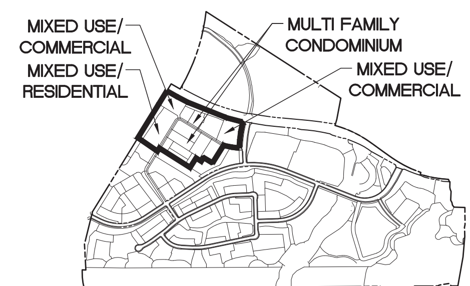
PA-4f

LOT 47,50						
RESIDENTIAL						
Product Type:	MU–RESIDENTIAL					
# of Stories:	4					
Total Site Area:	3.7 Acres					
Land Use:	Residential					
Total Units:	72					
Number of Buildings:	6					
Max Height:	55'					
Parking Summary:						
Bedroom Count	Units	Covered @ 1 space/unit (bachelor only)	Covered @ 1.5 spaces/unit	Uncov @ 0.5 spaces/unit	Guest @ 0.25 spaces/unit	Total
Bachelor	18	18				18
1 bed	24		36	12	6	54
2 bed	24		36	12	6	54
3 bed	6		9	3	2	14
4 bed						
Total	72	18	81	27	14	140
Res. ADA Parking (2% of total units)						2.0
Guest ADA Parking (5% of total guest sp.)						1.0
Total ADA Parking						3
ADA Van (1 sp/8 ADA Stalls						1
Required Spaces:	140					
Provided Spaces:						
Garage:	114					
Carport:	12					
* Open	39					
Total:	165					

* Note: Some ADA parking is included in open parking stall count.

PA-4d

LOT 39	
COMMERCIAL	
Land Use:	MU–COMM
Total Site Acreage:	2.4 Acres
Total Retail Sq. Ft.:	
Total Retail Units:	
Total Office Sq. Ft.:	25,825 s.f.
Total Office Units:	
Number of Buildings:	1 Building
Max Height:	55'
Parking Required Commercial:	
Total Required Parking:	65 Spaces
Total Parking Provided*:	76 Spaces
Handicap Parking**:	4 Spaces Per CBC Table 11B–208.2
Handicap Van–Accessible**:	1 Spaces 1 Space/6 Handicap PS



INDEX MAP
SCALE: 1" = 800'

DESIGNED:
DRAFTED:
CHECKED: JFukumitsu

LEGAL DESCRIPTION:
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OWNER/DEVELOPER:
FIVEPOINT®
NEWHALL LAND
25124 SPRINGFIELD COURT SUITE 300
VALENCIA, CA 91355
TELEPHONE: (661) 255–4000
REPRESENTATIVE : MR. MILES HELFRICH

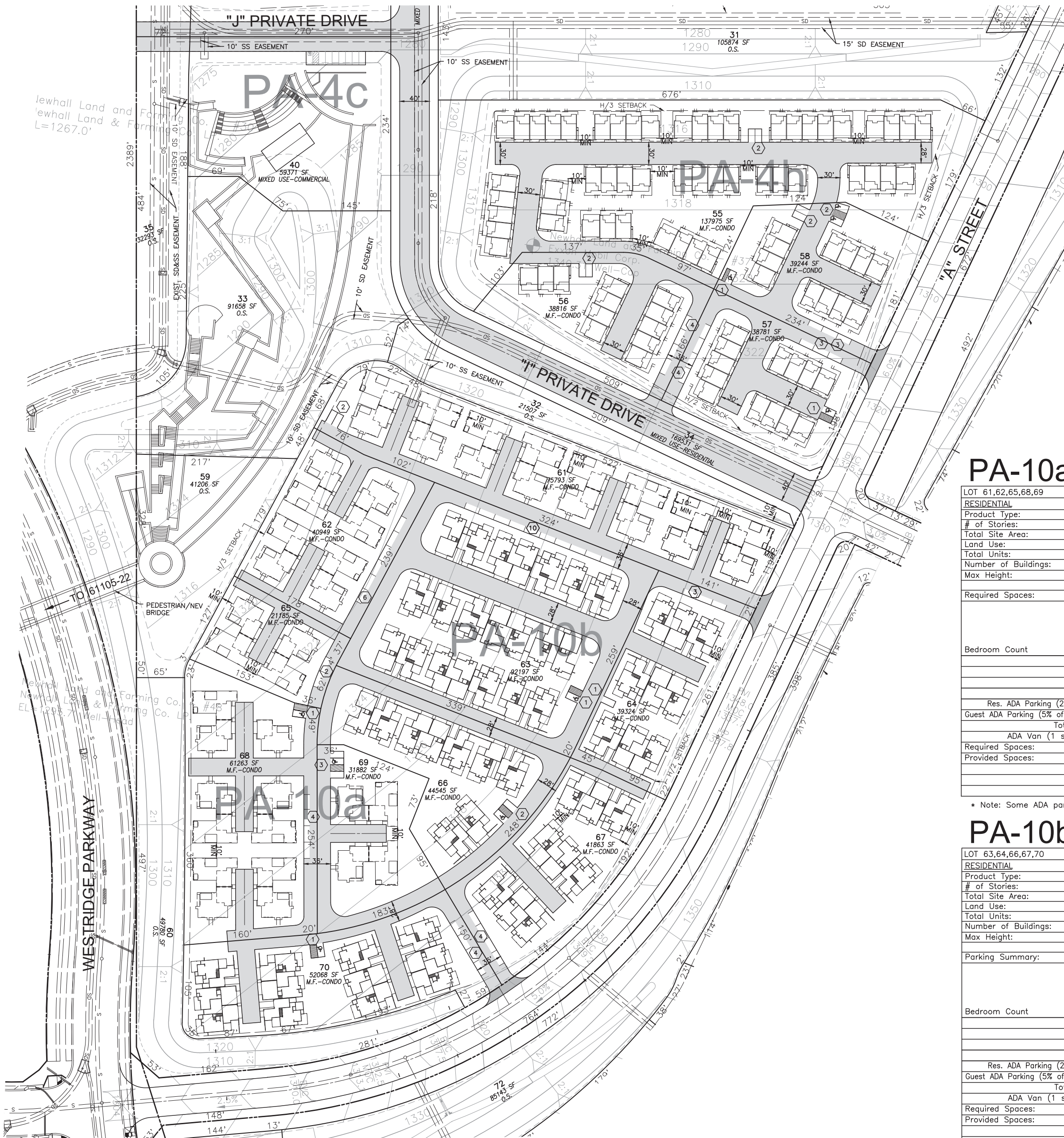
REGISTERED PROFESSIONAL ENGINEER JASON H. FUKUMITSU No. 40695 CIVIL STATE OF CALIFORNIA

PLANS PREPARED BY:
HUNSAKER & ASSOCIATES LOS ANGELES, INC.
PLANNING • ENGINEERING • SURVEYING
26074 Avenue Hall, Ste 23 • Valencia, CA 91355
PH: (661) 294-2211 • FX: (661) 294-9890
JASON H. FUKUMITSU DATE

MAJOR LAND DIVISION
VESTING TENTATIVE TRACT MAP NO. 53295
EXHIBIT "A"
IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES STATE OF CALIFORNIA

SCALE: AS SHOWN
DATE: 11/04/2021
JOB No. 0015–035–036
SHEET 4 OF 14 SHEETS

G:\Newhall Ranch\53295 Entrada\Tentative\HES043–04_Exh A.dwg



PA-4c

LOT 40	
COMMERCIAL	
Land Use:	MU–COMM
Total Site Acreage:	1.4 Acres
Total Retail Sq. Ft.:	2,000 s.f. (Retail)
Total Retail Units:	
Total Office Sq. Ft.:	
Total Office Units:	
Number of Buildings:	1 Building
Max Height:	55'
Parking Required Commercial:	8 Spaces
Total Required Parking:	8 Spaces
Total Parking Provided*:	12 Spaces
Handicap Parking**:	1 Spaces Per CBC Table 11B–208.2
Handicap Van–Accessible**:	1 Spaces 1 Space/6 Handicap PS

LEGEND

- 100 — LOT NO.
- PA-4a — PLANNING AREA NUMBER
- VTTM 53295 BOUNDARY
- RIGHT OF WAY
- 225' — PROPOSED LOT LINE
- PROPOSED EASEMENT
- EXISTING EASEMENT
- SD — PROPOSED STORM DRAIN
- S — PROPOSED SEWER
- H/2 & H/3 SETBACK LINE
- 950 — PROPOSED CONTOUR
- DAYLIGHT LINE
- 310' — LINE OF SIGHT / LINE OF SIGHT EASEMENT
- PROPOSED DRIVEWAY
- PRIVATE DRIVE AND FIRE LANE
- EXISTING OIL WELL
- X — PARKING COUNT
- TRASH ENCLOSURE
- SD — STORM DRAIN MANHOLE
- 3 — COVERED PARKING (NUMBER OF SPACES IN BOX)

PA-10a

LOT 61,62,65,68,69					
RESIDENTIAL					
Product Type:	MU–Residential				
# of Stories:	3				
Total Site Area:	5.2 Acres				
Land Use:	Residential				
Total Units:	43				
Number of Buildings:	22				
Max Height:	55'				
Required Spaces:					
Bedroom Count	Units	Covered @ 1.5 spaces/unit	Uncov @ 0.5 spaces/unit	Guest @ 0.25 spaces/unit	Total
3 bed	21	32	10	6	48
4 bed	22	33	11	6	50
Total	43	65	21	12	98
Res. ADA Parking (2% of total units)	1				
Guest ADA Parking (5% of total guest sp.)	1				
Total ADA Parking	2				
ADA Van (1 sp/8 ADA Stalls	1				
Required Spaces:	98				
Provided Spaces:					
Garage:	86				
* Open	18				
Total:	104				

* Note: Some ADA parking is included in open parking stall count.

PA-4h

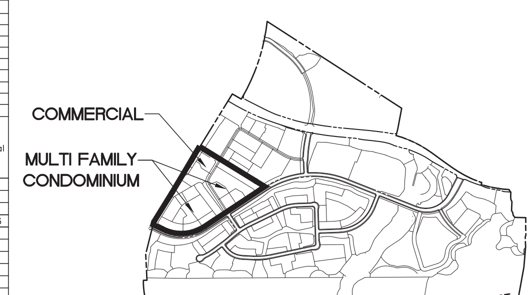
LOT 55,56,57,58					
RESIDENTIAL					
Product Type:	MU–Residential				
# of Stories:	3				
Total Site Area:	5.9 Acres				
Land Use:	Residential				
Total Units:	89				
Number of Buildings:	22				
Max Height:	55'				
Parking Summary:					
Bedroom Count	Units	Covered @ 1.5 spaces/unit	Uncov @ 0.5 spaces/unit	Guest @ 0.25 spaces/unit	Total
3 bed	45	67	23	12	102
4 bed	44	66	22	11	99
Total	89	133	45	23	201
Res. ADA Parking (2% of total units)	2				
Guest ADA Parking (5% of total guest sp.)	2				
Total ADA Parking	4				
ADA Van (1 sp/8 ADA Stalls	1				
Required Spaces:	201				
Provided Spaces:					
Garage:	178				
* Open	24				
Total:	202				

* Note: Some ADA parking is included in open parking stall count.

PA-10b

LOT 63,64,66,67,70					
RESIDENTIAL					
Product Type:	MU–Residential				
# of Stories:	2 & 3				
Total Site Area:	6.2 Acres				
Land Use:	Residential				
Total Units:	60				
Number of Buildings:	23				
Max Height:	55'				
Parking Summary:					
Bedroom Count	Units	Covered @ 1.5 spaces/unit	Uncov @ 0.5 spaces/unit	Guest @ 0.25 spaces/unit	Total
2 bed	38	57	19	10	86
3 bed	22	33	11	6	50
Total	60	90	30	16	136
Res. ADA Parking (2% of total units)	2				
Guest ADA Parking (5% of total guest sp.)	1				
Total ADA Parking	3				
ADA Van (1 sp/8 ADA Stalls	1				
Required Spaces:	136				
Provided Spaces:					
Garage:	120				
* Open	26				
Total:	146				

* Note: Some ADA parking is included in open parking stall count.



INDEX MAP

SCALE: 1" = 800'

NOTES:

1. ALL PERIMETER WALLS SHALL HAVE PEDESTRIAN ACCESS GATES LOCATED TO SATISFACTION OF THE FIRE DEPARTMENT.
2. ALL DRIVE AISLES SHALL PROVIDE A MINIMUM OF 32 FOOT CENTERLINE TURNING RADIUS.
3. FIRE ACCESS WILL BE PROVIDED TO WITHIN 150' OF ALL EXTERIOR WALLS.

DESIGNED:

DRAFTED:

CHECKED: JFukumitsu

LEGAL DESCRIPTION:

THAT PORTION OF RANCHO SAN FRANCISCO, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS SHOWN IN MAP RECORDED IN BOOK 1 PAGES 521, PAGES 522 OF PATENTS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

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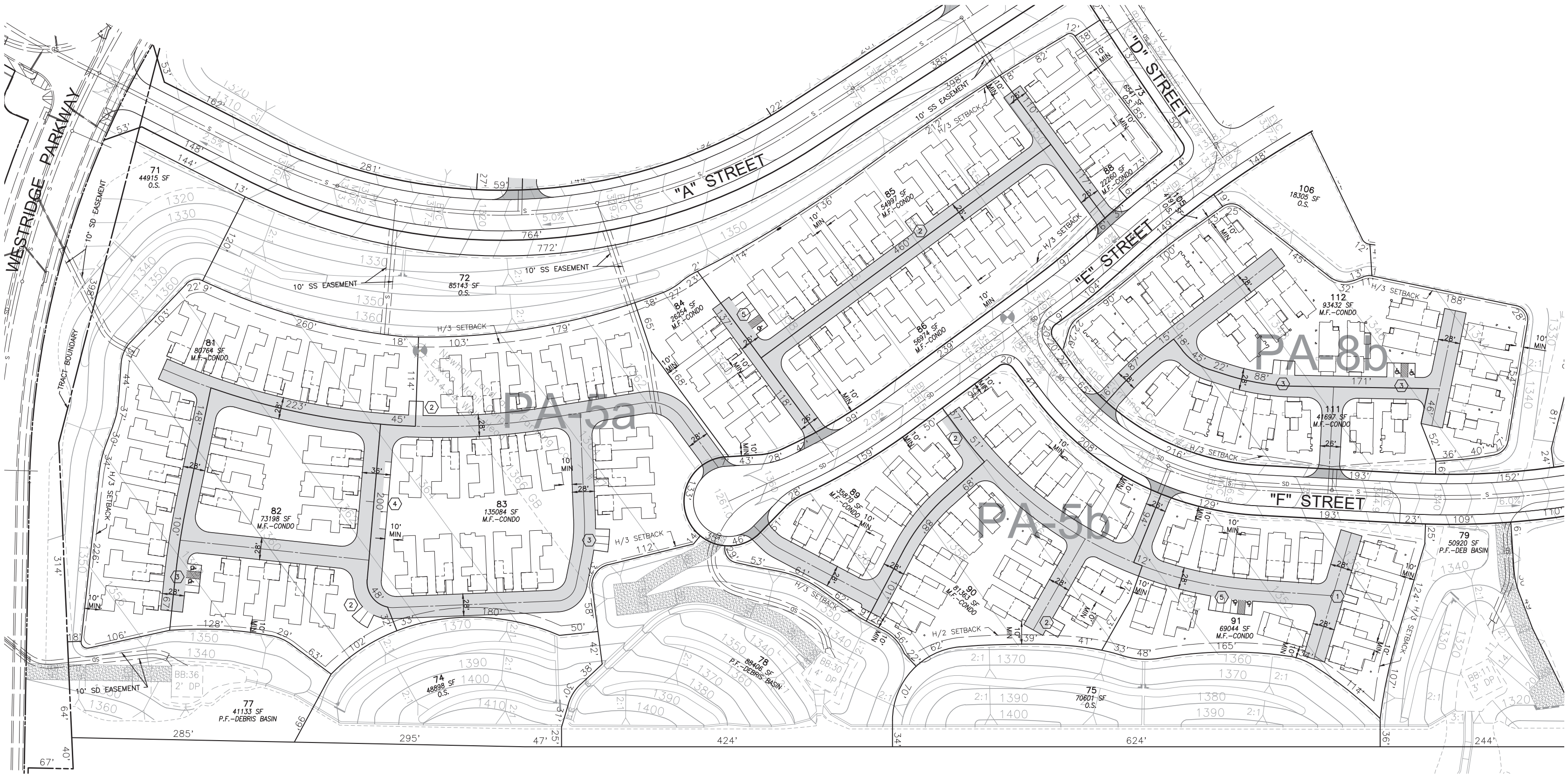
JASON H. FUKUMITSU DATE

MAJOR LAND DIVISION
VESTING TENTATIVE TRACT MAP NO. 53295
EXHIBIT "A"

IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES STATE OF CALIFORNIA

SCALE: AS SHOWN
DATE: 11/04/2021
JOB No. 0015-035-036
SHEET 5 OF 14 SHEETS



LEGEND

100	LOT NO.
PA-4a	PLANNING AREA NUMBER
	VTTM 53295 BOUNDARY
	RIGHT OF WAY
225'	PROPOSED LOT LINE
	PROPOSED EASEMENT
	EXISTING EASEMENT
SD	PROPOSED STORM DRAIN
S	PROPOSED SEWER
	H/2 & H/3 SETBACK LINE
950	PROPOSED CONTOUR
	DAYLIGHT LINE
310'	LINE OF SIGHT LINE OF SIGHT EASEMENT
	PROPOSED DRIVEWAY
	PRIVATE DRIVE AND FIRE LANE
	EXISTING OIL WELL
X	PARKING COUNT
	TRASH ENCLOSURE
SD	STORM DRAIN MANHOLE
3	COVERED PARKING (NUMBER OF SPACES IN BOX)

PA-5a

LOT 81,82,83,84,85,86,88					
RESIDENTIAL					
Product Type:	MU–Residential				
# of Stories:	2				
Total Site Area:	10.4 Acres				
Land Use:	Residential				
Total Units:	70				
Number of Buildings:	70				
Max Height:	32'				
Parking Summary:					
Bedroom Count	Units	Covered @ 1.5 spaces/unit	Uncov @ 0.5 spaces/unit	Guest @ 0.25 spaces/unit	Total
4 bed	46	69	23	12	104
5 bed	24	36	12	6	54
Total	70	105	35	18	158
Res. ADA Parking (2% of total units)	2				
Guest ADA Parking (5% of total guest sp.)	1				
Total ADA Parking	3				
ADA Van (1 sp/8 ADA Stalls	1				
Required Spaces:	158				
Provided Spaces:					
Garage:	140				
* Open	21				
Total:	161				

* Note: Some ADA parking is included in open parking stall count.

PA-5b

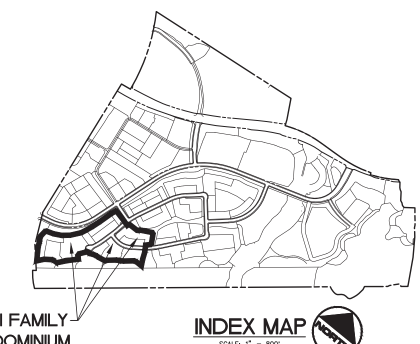
LOT 89,90,91					
RESIDENTIAL					
Product Type:	MU–Residential				
# of Stories:	3				
Total Site Area:	4.3 Acres				
Land Use:	Residential				
Total Units:	34				
Number of Buildings:	34				
Max Height:	55'				
Parking Summary:					
Bedroom Count	Units	Covered @ 1.5 spaces/unit	Uncov @ 0.5 spaces/unit	Guest @ 0.25 spaces/unit	Total
3 bed	34	51	17	9	77
Total	34	51	17	9	77
Res. ADA Parking (2% of total units)	1				
Guest ADA Parking (5% of total guest sp.)	1				
Total ADA Parking	2				
ADA Van (1 sp/8 ADA Stalls	1				
Required Spaces:	77				
Provided Spaces:					
Garage:	68				
* Open	10				
Total:	78				

* Note: Some ADA parking is included in open parking stall count.

PA-8b

LOT 111,112					
RESIDENTIAL					
Product Type:	MU–Residential				
# of Stories:	3				
Total Site Area:	3.1 Acres				
Land Use:	Residential				
Total Units:	24				
Number of Buildings:	24				
Max Height:	55'				
Parking Summary:					
Bedroom Count	Units	Covered @ 1.5 spaces/unit	Uncov @ 0.5 spaces/unit	Guest @ 0.25 spaces/unit	Total
4 bed	24	36	12	6	54
Total	24	36	12	6	54
Res. ADA Parking (2% of total units)	1				
Guest ADA Parking (5% of total guest sp.)	1				
Total ADA Parking	2				
ADA Van (1 sp/8 ADA Stalls	1				
Required Spaces:	54				
Provided Spaces:					
Garage:	48				
* Open	6				
Total:	54				

* Note: Some ADA parking is included in open parking stall count.



INDEX MAP
SCALE: 1" = 800'

NOTES:

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2. ALL DRIVE AISLES SHALL PROVIDE A MINIMUM OF 32 FOOT CENTERLINE TURNING RADIUS.
3. FIRE ACCESS WILL BE PROVIDED TO WITHIN 150' OF ALL EXTERIOR WALLS.

FEET 60' 30' 0' 60' 120'
INCHES 1" ½" 0" 1" 2"

DESIGNED:
DRAFTED:
CHECKED: JFukumitsu

LEGAL DESCRIPTION:
THAT PORTION OF RANCHO SAN FRANCISCO, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS SHOWN IN MAP RECORDED IN BOOK 1 PAGES 521, PAGES 522 OF PATENTS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

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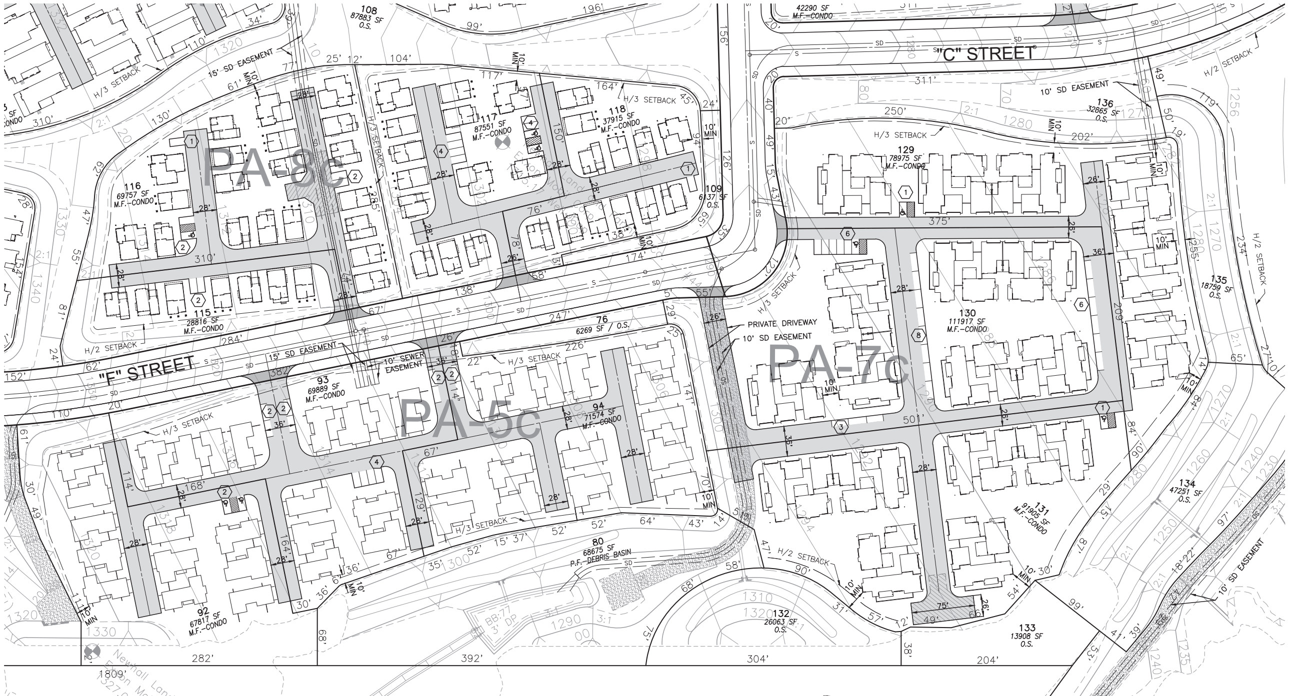
JASON H. FUKUMITSU DATE

MAJOR LAND DIVISION
VESTING TENTATIVE TRACT MAP NO. 53295
EXHIBIT "A"
IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES STATE OF CALIFORNIA

SCALE: AS SHOWN
DATE: 11/04/2021
JOB No. 0015-035-036
SHEET 6 OF 14 SHEETS

G:\Newhall Ranch\53295 Entrada\Tentative\HES043-06_Exh A.dwg



LEGEND

- 100 — LOT NO.
- PA-4a — PLANNING AREA NUMBER
- VTTM 53295 BOUNDARY
- RIGHT OF WAY
- 225' — PROPOSED LOT LINE
- PROPOSED EASEMENT
- EXISTING EASEMENT
- SD — PROPOSED STORM DRAIN
- S — PROPOSED SEWER
- H/2 & H/3 SETBACK LINE
- 950 — PROPOSED CONTOUR
- DAYLIGHT LINE
- 310' — LINE OF SIGHT / LINE OF SIGHT EASEMENT
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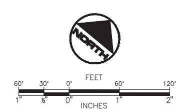
- SD — STORM DRAIN MANHOLE
- 3 — COVERED PARKING (NUMBER OF SPACES IN BOX)



PA-5c

LOT 92,93,94					
RESIDENTIAL					
Product Type:	MU-Residential				
# of Stories:	3				
Total Site Area:	4.8 Acres				
Land Use:	Residential				
Total Units:	39				
Number of Buildings:	39				
Max Height:	55'				
Parking Summary:					
Bedroom Count	Units	Covered @ 1.5 spaces/unit	Uncov @ 0.5 spaces/unit	Guest @ 0.25 spaces/unit	Total
2 bed	15	21	8	4	35
3 bed	11	17	5	3	26
4 bed	13	20	7	4	31
Total	39	58	20	11	89
Res. ADA Parking (2% of total units)	1				
Guest ADA Parking (5% of total guest sp.)	1				
Total ADA Parking	2				
ADA Van (1 sp/8 ADA Stalls	1				
Required Spaces:	89				
Provided Spaces: Garage:	78				
* Open	14				
Total:	92				

* Note: Some ADA parking is included in open parking stall count.

PA-7c

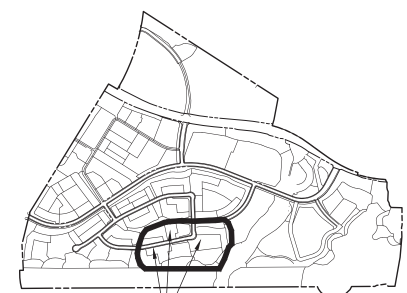
LOT 129,130,131					
RESIDENTIAL					
Product Type:	MU-Residential				
# of Stories:	3				
Total Site Area:	6.5 Acres				
Land Use:	Residential				
Total Units:	57				
Number of Buildings:	12				
Max Height:	55'				
Parking Summary:					
Bedroom Count	Units	Covered @ 1.5 spaces/unit	Uncov @ 0.5 spaces/unit	Guest @ 0.25 spaces/unit	Total
3 bed	57	85	29	14	128
Total	57	85	29	14	128
Res. ADA Parking (2% of total units)	2				
Guest ADA Parking (5% of total guest sp.)	1				
Total ADA Parking	3				
ADA Van (1 sp/8 ADA Stalls	1				
Provided Spaces:	128				
Required Spaces: Garage:	114				
* Open	25				
Total:	139				

* Note: Some ADA parking is included in open parking stall count.

PA-8c

LOT 115,116,117,118					
RESIDENTIAL					
Product Type:	MU-Residential				
# of Stories:	2 & 3				
Total Site Area:	4.3 Acres				
Land Use:	Residential				
Total Units:	52				
Number of Buildings:	52				
Max Height:	55'				
Parking Summary:					
Bedroom Count	Units	Covered @ 1.5 spaces/unit	Uncov @ 0.5 spaces/unit	Guest @ 0.25 spaces/unit	Total
3 bed	52	78	26	13	117
Total	52	78	26	13	117
Res. ADA Parking (2% of total units)	1				
Guest ADA Parking (5% of total guest sp.)	1				
Total ADA Parking	2				
ADA Van (1 sp/8 ADA Stalls	1				
Provided Spaces:	117				
Required Spaces: Garage:	90				
Carport:	14				
* Open	16				
Total:	120				

* Note: Some ADA parking is included in open parking stall count.



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DESIGNED:
DRAFTED:
CHECKED: JFukumitsu

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JASON H. FUKUMITSU DATE

MAJOR LAND DIVISION
VESTING TENTATIVE TRACT MAP NO. 53295
EXHIBIT "A"

IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES STATE OF CALIFORNIA

SCALE: AS SHOWN
DATE: 11/04/2021
JOB No. 0015-035-036
SHEET 7 OF 14 SHEETS

PA-13a

LOT 171,172,173,174					
RESIDENTIAL					
Product Type:	MU–Residential				
# of Stories:	2 & 3				
Total Site Area:	6.3 Acres				
Land Use:	Residential				
Total Units:	68				
Number of Buildings:	6				
Max Height:	55'				
Parking Summary:					
Bedroom Count	Units	Covered @ 1.5 spaces/unit	Uncov @ 0.5 spaces/ unit	Guest @ 0.25 spaces/ unit	Total
3 bed	34	51	17	9	77
4 bed	34	51	17	9	77
Total	68	102	34	18	154
Res. ADA Parking (2% of total units)	2				
Guest ADA Parking (5% of total guest sp.)	1				
Total ADA Parking	3				
ADA Van (1 sp/8 ADA Stalls	1				
Required Spaces:	154				
Provided Spaces:					
Garage:	136				
* Open	56				
Total:	192				

* Note: Some ADA parking is included in open parking stall count.

LEGEND

- 100 — LOT NO.
- PA-4a — PLANNING AREA NUMBER
- VTTM 53295 BOUNDARY
- RIGHT OF WAY
- 225' — PROPOSED LOT LINE
- PROPOSED EASEMENT
- EXISTING EASEMENT
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- DAYLIGHT LINE
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- PROPOSED DRIVEWAY
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- EXISTING OIL WELL
- X — PARKING COUNT
- TRASH ENCLOSURE
- SD — STORM DRAIN MANHOLE
- 3 — COVERED PARKING (NUMBER OF SPACES IN BOX)

PA-13b

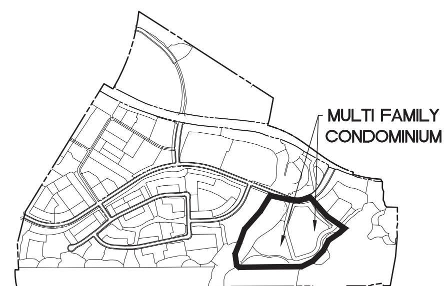
LOT 175,179					
RESIDENTIAL					
Product Type:	MU–Residential				
# of Stories:	3				
Total Site Area:	3.6 Acres				
Land Use:	Residential				
Total Units:	48				
Number of Buildings:	17				
Max Height:	55'				
Parking Summary:					
Bedroom Count	Units	Covered @ 1.5 spaces/unit	Uncov @ 0.5 spaces/ unit	Guest @ 0.25 spaces/ unit	Total
1 bed	12	18	6	3	27
2 bed	24	36	12	6	54
3 bed	12	18	6	3	27
Total	48	72	24	12	108
Res. ADA Parking (2% of total units)	1				
Guest ADA Parking (5% of total guest sp.)	1				
Total ADA Parking	8				
ADA Van (1 sp/8 ADA Stalls	1				
Required Spaces:	108				
Provided Spaces:					
Garage:	78				
Carport	18				
* Open	17				
Total:	113				

* Note: Some ADA parking is included in open parking stall count.

PA-13c

LOT 176,177,178					
RESIDENTIAL					
Product Type:	MU–Residential				
# of Stories:	2 & 3				
Total Site Area:	5.2 Acres				
Land Use:	Residential				
Total Units:	56				
Number of Buildings:	4				
Max Height:	55'				
Parking Summary:					
Bedroom Count	Units	Covered @ 1.5 spaces/unit	Uncov @ 0.5 spaces/ unit	Guest @ 0.25 spaces/ unit	Total
1 bed	8	12	4	2	18
2 bed	16	24	8	4	36
3 bed	32	48	16	8	72
Total	56	84	28	14	126
Res. ADA Parking (2% of total units)	2				
Guest ADA Parking (5% of total guest sp.)	1				
Total ADA Parking	3				
ADA Van (1 sp/8 ADA Stalls	1				
Required Spaces:	126				
Provided Spaces:					
Garage:	104				
Carport	8				
* Open	37				
Total:	149				

* Note: Some ADA parking is included in open parking stall count.



INDEX MAP

SCALE: 1" = 800'

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FEET 60' 30' 0' 60' 120'
INCHES 1 ½ 0 1 2

DESIGNED:
DRAFTED:
CHECKED: JFukumitsu

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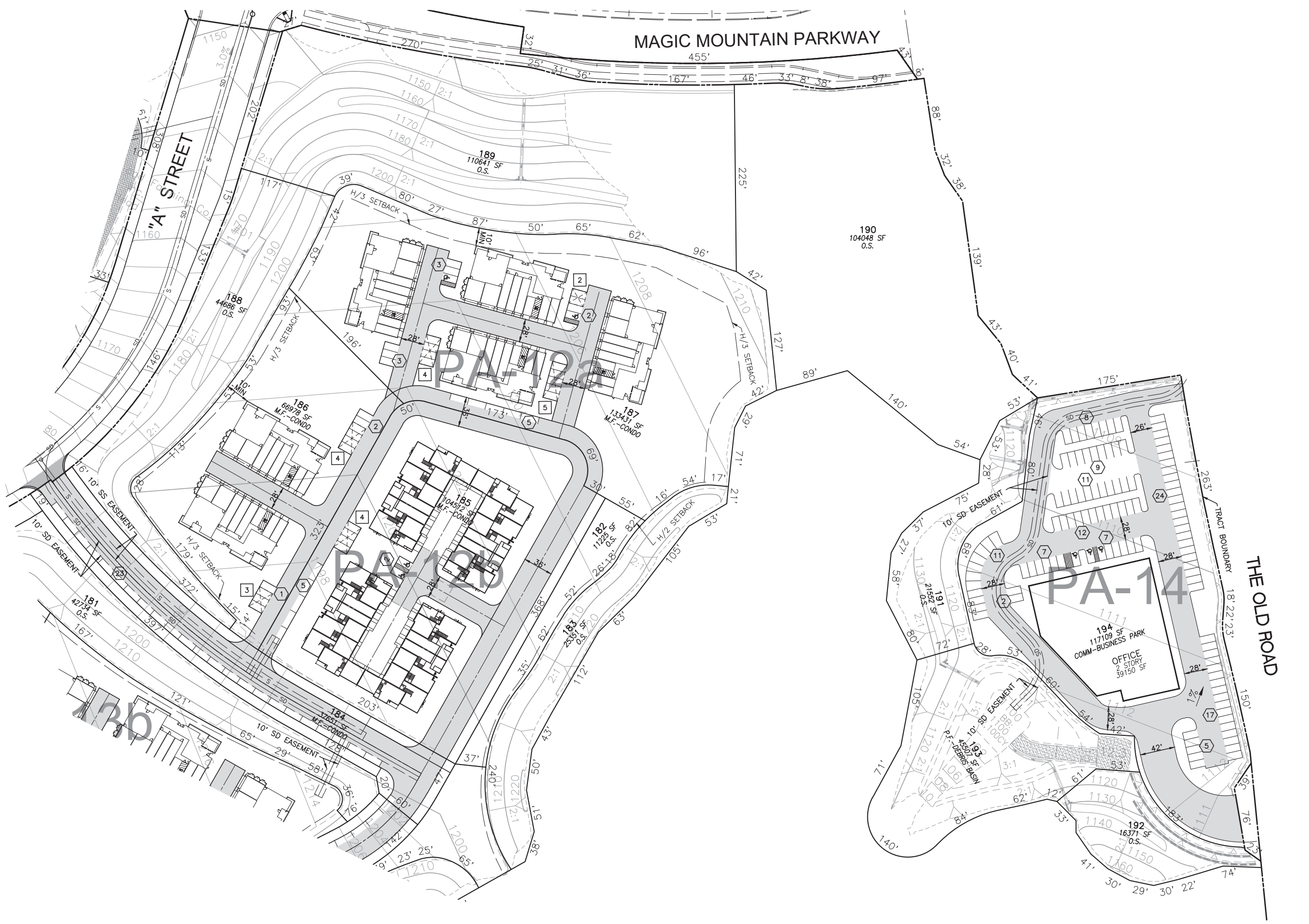
MAJOR LAND DIVISION VESTING TENTATIVE TRACT MAP NO. 53295 EXHIBIT "A"

IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES STATE OF CALIFORNIA

SCALE: AS SHOWN
DATE: 11/04/2021
JOB No. 0015-035-036
SHEET 8 OF 14 SHEETS



LEGEND

- 100 — LOT NO.
- PA-4a — PLANNING AREA NUMBER
- VTTM 53295 BOUNDARY
- RIGHT OF WAY
- 225' — PROPOSED LOT LINE
- PROPOSED EASEMENT
- EXISTING EASEMENT
- SD — PROPOSED STORM DRAIN
- S — PROPOSED SEWER
- H/2 & H/3 SETBACK LINE
- 950 — PROPOSED CONTOUR
- DAYLIGHT LINE
- 310' — LINE OF SIGHT / LINE OF SIGHT EASEMENT
- PROPOSED DRIVEWAY
- PRIVATE DRIVE AND FIRE LANE
- EXISTING OIL WELL
- X — PARKING COUNT
- TRASH ENCLOSURE
- SD — STORM DRAIN MANHOLE
- 3 — COVERED PARKING (NUMBER OF SPACES IN BOX)

PA-14

LOT 194	
COMMERCIAL/OFFICE	
Land Use:	Office
Total Site Acreage:	2.7 Acres
Total Commercial Sq. Ft:	39,150 s.f.
Total Units	
Number of Buildings:	1 Building
Max Height:	55'
Parking Req. Residential:	
Parking Req. Office:	94 Spaces
Total Required Parking:	94 Spaces
Total Parking Provided*:	113 Spaces
Handicap Parking:	3 Spaces 3.1% of Parking Provided
Handicap Van–Accessible:	1 Space 1 Space/8 Handicap PS

PA-12a

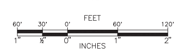
LOT 186,187					
RESIDENTIAL					
Product Type:	MU–Residential				
# of Stories:	3				
Total Site Area:	4.6 Acres				
Land Use:	Residential				
Total Units:	48				
Number of Buildings:	6				
Max Height:	55'				
Parking Summary:					
Bedroom Count	Units	Covered @ 1.5 spaces/unit	Uncov @ 0.5 spaces/ unit	Guest @ 0.25 spaces/ unit	Total
1 bed	12	18	6	3	27
2 bed	24	36	12	6	54
3 bed	12	18	6	3	27
Total	48	72	24	12	108
Res. ADA Parking (2% of total units)	1				
Guest ADA Parking (5% of total guest sp.)	1				
Total ADA Parking	2				
ADA Van (1 sp/8 ADA Stalls	1				
Required Spaces:	108				
Provided Spaces:					
Garage:	96				
Carport	18				
* Open	16				
Total:	130				

* Note: Some ADA parking is included in open parking stall count.

PA-12b

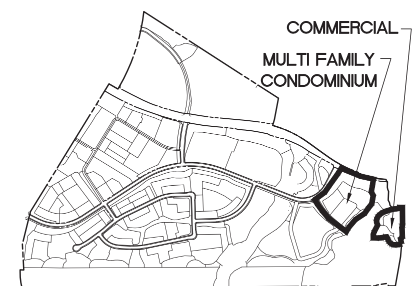
LOT 184,185					
RESIDENTIAL					
Product Type:	MU–Residential				
# of Stories:	3				
Total Site Area:	3.3 Acres				
Land Use:	Residential				
Total Units:	28				
Number of Buildings:	2				
Max Height:	55'				
Parking Summary:					
Bedroom Count	Units	Covered @ 1.5 spaces/unit	Uncov @ 0.5 spaces/ unit	Guest @ 0.25 spaces/ unit	Total
1 bed	4	6	2	1	9
2 bed	8	12	4	2	18
3 bed	16	24	8	4	36
Total	28	42	14	7	63
Res. ADA Parking (2% of total units)	1				
Guest ADA Parking (5% of total guest sp.)	1				
Total ADA Parking	2				
ADA Van (1 sp/8 ADA Stalls	1				
Required Spaces:	63				
Provided Spaces:					
Garage:	56				
Carport	4				
* Open	30				
Total:	90				

* Note: Some ADA parking is included in open parking stall count.



NOTES:

1. ALL PERIMETER WALLS SHALL HAVE PEDESTRIAN ACCESS GATES LOCATED TO SATISFACTION OF THE FIRE DEPARTMENT.
2. ALL DRIVE AISLES SHALL PROVIDE A MINIMUM OF 32 FOOT CENTERLINE TURNING RADIUS.
3. FIRE ACCESS WILL BE PROVIDED TO WITHIN 150' OF ALL EXTERIOR WALLS.



INDEX MAP
SCALE: 1" = 800'

DESIGNED:
DRAFTED:
CHECKED: JFukumitsu

LEGAL DESCRIPTION:
THAT PORTION OF RANCHO SAN FRANCISCO, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS SHOWN IN MAP RECORDED IN BOOK 1 PAGES 521, PAGES 522 OF PATENTS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

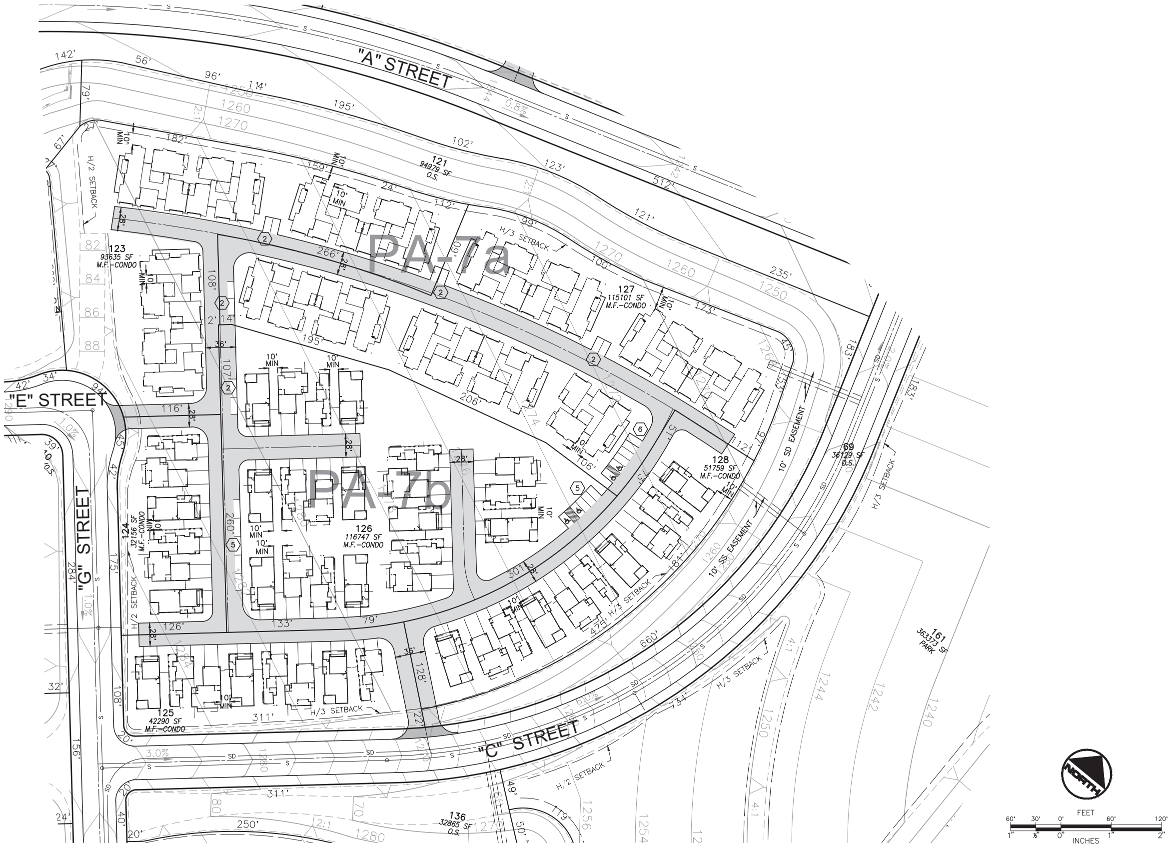
OWNER/DEVELOPER:
FIVEPOINT
NEWHALL LAND
25124 SPRINGFIELD COURT SUITE 300
VALENCIA, CA 91355
TELEPHONE: (661) 255–4000
REPRESENTATIVE : MR. MILES HELFRICH

REGISTERED PROFESSIONAL ENGINEER JASON H. FUKUMITSU No. 40695 CIVIL STATE OF CALIFORNIA

PLANS PREPARED BY:
HUNSAKER & ASSOCIATES
LOS ANGELES, INC.
PLANNING ▪ ENGINEERING ▪ SURVEYING
26074 Avenue Hall, Ste 23 ▪ Valencia, CA 91355
PH: (661) 294-2211 ▪ FX: (661) 294-9890
JASON H. FUKUMITSU DATE

MAJOR LAND DIVISION
VESTING TENTATIVE TRACT MAP NO. 53295
EXHIBIT "A"
IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES STATE OF CALIFORNIA

SCALE: AS SHOWN
DATE: 11/04/2021
JOB No. 0015–035–036
SHEET 9
OF 14 SHEETS



LEGEND

- 100 — LOT NO.
- PA-4a — PLANNING AREA NUMBER
- VTTM 53295 BOUNDARY
- RIGHT OF WAY
- 225' — PROPOSED LOT LINE
- PROPOSED EASEMENT
- EXISTING EASEMENT
- SD — PROPOSED STORM DRAIN
- S — PROPOSED SEWER
- H/2 & H/3 SETBACK LINE
- 950 — PROPOSED CONTOUR
- DAYLIGHT LINE
- 310' — LINE OF SIGHT / LINE OF SIGHT EASEMENT
- PROPOSED DRIVEWAY
- PRIVATE DRIVE AND FIRE LANE
- EXISTING OIL WELL
- X — PARKING COUNT
- TRASH ENCLOSURE
- SD — STORM DRAIN MANHOLE
- 3 — COVERED PARKING (NUMBER OF SPACES IN BOX)

PA-7a

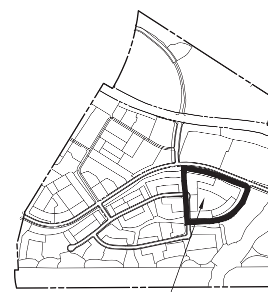
LOT 123,127					
RESIDENTIAL					
Product Type:	MU-Residential				
# of Stories:	2				
Total Site Area:	4.7 Acres				
Land Use:	Residential				
Total Units:	45				
Number of Buildings:	15				
Max Height:	32'				
Parking Summary:					
Bedroom Count	Units	Covered @ 1.5 spaces/unit	Uncov @ 0.5 spaces/unit	Guest @ 0.25 spaces/unit	Total
3 bed	45	67	23	12	102
Total	45	67	23	12	102
Res. ADA Parking (2% of total units)	1				
Guest ADA Parking (5% of total guest sp.)	1				
Total ADA Parking	2				
ADA Van (1 sp/8 ADA Stalls	1				
Required Spaces:	102				
Provided Spaces:					
Garage:	90				
• Open	13				
Total:	103				

• Note: Some ADA parking is included in open parking stall count.

PA-7b

LOT 124,125,126,128					
RESIDENTIAL					
Product Type:	MU-Residential				
# of Stories:	3				
Total Site Area:	5.6 Acres				
Land Use:	Residential				
Total Units:	44				
Number of Buildings:	44				
Max Height:	55'				
Parking Summary:					
Bedroom Count	Units	Covered @ 1.5 spaces/unit	Uncov @ 0.5 spaces/unit	Guest @ 0.25 spaces/unit	Total
3 bed	44	66	22	11	99
Total	44	66	22	11	99
Res. ADA Parking (2% of total units)	1				
Guest ADA Parking (5% of total guest sp.)	1				
Total ADA Parking	2				
ADA Van (1 sp/8 ADA Stalls	1				
Required Spaces:	99				
Provided Spaces:					
Garage:	88				
• Open	13				
Total:	101				

• Note: Some ADA parking is included in open parking stall count.



MULTI FAMILY CONDOMINIUM

INDEX MAP

SCALE: 1" = 800'

NOTES:

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2. ALL DRIVE AISLES SHALL PROVIDE A MINIMUM OF 32 FOOT CENTERLINE TURNING RADIUS.
3. FIRE ACCESS WILL BE PROVIDED TO WITHIN 150' OF ALL EXTERIOR WALLS.

DESIGNED:

DRAFTED:

CHECKED: JFukumitsu

LEGAL DESCRIPTION:

THAT PORTION OF RANCHO SAN FRANCISCO, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS SHOWN IN MAP RECORDED IN BOOK 1 PAGES 521, PAGES 522 OF PATENTS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

OWNER/DEVELOPER:

FIVEPOINT

NEWHALL LAND

25124 SPRINGFIELD COURT SUITE 300
VALENCIA, CA 91355

TELEPHONE: (661) 255-4000
REPRESENTATIVE : MR. MILES HELFRICH

REGISTERED PROFESSIONAL ENGINEER JASON H. FUKUMITSU No. 40695 CIVIL STATE OF CALIFORNIA

PLANS PREPARED BY:

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PH: (661) 294-2211 • FX: (661) 294-9890

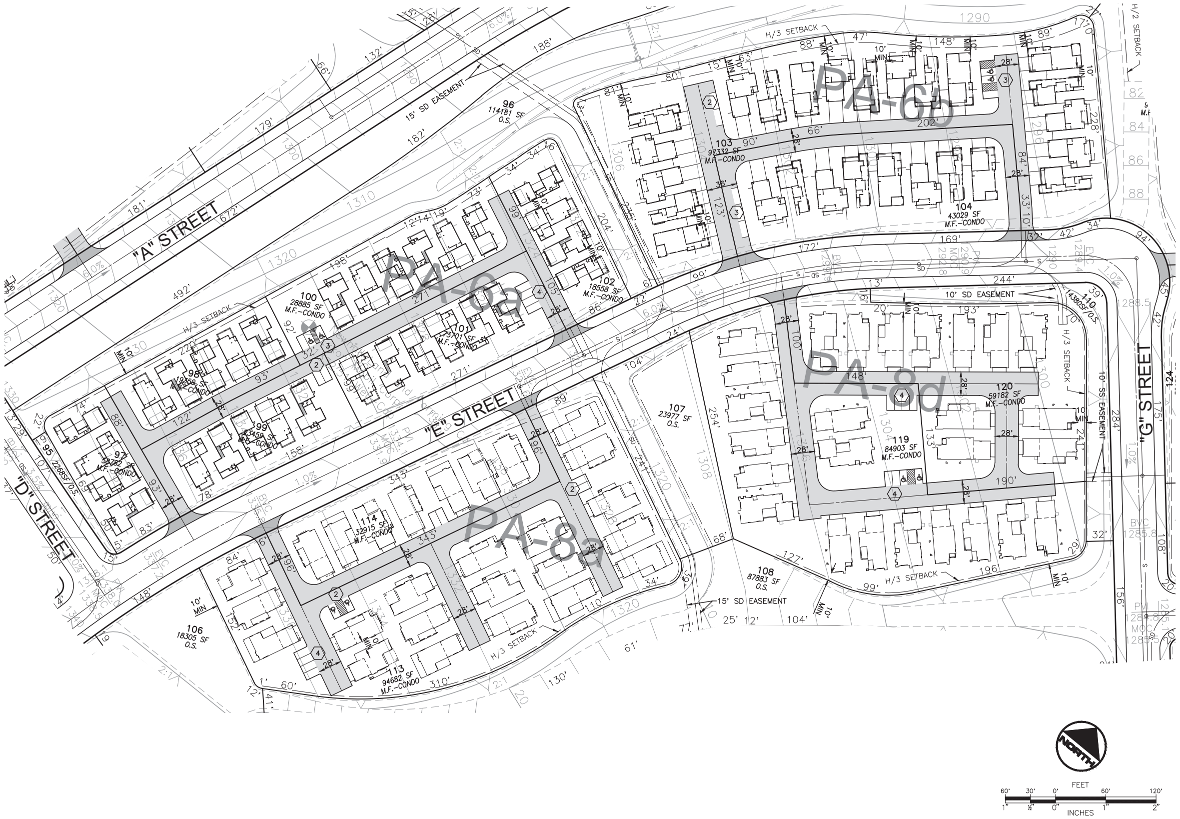
JASON H. FUKUMITSU DATE

MAJOR LAND DIVISION
VESTING TENTATIVE TRACT MAP NO. 53295
EXHIBIT "A"

IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES STATE OF CALIFORNIA

SCALE: AS SHOWN
DATE: 11/04/2021
JOB No. 0015-035-036

SHEET 10 OF 14 SHEETS



PA-8d

LOT 119,120					
RESIDENTIAL					
Product Type:	MU–Residential				
# of Stories:	3				
Total Site Area:	3.3 Acres				
Land Use:	Residential				
Total Units:	26				
Number of Buildings:	26				
Max Height:	55'				
Parking Summary:					
Bedroom Count	Units	Covered @ 1.5 spaces/unit	Uncov @ 0.5 spaces/unit	Guest @ 0.25 spaces/unit	Total
4 bed	26	39	13	7	59
Total	26	39	13	7	59
Res. ADA Parking (2% of total units)	1				
Guest ADA Parking (5% of total guest sp.)	1				
Total ADA Parking	2				
ADA Van (1 sp/8 ADA Stalls	1				
Required Spaces:	59				
Provided Spaces:					
Garage:	52				
* Open	8				
Total:	60				

* Note: Some ADA parking is included in open parking stall count.

LEGEND

100	LOT NO.
PA-4a	PLANNING AREA NUMBER
	VTTM 53295 BOUNDARY
	RIGHT OF WAY
225'	PROPOSED LOT LINE
	PROPOSED EASEMENT
	EXISTING EASEMENT
SD	PROPOSED STORM DRAIN
S	PROPOSED SEWER
	H/2 & H/3 SETBACK LINE
950	PROPOSED CONTOUR
	DAYLIGHT LINE
310'	LINE OF SIGHT LINE OF SIGHT EASEMENT
	PROPOSED DRIVEWAY
	PRIVATE DRIVE AND FIRE LANE
	EXISTING OIL WELL
X	PARKING COUNT
	TRASH ENCLOSURE
SD	STORM DRAIN MANHOLE
3	COVERED PARKING (NUMBER OF SPACES IN BOX)

PA-6a

LOT 97,98,99,100,101,102					
RESIDENTIAL					
Product Type:	MU–Residential				
# of Stories:	3				
Total Site Area:	3.0 Acres				
Land Use:	Residential				
Total Units:	30				
Number of Buildings:	30				
Max Height:	55'				
Parking Summary:					
Bedroom Count	Units	Covered @ 1.5 spaces/unit	Uncov @ 0.5 spaces/unit	Guest @ 0.25 spaces/unit	Total
2 bed	10	15	5	3	23
3 bed	10	15	5	3	23
4 bed	10	15	5	3	23
Total	30	45	15	9	69
Res. ADA Parking (2% of total units)	1				
Guest ADA Parking (5% of total guest sp.)	1				
Total ADA Parking	2				
ADA Van (1 sp/8 ADA Stalls	1				
Required Spaces:	69				
Provided Spaces:					
Garage:	60				
* Open	9				
Total:	69				

* Note: Some ADA parking is included in open parking stall count.

PA-6b

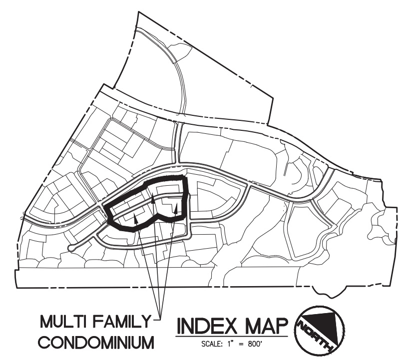
LOT 103,104					
RESIDENTIAL					
Product Type:	MU–Residential				
# of Stories:	3				
Total Site Area:	3.2 Acres				
Land Use:	Residential				
Total Units:	26				
Number of Buildings:	26				
Max Height:	55'				
Parking Summary:					
Bedroom Count	Units	Covered @ 1.5 spaces/unit	Uncov @ 0.5 spaces/unit	Guest @ 0.25 spaces/unit	Total
3 bed	26	39	13	7	59
Total	26	39	13	7	59
Res. ADA Parking (2% of total units)	1				
Guest ADA Parking (5% of total guest sp.)	1				
Total ADA Parking	2				
ADA Van (1 sp/8 ADA Stalls	1				
Required Spaces:	59				
Provided Spaces:					
Garage:	52				
* Open	8				
Total:	60				

* Note: Some ADA parking is included in open parking stall count.

PA-8a

LOT 113,114					
RESIDENTIAL					
Product Type:	MU–Residential				
# of Stories:	3				
Total Site Area:	3.0 Acres				
Land Use:	Residential				
Total Units:	26				
Number of Buildings:	26				
Max Height:	55'				
Parking Summary:					
Bedroom Count	Units	Covered @ 1.5 spaces/unit	Uncov @ 0.5 spaces/unit	Guest @ 0.25 spaces/unit	Total
3 bed	26	39	13	7	59
Total	26	39	13	7	59
Res. ADA Parking (2% of total units)	1				
Guest ADA Parking (5% of total guest sp.)	1				
Total ADA Parking	2				
ADA Van (1 sp/8 ADA Stalls	1				
Required Spaces:	59				
Provided Spaces:					
Garage:	52				
* Open	10				
Total:	62				

* Note: Some ADA parking is included in open parking stall count.



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DRAFTED:

CHECKED: JFukumitsu

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OWNER/DEVELOPER:

FIVEPOINT
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TELEPHONE: (661) 255–4000
REPRESENTATIVE : MR. MILES HELFRICH

REGISTERED PROFESSIONAL ENGINEER
JASON H. FUKUMITSU
No. 40695
CIVIL
STATE OF CALIFORNIA

PLANS PREPARED BY:

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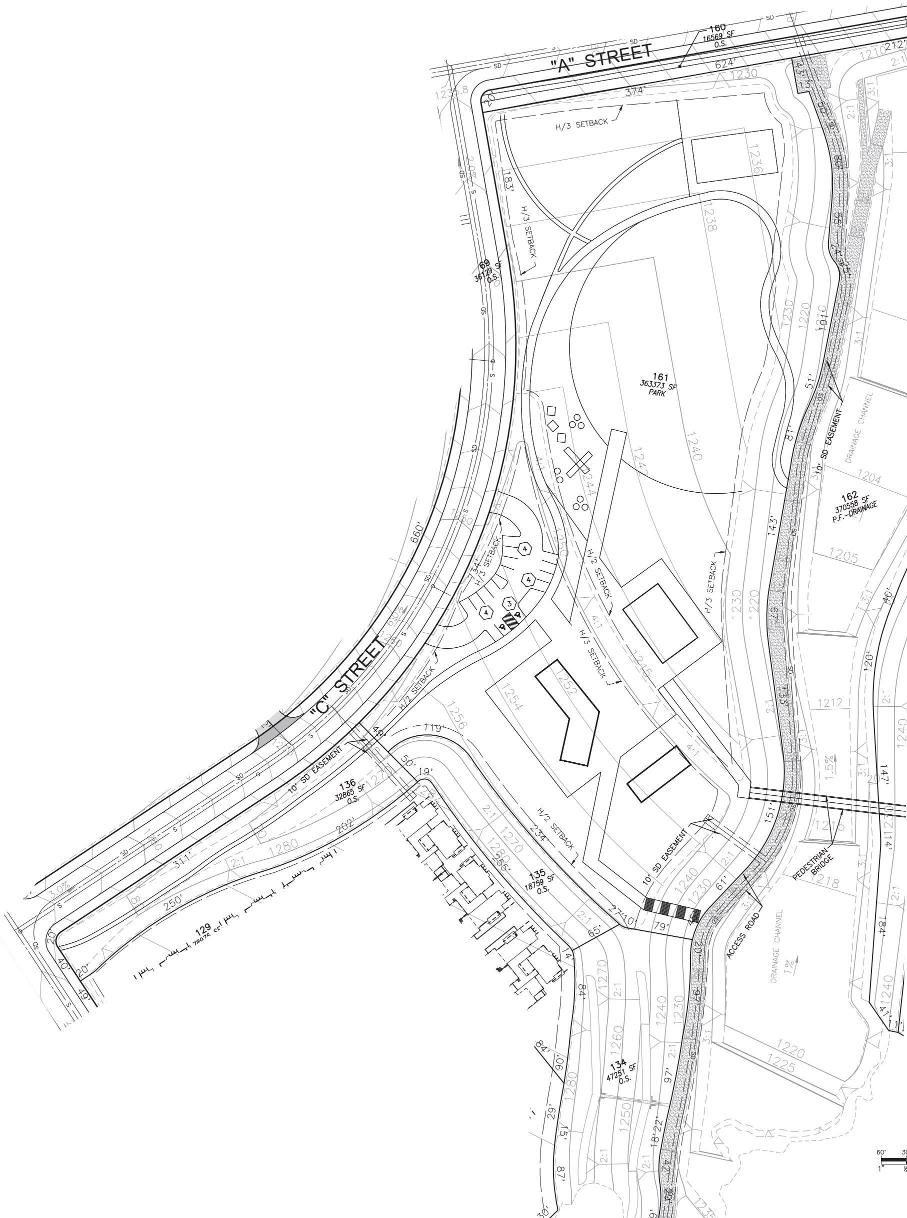
JASON H. FUKUMITSU DATE

MAJOR LAND DIVISION
VESTING TENTATIVE TRACT MAP NO. 53295
EXHIBIT "A"

IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES STATE OF CALIFORNIA

SCALE: AS SHOWN
DATE: 11/04/2021
JOB No. 0015-035-036

SHEET 11 OF 14 SHEETS

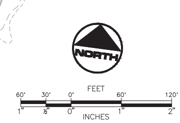


PRIVATE PARK

LOT 161	
PARK	
Land Use:	PARK
Total Site Area:	8.3 Acres
Total Building Sq. Ft:	1,500 SF
Total Buildings	1
Number of Buildings:	1
Max Height:	32'
Total Required Parking: (1 Space/400 SF Building)	4 Spaces
Total Parking Provided:	15 Spaces
Handicap Parking: (1 Space/25 PS)	2 Spaces
Handicap Van-Accessible: (1 Space/8 Handicap PS)	1 Space

LEGEND

100	LOT NO.
PA-4a	PLANNING AREA NUMBER
	VTTM 53295 BOUNDARY
	RIGHT OF WAY
225'	PROPOSED LOT LINE
	PROPOSED EASEMENT
	EXISTING EASEMENT
SD	PROPOSED STORM DRAIN
S	PROPOSED SEWER
	H/2 & H/3 SETBACK LINE
950	PROPOSED CONTOUR
	DAYLIGHT LINE
310'	LINE OF SIGHT LINE OF SIGHT EASEMENT
	PROPOSED DRIVEWAY
	PRIVATE DRIVE AND FIRE LANE
	EXISTING OIL WELL
X	PARKING COUNT
	TRASH ENCLOSURE
SD	STORM DRAIN MANHOLE
3	COVERED PARKING (NUMBER OF SPACES IN BOX)



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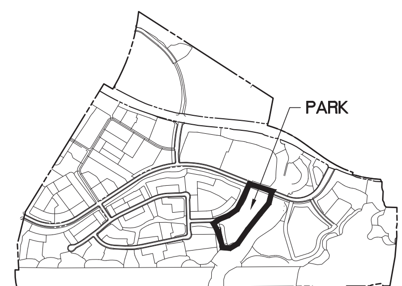

INDEX MAP

SCALE: 1" = 800'

DESIGNED:

DRAFTED:

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NEWHALL LAND

25124 SPRINGFIELD COURT SUITE 300 VALENCIA, CA 91355

TELEPHONE: (661) 255-4000

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JASON H. FUKUMITSU DATE

MAJOR LAND DIVISION

VESTING TENTATIVE TRACT MAP NO. 53295

EXHIBIT "A"

IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES STATE OF CALIFORNIA

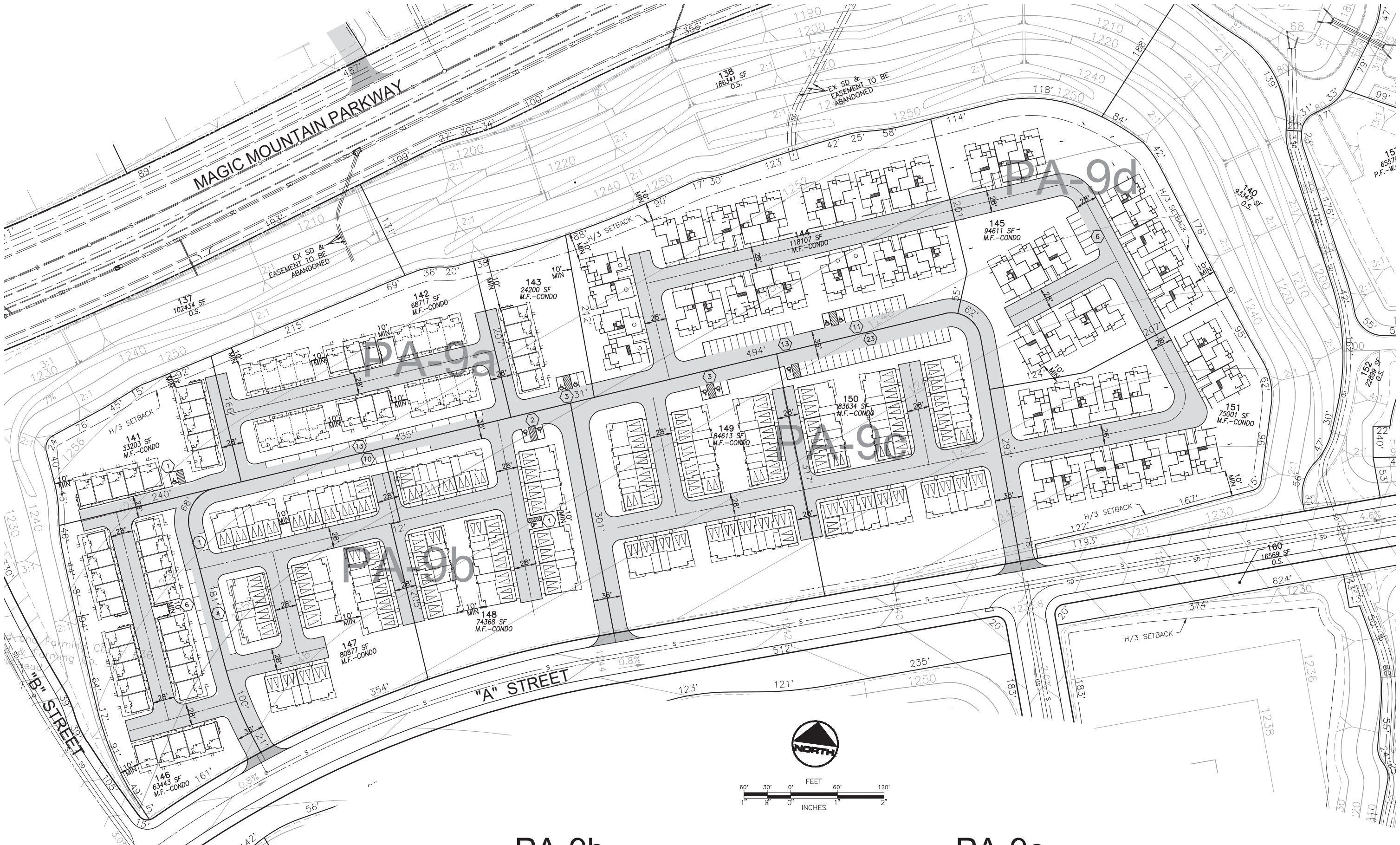
SCALE: AS SHOWN

DATE: 11/04/2021

JOB No. 0015-035-036

SHEET 12

OF 14 SHEETS



LEGEND

100	LOT NO.
PA-4a	PLANNING AREA NUMBER
	VTTM 53295 BOUNDARY
	RIGHT OF WAY
225'	PROPOSED LOT LINE
	PROPOSED EASEMENT
	EXISTING EASEMENT
SD	PROPOSED STORM DRAIN
S	PROPOSED SEWER
	H/2 & H/3 SETBACK LINE
950	PROPOSED CONTOUR
	DAYLIGHT LINE
310'	LINE OF SIGHT LINE OF SIGHT EASEMENT
	PROPOSED DRIVEWAY
	PRIVATE DRIVE AND FIRE LANE
	EXISTING OIL WELL
X	PARKING COUNT
	TRASH ENCLOSURE
SD	STORM DRAIN MANHOLE
3	COVERED PARKING (NUMBER OF SPACES IN BOX)

PA-9d

LOT 149,150					
RESIDENTIAL					
Product Type:	MU–Residential				
# of Stories:	3				
Total Site Area:	3.8 Acres				
Land Use:	Residential				
Total Units:	54				
Number of Buildings:	22				
Max Height:	55'				
Parking Summary:					
Bedroom Count	Units	Covered @ 1.5 spaces/unit	Uncov @ 0.5 spaces/unit	Guest @ 0.25 spaces/unit	Total
3 bed	39	58	19	10	89
4 bed	15	23	8	4	35
Total	54	81	27	14	122
Res. ADA Parking (2% of total units)	1				
Guest ADA Parking (5% of total guest sp.)	1				
Total ADA Parking	2				
ADA Van (1 sp/8 ADA Stalls	1				
Required Spaces:	122				
Provided Spaces:					
Garage:	108				
* Open	30				
Total:	138				

* Note: Some ADA parking is included in open parking stall count.

NOTES:

1. ALL PERIMETER WALLS SHALL HAVE PEDESTRIAN ACCESS GATES LOCATED TO SATISFACTION OF THE FIRE DEPARTMENT.

2. ALL DRIVE AISLES SHALL PROVIDE A MINIMUM OF 32 FOOT CENTERLINE TURNING RADIUS.

3. FIRE ACCESS WILL BE PROVIDED TO WITHIN 150' OF ALL EXTERIOR WALLS.

PA-9a

LOT 141,142,143,146					
RESIDENTIAL					
Product Type:	MU–Residential				
# of Stories:	3				
Total Site Area:	4.5 Acres				
Land Use:	Residential				
Total Units:	62				
Number of Buildings:	14				
Max Height:	55'				
Parking Summary:					
Bedroom Count	Units	Covered @ 1.5 spaces/unit	Uncov @ 0.5 spaces/unit	Guest @ 0.25 spaces/unit	Total
2 bed	48	72	24	12	108
3 bed	14	21	7	4	32
4 bed					
Total	62	93	31	16	140
Res. ADA Parking (2% of total units)	2				
Guest ADA Parking (5% of total guest sp.)	1				
Total ADA Parking	3				
ADA Van (1 sp/8 ADA Stalls	1				
Required Spaces:	140				
Provided Spaces:					
Garage:	124				
* Open	23				
Total:	147				

* Note: Some ADA parking is included in open parking stall count.

PA-9b

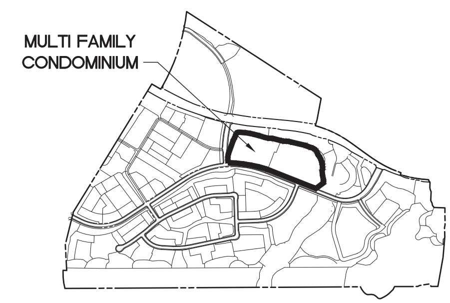
LOT 147,148					
RESIDENTIAL					
Product Type:	MU–Residential				
# of Stories:	3				
Total Site Area:	3.6 Acres				
Land Use:	Residential				
Total Units:	54				
Number of Buildings:	11				
Max Height:	55'				
Parking Summary:					
Bedroom Count	Units	Covered @ 1.5 spaces/unit	Uncov @ 0.5 spaces/unit	Guest @ 0.25 spaces/unit	Total
3 bed	37	55	19	10	85
4 bed	17	25	9	5	40
Total	62	80	28	15	123
Res. ADA Parking (2% of total units)	2				
Guest ADA Parking (5% of total guest sp.)	1				
Total ADA Parking	3				
ADA Van (1 sp/8 ADA Stalls	1				
Required Spaces:	123				
Provided Spaces:					
Garage:	108				
* Open	18				
Total:	126				

* Note: Some ADA parking is included in open parking stall count.

PA-9c

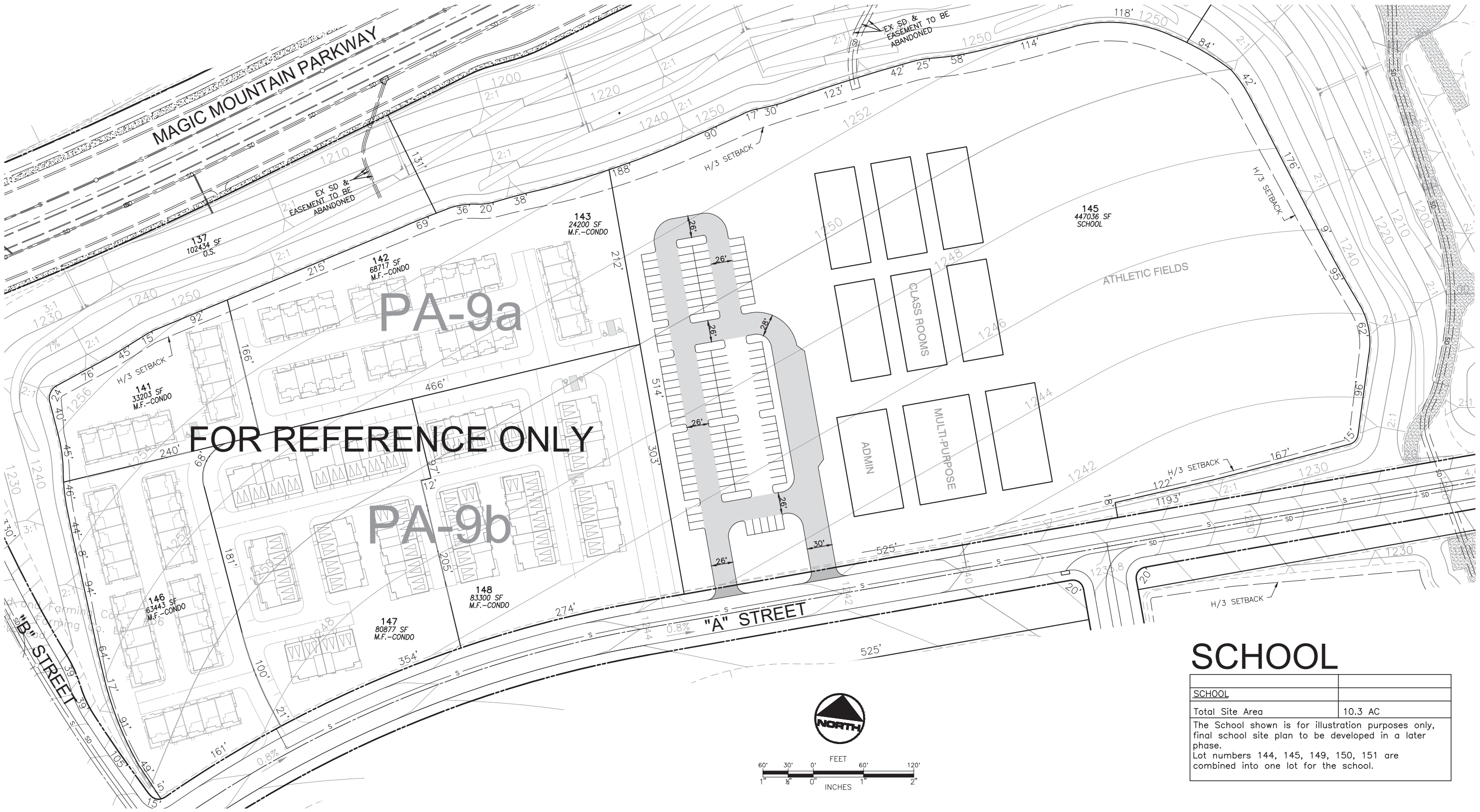
LOT 144,145,151					
RESIDENTIAL					
Product Type:	MU–Residential				
# of Stories:	3				
Total Site Area:	6.6 Acres				
Land Use:	Residential				
Total Units:	56				
Number of Buildings:	10				
Max Height:	55'				
Parking Summary:					
Bedroom Count	Units	Covered @ 1.5 spaces/unit	Uncov @ 0.5 spaces/unit	Guest @ 0.25 spaces/unit	Total
3 bed	44	66	22	11	99
4 bed	12	18	6	3	27
Total	56	84	28	14	126
Res. ADA Parking (2% of total units)	1				
Guest ADA Parking (5% of total guest sp.)	1				
Total ADA Parking	3				
ADA Van (1 sp/8 ADA Stalls)	1				
Required Spaces:	126				
Provided Spaces:					
Garage:	112				
* Open	26				
Total:	138				

* Note: Some ADA parking is included in open parking stall count.



INDEX MAP
SCALE: 1" = 800'

DESIGNED: DRAFTED: CHECKED: JFukumitsu	LEGAL DESCRIPTION: THAT PORTION OF RANCHO SAN FRANCISCO, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS SHOWN IN MAP RECORDED IN BOOK 1 PAGES 521, PAGES 522 OF PATENTS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.	OWNER/DEVELOPER: FIVEPOINT NEWHALL LAND 25124 SPRINGFIELD COURT SUITE 300 VALENCIA, CA 91355 TELEPHONE: (661) 255–4000 REPRESENTATIVE : MR. MILES HELFRICH	REGISTERED PROFESSIONAL ENGINEER JASON H. FUKUMITSU No. 40695 CIVIL STATE OF CALIFORNIA	PLANS PREPARED BY: HUNSAKER & ASSOCIATES LOS ANGELES, INC. PLANNING ▪ ENGINEERING ▪ SURVEYING 26074 Avenue Hall, Ste 23 ▪ Valencia, CA 91355 PH: (661) 294-2211 ▪ FX: (661) 294-9890 JASON H. FUKUMITSU DATE	MAJOR LAND DIVISION VESTING TENTATIVE TRACT MAP NO. 53295 EXHIBIT "A" IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES STATE OF CALIFORNIA	SCALE: AS SHOWN DATE: 11/04/2021 JOB No. 0015–035–036 SHEET 13 OF 14 SHEETS



SCHOOL

SCHOOL	
Total Site Area	10.3 AC

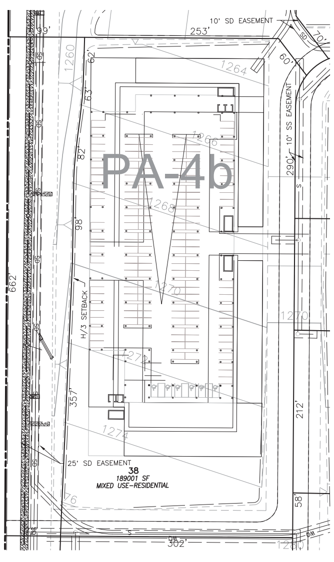
The School shown is for illustration purposes only, final school site plan to be developed in a later phase.
Lot numbers 144, 145, 149, 150, 151 are combined into one lot for the school.

NOTES:

1. ALL PERIMETER WALLS SHALL HAVE PEDESTRIAN ACCESS GATES LOCATED TO SATISFACTION OF THE FIRE DEPARTMENT.
2. ALL DRIVE AISLES SHALL PROVIDE A MINIMUM OF 32 FOOT CENTERLINE TURNING RADIUS.
3. FIRE ACCESS WILL BE PROVIDED TO WITHIN 150' OF ALL EXTERIOR WALLS.

LEGEND

100	LOT NO.
PA-4a	PLANNING AREA NUMBER
	VTTM 53295 BOUNDARY
	RIGHT OF WAY
225'	PROPOSED LOT LINE
	PROPOSED EASEMENT
	EXISTING EASEMENT
SD	PROPOSED STORM DRAIN
S	PROPOSED SEWER
	H/2 & H/3 SETBACK LINE
950	PROPOSED CONTOUR
	DAYLIGHT LINE
310'	LINE OF SIGHT LINE OF SIGHT EASEMENT
	PROPOSED DRIVEWAY
	PRIVATE DRIVE AND FIRE LANE
	EXISTING OIL WELL
X	PARKING COUNT
	TRASH ENCLOSURE
SD	STORM DRAIN MANHOLE
3	COVERED PARKING (NUMBER OF SPACES IN BOX)



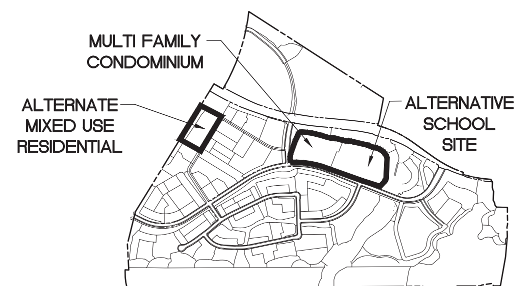
PA-4b ALTERNATE

LOT 41	
Condominium in Mixed-Use Zone	
Land Use:	MU-Residential
Total Site Acreage:	7.8 Acres
Total Residential Units:	309 *
Number of Buildings:	1 Building
Max Height:	55'
Parking Required Residential:	697 Spaces
Total Parking Provided*:	697 Spaces
Handicap Parking:	14 Spaces (10 assigned + 4 unassigned) 2% of Total assigned stalls per CBC 1109A.3 + 5% of total unassigned stalls per CBC 1109A.5 (Guest Parking)
Handicap Van-Accessible:	2 Spaces (1 assigned + 1 unassigned) 1 Space/8 Handicap PS

* 110 dwelling units on PA-9c and PA-9d were relocated to PA-4b with the addition of the school site in this location.

PA-4b ALTERNATE

LOT 41	
COMMERCIAL	
Land Use:	MU-COMM
Total Site Acreage:	3.9 Acres
Total Sq. Ft.:	17,025 s.f.
Total Retail Units:	
Total Office Sq. Ft.:	
Total Office Units:	
Number of Buildings:	1 Building
Max Height:	55'
Parking Required Commercial:	69 Spaces
Total Required Parking:	69 Spaces
Total Parking Provided*:	69 Spaces
Handicap Parking**:	7 Spaces Per CBC Table 11B-208.2
Handicap Van-Accessible**:	2 Spaces 1 Space/6 Handicap PS



INDEX MAP

SCALE: 1" = 800'

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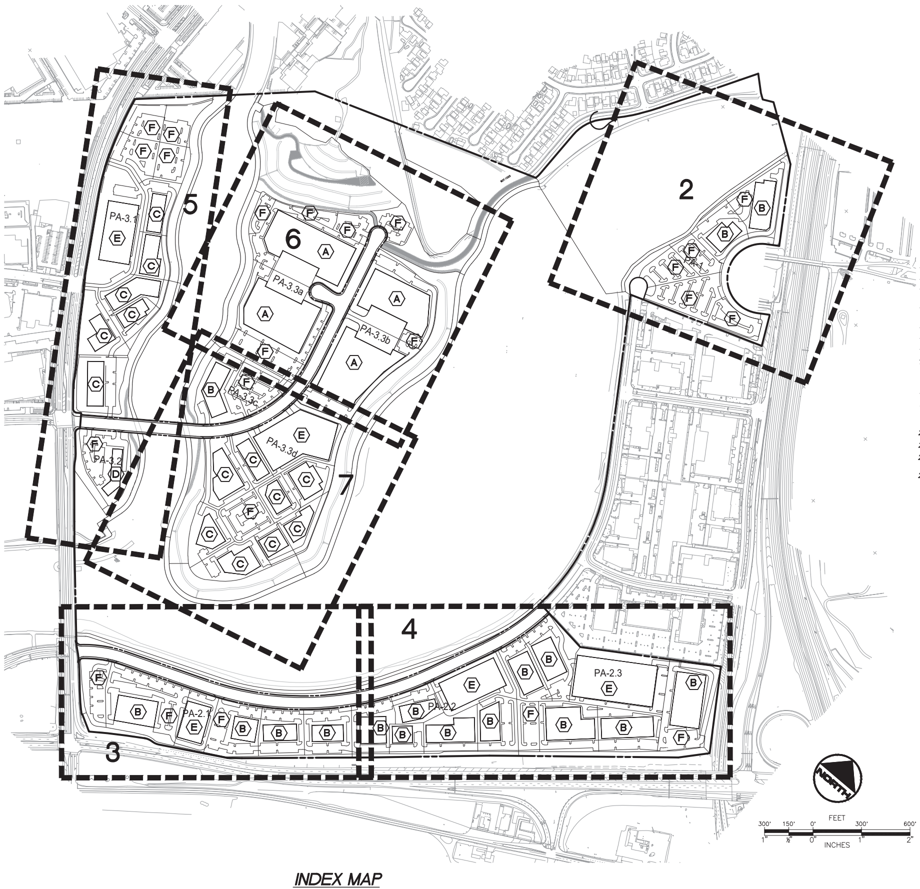
G:\Newhall Ranch\53295 Entrada\Tentative\HES043-14_Exh A.dwg Plotted on Dec 22, 2021-11:54am by jongs

APPENDIX B: VALENCIA COMMERCE CENTER SITE PLAN



INDEX MAP

GENERAL NOTES:

1. GRADE ELEVATIONS SHOWN ON THE VTPM ARE APPROXIMATE. THE ELEVATIONS MAY CHANGE BY 10 FEET. ELEVATION CHANGES MAY BE GREATER THAN 10 FEET BUT ONLY IF DETERMINED BY DPW AND DRP THAT THE REVISIONS ARE CONSISTENT WITH THE INTENT OF THE SUBDIVISION MAP APPROVAL.
2. LOT LINES CAN BE ADJUSTED PROVIDED NO ADDITIONAL DEVELOPABLE LOTS ARE CREATED. THE DEGREE OF ADJUSTMENT SHALL BE CONSISTENT WITH THE INTENT OF THE SUBDIVISION MAP APPROVAL, THE SUBDIVISION MAP ACT.
3. ALIGNMENT AND GEOMETRICS OF STREETS AND TRAILS ARE APPROXIMATE. ADJUSTMENTS TO STREETS CAN BE MADE PROVIDED THE DEPARTMENT OF PUBLIC WORKS AND DRP DETERMINE THAT THE ADJUSTMENTS ARE CONSISTENT WITH THE INTENT OF THE SUBDIVISION APPROVAL. ADJUSTMENTS TO TRAILS CAN BE MADE WITH APPROVAL BY DRP AND THE PARKS AND RECREATION DEPARTMENT.
4. BUILDING FOOTPRINTS THAT ARE SHOWN ON THE SUBDIVISION MAP OR ACCOMPANYING SITE PLAN ARE ONLY FOR ILLUSTRATIVE PURPOSES. ACTUAL BUILDING LOCATIONS AND FOOTPRINTS MAY VARY AND WILL BE REVIEWED DURING PLOT PLAN APPROVAL AND SHALL BE GRANTED PROVIDED THE PROPOSED BUILDING SATISFIES ALL EXISTING CODES AND ORDINANCES.
5. PERMISSION IS REQUESTED TO FILE "LARGE LOT" TRACT MAPS OF 20 ACRES OR MORE (WITHOUT IMPROVEMENTS) AS SPECIFIED IN THE COUNTY SUBDIVISION CODE.
6. THE RECORDATION OF A "LARGE LOT" PARCEL MAP WHERE ALL PARCELS ARE LARGER THAN 20 ACRES SHALL NOT REQUIRE THE OBLIGATION OF CONSTRUCTING IMPROVEMENTS OR INFRASTRUCTURE AS MAY BE OTHERWISE REQUIRED FOR THE SUBDIVISION, EXCEPT AS MAY BE REQUIRED BY CHAPTER 21.32 OF THE SUBDIVISION CODE.
7. THE RECORDATION OF A "LARGE LOT" PARCEL MAP SHALL BE CONSIDERED THE FILING OF THE FIRST UNIT FOR THE PURPOSE OF TIME EXTENSIONS PURSUANT TO THE SUBDIVISION MAP ACT. HOWEVER, THE RECORDATION OF A "LARGE LOT" PARCEL MAP SHALL NOT REQUIRE FULFILLMENT OF INFRASTRUCTURE REQUIREMENTS—IF CONSISTENT WITH THE COUNTY SUBDIVISION ORDINANCE—NOR THE DEDICATION OF PARKLAND OR IN LIEU PARK FEES.
8. PERMISSION IS REQUESTED FOR UNIT PHASING.
9. PERMISSION IS REQUESTED TO COMBINE LOTS.
10. PERMISSION IS REQUESTED TO RECORD ADDITIONAL OPEN SPACE LOTS.
11. PERMISSION IS REQUESTED TO ADD NON DEVELOPABLE LOTS FOR PRIVATE DRIVEWAY PURPOSES.
12. PERMISSION IS REQUESTED TO RECORD ADDITIONAL UTILITY LOTS PROVIDED MAINTENANCE EASEMENTS ARE GRANTED TO THE SATISFACTION OF THE DRP.
13. THE LOCATIONS OF APPURTENANT STRUCTURES (E.G., PASEOS, PEDESTRIAN BRIDGES, TRANSIT SHELTERS, WATER QUALITY BASINS, WATER TANKS, ETC.) MAY BE RELOCATED TO THE SATISFACTION OF DPW AND DRP.
14. PROPOSED RETAIL AND OFFICE FLOOR AREA ARE INTERCHANGEABLE IF THE REQUIRED PARKING IS PROVIDED.
15. PERMISSION TO RECORD JOINT ACCESS EASEMENTS (20' WIDE) AS LOTS REQUESTED.
16. REQUEST PERMISSION TO MASS/BULK GRADE.
17. PROPOSED STREET GRADING IS APPROXIMATE ONLY AND SUBJECT TO ADJUSTMENTS PENDING DETERMINATION OF FINAL DEVELOPMENT LAYOUT AND PLANS.
18. RIGHT OF WAY RETURN RADII OF 13 FT. AT ALL LOCAL STREET INTERSECTIONS AND 27 FT WHERE ALL PLANNED HIGHWAYS INTERSECT OR WHERE ONE OF THE ROADS SERVES A COMMERCIAL OR INDUSTRIAL DEVELOPMENT.
19. MODIFIED STREET CROSS-SECTIONS AS SHOWN ON VESTING TENTATIVE TRACT MAP ARE REQUESTED. HOWEVER, PERMISSION IS SOUGHT TO CONSTRUCT STANDARD AND ALTERNATE STREET CROSS-SECTIONS AT THE DISCRETION OF THE SUBDIVIDER.
20. ALL DIMENSIONS SHOWN ARE APPROXIMATE.
21. TOPO COMPILED FROM AERIAL DATA FLOWN 12/2013.
22. PERMISSION IS REQUESTED TO VACATE EXCESS RIGHT OF WAY ON LIVE OAK ROAD WITHIN LOTS 24, 25, 27, 42 AND 104.
23. GRADING OF FINAL FLAT BUILDING PADS SHALL BE ALLOWED ON THE PROJECT ROUGH GRADING PLANS CONSISTENT WITH "SECTION J109.5 DISPOSAL" OF APPENDIX J OF THE LOS ANGELES COUNTY BUILDING CODE. THE LOCATION AND ELEVATION OF THE BUILDING PADS WILL BE CONSISTENT WITH THE APPROVED VESTING TENTATIVE TRACT MAP OR THE MOST CURRENT APPROVED EXHIBIT "A" SITE PLAN. THE FOLLOWING REQUIREMENTS SHALL APPLY TO THE ROUGH GRADING PLAN: ALL FLAT PADS WILL DRAIN TO AN APPROVED DRAINAGE FACILITY OR PUBLIC STREET IN A CONTROLLED MANNER AND CONSISTENT WITH THE APPROVED PROJECT HYDROLOGY OR EROSION CONTROL PLAN AS DETERMINED BY THE LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS. THE USE OF SWALES, BERMS, OR OTHER DRAINAGE FACILITIES SHALL BE UTILIZED AS NECESSARY TO PREVENT DRAINAGE ACROSS PROPERTY LINES.

NON-RESIDENTIAL SITE DEVELOPMENT STANDARDS

STREET FRONTAGE	LOT REQUIREMENTS			
	MINIMUM FRONT PARKING SETBACK	MINIMUM FRONT BUILDING SETBACK	MINIMUM SIDE PARKING SETBACK (CORNER LOT)	MINIMUM SIDE BUILDING SETBACK (CORNER LOT)
COMMERCE CENTER DRIVE	33.5'	65'	20'	25'
INTERIOR STREETS	15' [1]	40'	15' [1]	25'

SETBACKS ARE MEASURED FROM CURB OF ROADWAY.
1. 20' AT SIDEWALK CONDITIONS

SURVEY NOTES:

VERTICAL DATUM:
LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS BENCHMARK DESCRIBED AS FOLLOWS: LACDPW L5402 RND HD SPK IN LOWER CONC HDWL @ N END 24 FT W/O C/L THE OLD RD (W RDWY) AND 0.6 MI S/O HENRY MAYO DR @ MI MKR #6.25 NEWHALL QUAD, 1995 ADJUSTMENT (NAVD 1988) ELEVATION = 1031.951

THERE IS APPROXIMATELY 2.3 FEET DIFFERENCE BETWEEN PREVIOUS COUNTY OF LOS ANGELES DATUMS BASED UPON NAVD 1929 AND NAVD 1988 (NAVD 1988 IS 2.3 FEET HIGHER THAN NAVD 1929).

SPECIAL NOTES:

1. WATER QUALITY BASINS WILL PROVIDE FOR TREATMENT OF STORM WATER RUN OFF.
2. THE WATER QUALITY BASINS SHALL BE DEDICATED TO THE COUNTY WHEN COMPLETED AND ACCEPTED.
3. PROPOSED RECLAIMED WATER LINES WILL BE LOCATED IN PUBLIC STREETS AND TRAILS.

NOTES:

1. ALL PERIMETER WALLS SHALL HAVE PERSONNEL PEDESTRIAN ACCESS GATES LOCATED TO THE SATISFACTION OF THE FIRE DEPARTMENT (NO VEHICULAR ACCESS).
2. ALL DRIVE AISLES SHALL PROVIDE A MINIMUM OF 32 FOOT CENTERLINE TURNING RADIUS.
3. FIRELANE TO BE DEDICATED BY SEPARATE INSTRUMENT BASED UPON THE FINAL SITE PLAN APPROVAL.
4. FIRE ACCESS WILL BE PROVIDED TO WITHIN 150' OF ALL EXTERIOR WALLS.

UTILITY PROVIDERS

PHONE: AT&T

GAS: SOUTHERN CALIFORNIA GAS COMPANY

ELECTRIC: SOUTHERN CALIFORNIA EDISON

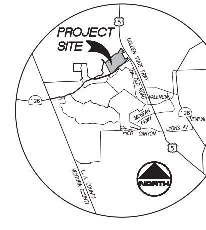
SEWER TREATMENT: LA COUNTY SANITATION

DISTRICT SCHOOLS: CASTAIC UNION SCHOOL DISTRICT

WATER: SANTA CLARITA VALLEY WATER AGENCY

POLICE PROTECTION: LA COUNTY SHERIFF

FIRE PROTECTION: LA COUNTY FIRE



VICINITY MAP

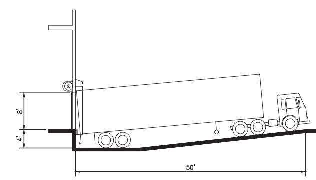
NOT TO SCALE

LEGEND

2 SHEET NUMBER
A INDUSTRIAL
B OFFICE
C OFFICE (4 LEVELS)
D RETAIL
E STRUCTURE PARKING
F SURFACE PARKING

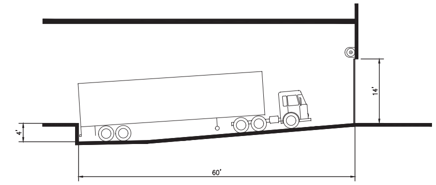
SHEET INDEX

SHEET No.	DESCRIPTION
1	TITLE SHEET, NOTES, STATISTICS
2	PLANNING AREA 1
3	PLANNING AREA 2.1
4	PLANNING AREAS 2.2 AND 2.3
5	PLANNING AREA 3.1 AND 3.2
6	PLANNING AREA 3.3a AND 3.3b
7	PLANNING AREA 3.3c AND 3.3d



TYPE "B" EXTERIOR LOADING WELL - SECTION

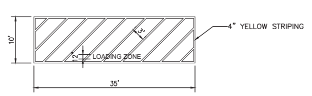
MIN. DIMENSIONS: 10' W x 35' D x 14' H
NOT TO SCALE



TYPE "C" INTERIOR LOADING WELL - SECTION

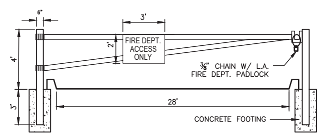
MIN. DIMENSIONS: 10' W x 35' D x 14' H
NOT TO SCALE

DRP REVISION RECEIVED
EXHIBIT "A"
FEBRAURY 1, 2022



TYPE "A" TYPICAL LOADING ZONE - PLAN

MIN. DIMENSIONS: 10' W x 35' D x 14' H
NOT TO SCALE

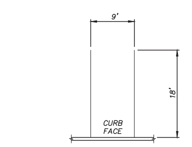


EMERGENCY ACCESS GATE DETAIL

NOT TO SCALE

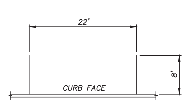
PROJECT SUMMARY:

GROSS AREA	328.8 Acres
TOTAL LOTS	104
EXISTING ZONING	M-1.5-DP, M-1.5
PROPOSED ZONING	M-1.5-DP, M-1.5
EXISTING COUNTYWIDE GENERAL PLAN DESIGNATION:	I O
PROPOSED COUNTYWIDE GENERAL PLAN DESIGNATIONS:	I O



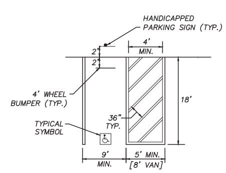
TYPICAL PERPENDICULAR PARKING

NOT TO SCALE



TYPICAL PARALLEL PARKING

NOT TO SCALE



HANDICAP PARKING

NOT TO SCALE

PARKING SPACE SUMMARY TABLE

PLANNING AREA	LOT NO.	STREET FRONTAGE	NO. OF Buildings	Retail Building S.F.	Office Building S.F.	Industrial Building S.F.	Total Building S.F.	Required Retail Parking Spaces (1/250 S.F.)	Required Office Parking Spaces (1/400 S.F.)	Required Industrial Parking Spaces (1/500 S.F.)	Total Parking Spaces Required	Retail Parking Spaces Provided	Office Parking Spaces Provided	Total Industrial Spaces Provided	Total Parking Spaces Provided
1	92–97	THE OLD ROAD	2	–	174300	–	174300	–	436	–	436	–	479	–	479
2.1	68–73	HANCOCK PARKWAY	4	–	302600	–	302600	–	757	–	757	–	757	–	757
2.2	77–82	HANCOCK PARKWAY	5	–	368400	–	368400	–	921	–	921	–	921	–	921
2.3	83–89	HANCOCK PARKWAY	5	–	649800	–	649800	–	1625	–	1625	–	1625	–	1625
3.1	2–12	COMMERCE CENTER DRIVE	6	–	581200	–	581200	–	1453	–	1453	–	1453	–	1453
3.2	17	COMMERCE CENTER DRIVE	1	18000	–	–	18000	72	–	–	72	82	–	–	82
3.3a	29–35	FRANKLIN PARKWAY	2	–	–	247800	247800	–	–	496	496	–	–	496	496
3.3b	28,38,39	FRANKLIN PARKWAY	2	–	–	224500	224500	–	–	449	449	–	–	449	449
3.3c	43,44	FRANKLIN PARKWAY	1	–	66300	–	66300	–	166	–	166	–	201	–	201
3.3d	47–55,59	FRANKLIN PARKWAY	8	–	767100	–	767100	–	1918	–	1918	–	1918	–	1918
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TOTAL	–	–	36	18000	2909700	472300	3400000	72	7276	945	8293	82	7354	945	8381

NOTE:
1. EASEMENTS FOR INGRESS / EGRESS WILL BE BASED UPON FINAL SITE PLAN AND DEDICATED ON THE FINAL TRACT MAP.

2. ALL HANDICAP SPACES ARE VAN ACCESSIBLE

DESIGNED:
DRAFTED:
CHECKED:
JFukumitsu

LEGAL DESCRIPTION:
THAT CERTAIN REAL PROPERTY SITUATED IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, KNOWN AS ASSESSOR PARCELS 2866-002-001, 2866-002-007, 2866-002-045, 2866-002-052, 2866-002-061, 2866-002-063, AND 3271-001-038, BEING A PORTION OF THE RANCHO SAN FRANCISCO, AS PER MAP RECORDED IN BOOK 1 PAGES 521 AND 522 OF PATENTS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

OWNER/DEVELOPER:
FIVEPOINT
NEWHALL LAND
25124 SPRINGFIELD COURT SUITE 300
VALENCIA, CA 91355
TELEPHONE: (661) 255-4000
REPRESENTATIVE : MR. MILES HELFRICH

REGISTERED PROFESSIONAL ENGINEER
JASON H. FUKUMITSU
No. 40695
CIVIL
STATE OF CALIFORNIA

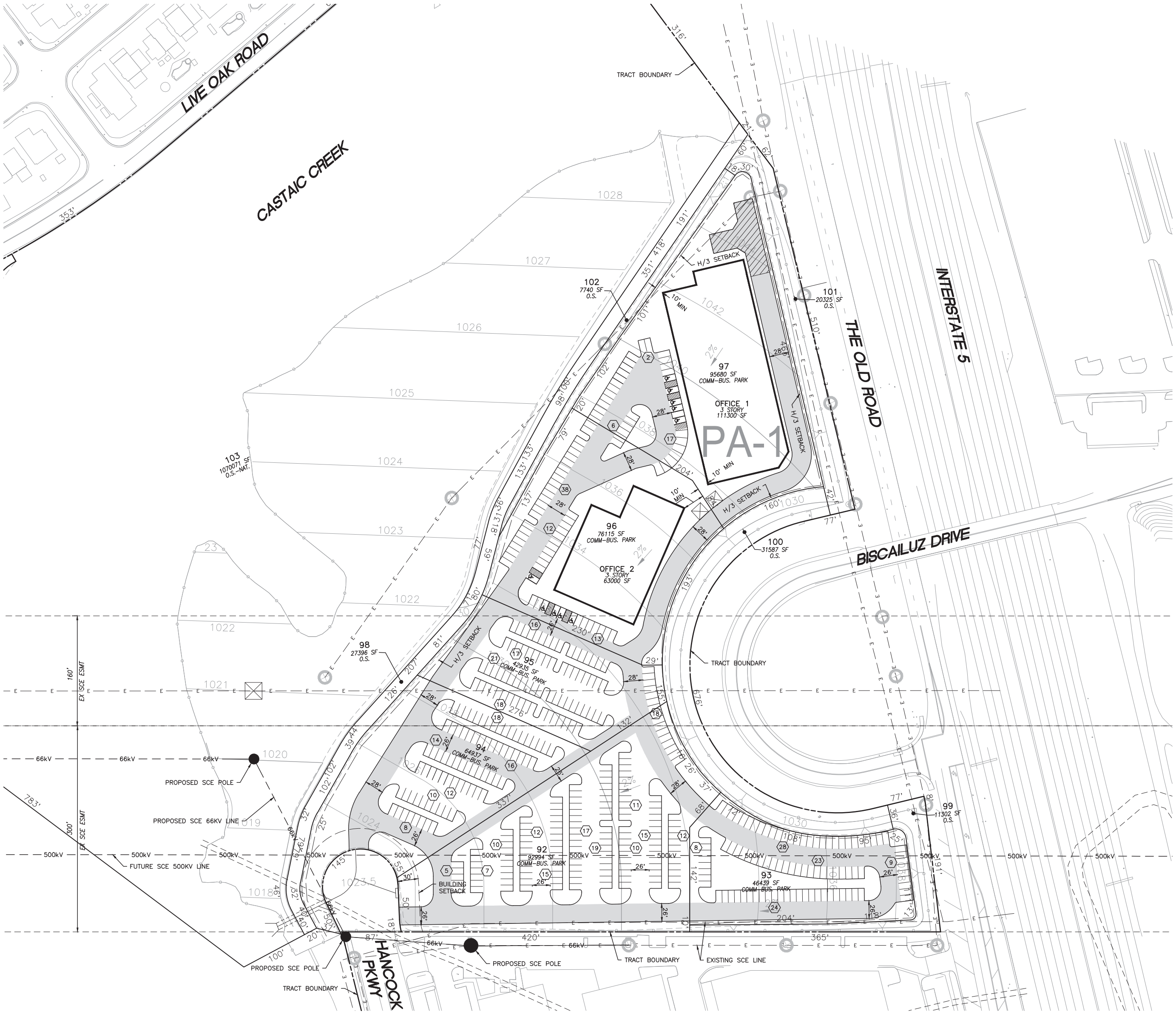
PLANS PREPARED BY:
HUNSAKER & ASSOCIATES
LOS ANGELES, INC.
PLANNING ▪ ENGINEERING ▪ SURVEYING
26074 Avenue Hall, Ste 23 ▪ Valencia, CA 91355
PH: (661) 294-2211 ▪ FX: (661) 294-9890
JASON H. FUKUMITSU DATE

MAJOR LAND DIVISION
VESTING TENTATIVE PARCEL MAP NO. 18108
EXHIBIT "A"

IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES STATE OF CALIFORNIA

SCALE: AS SHOWN
DATE: 11/04/2021
JOB No. 0015-043-020
SHEET 1 OF 7 SHEETS

Plan No. HCC093-01

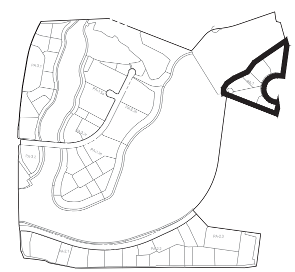


LEGEND

- 100 — LOT NO.
- PA-2.1 — PLANNING AREA NUMBER
- VTPM 18108 BOUNDARY
- RIGHT OF WAY
- 225' — PROPOSED LOT LINE
- PROPOSED EASEMENT
- EXISTING EASEMENT
- H/2 & H/3 SETBACK LINE
- BUILDING/PARKING SETBACK LINE
- 950 — PROPOSED CONTOUR
- DAYLIGHT LINE
- PROPOSED DRIVEWAY
- PRIVATE DRIVE AND FIRE LANE
- FIRE LANE ONLY
- SD — PROPOSED STORM DRAIN
- E — EXISTING SCE POWER LINE
- 66kV — PROPOSED 66KV SCE POWER LINE
- 500kV — FUTURE 500KV SCE POWER LINE
- EXISTING SCE POLE
- PROPOSED SCE POLE
- EXISTING WELL
- PARKING COUNT
- TRASH ENCLOSURE
- STORM DRAIN MANHOLE
- EXISTING WATER WELL

PA-1

LOTS 92, 93, 94, 95, 96, 97	
TOTAL LOT ACREAGE:	9.6 ACRES
TOTAL SITE AREA:	419100 S.F.
LAND USE:	COMMERCIAL–BUSINESS PARK
OFFICE - THREE STORY	
TOTAL COMMERCIAL SQ. FT:	174300 S.F.
NUMBER OF BUILDINGS:	2
MAX HEIGHT:	50'
PARKING SUMMARY:	
PARKING REQUIRED COMMERCIAL:	436
SURFACE PARKING PROVIDED:	479
TOTAL PARKING PROVIDED:	479
ADA PARKING (2% OF TOTAL):	10
ADA VAN (1SP/8 ADA STALLS):	2



KEY MAP
SCALE: 1" = 800'

NORTH

FEET
60' 30' 0' 60' 120'
INCHES
1" 0" 1" 2"

DESIGNED:

DRAFTED:

CHECKED: JFukumitsu

LEGAL DESCRIPTION:
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JASON H. FUKUMITSU DATE

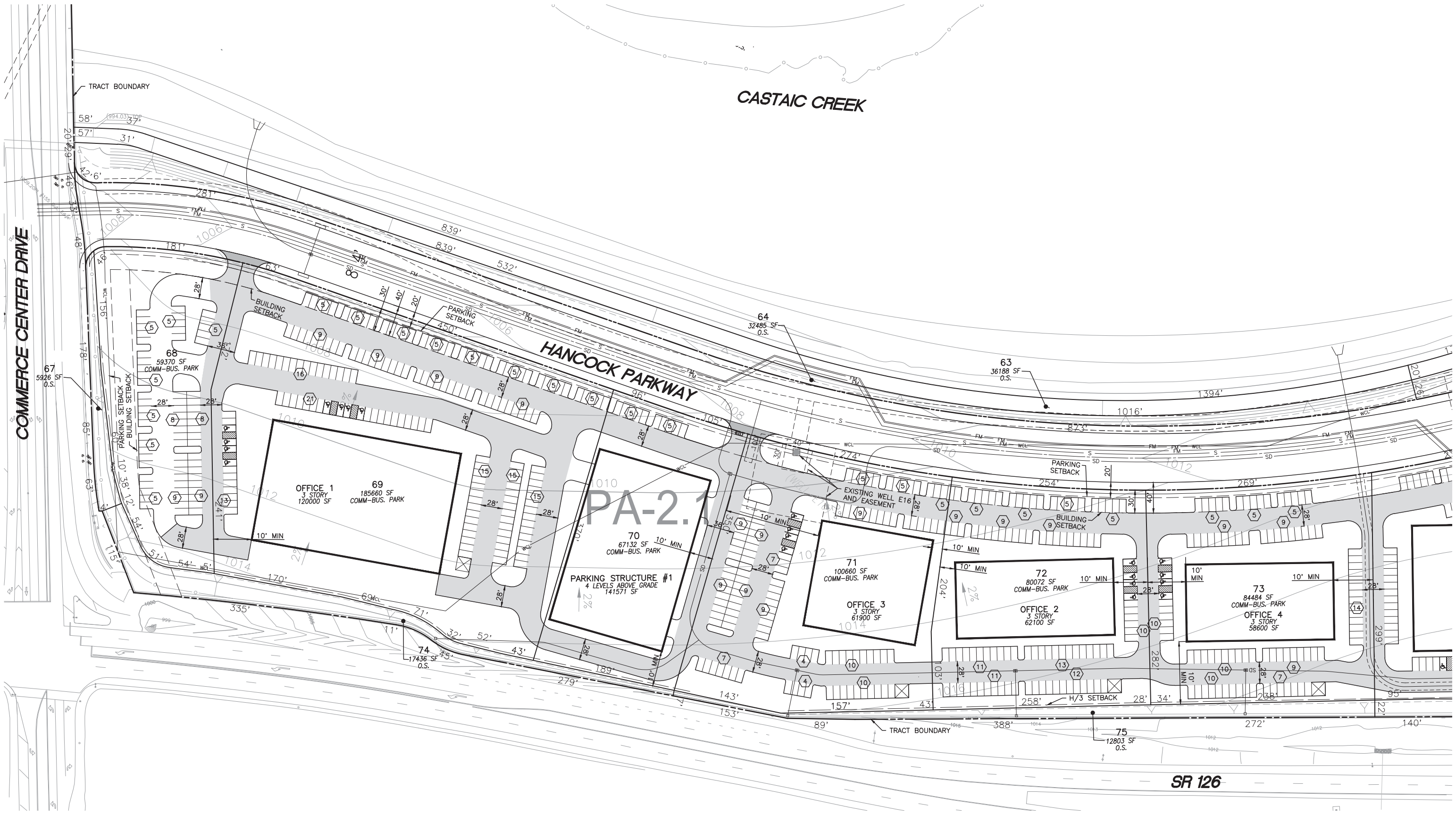
MAJOR LAND DIVISION
VESTING TENTATIVE PARCEL MAP NO. 18108
EXHIBIT "A"

IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES STATE OF CALIFORNIA

SCALE: AS SHOWN
DATE: 11/04/2021
JOB No. 0015–043–020

SHEET 2 OF 7 SHEETS

Plan No. HCC093–02



LEGEND

- 100 — LOT NO.
- PA-2.1 — PLANNING AREA NUMBER
- VTPM 18108 BOUNDARY
- RIGHT OF WAY
- 225' — PROPOSED LOT LINE
- PROPOSED EASEMENT
- EXISTING EASEMENT
- H/2 & H/3 SETBACK LINE
- BUILDING/PARKING SETBACK LINE
- 950 — PROPOSED CONTOUR
- DAYLIGHT LINE
- PROPOSED DRIVEWAY
- PRIVATE DRIVE AND FIRE LANE
- FIRE LANE ONLY
- SD — PROPOSED STORM DRAIN
- E — EXISTING SCE POWER LINE
- 66kV — PROPOSED 66KV SCE POWER LINE
- 500kV — FUTURE 500KV SCE POWER LINE
- EXISTING SCE POLE
- PROPOSED SCE POLE
- EXISTING WELL
- X — PARKING COUNT
- TRASH ENCLOSURE
- STORM DRAIN MANHOLE
- EXISTING WATER WELL

PA-2.1

LOTS 68, 69, 71, 72, 73	
TOTAL LOT ACREAGE:	11.7 ACRES
TOTAL SITE AREA:	510246 S.F.
LAND USE:	COMMERCIAL–BUSINESS PARK
OFFICE - THREE STORY	
TOTAL COMMERCIAL SQ. FT:	302600 S.F.
NUMBER OF BUILDINGS:	4
MAX HEIGHT:	50'
PARKING SUMMARY:	
PARKING REQUIRED COMMERCIAL:	757
SURFACE PARKING PROVIDED:	558
TOTAL PARKING PROVIDED:	757 *
ADA PARKING (2% OF TOTAL):	20
ADA VAN (1SP/8 ADA STALLS):	3

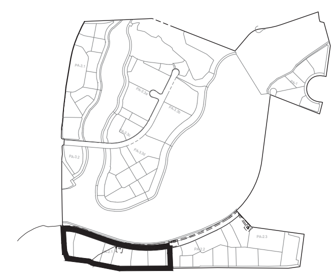
* INCLUDES 558 SPACES ON–SITE AND 199 SPACES IN PARKING STRUCTURE #1

PA-2.1

LOT 70	
TOTAL LOT ACREAGE:	1.5 ACRES
TOTAL SITE AREA:	67132 S.F.
TOTAL BUILDING SQ. FT.:	141571
LAND USE:	COMMERCIAL–BUSINESS PARK
PARKING STRUCTURE # 1	
# OF STORIES	4
NUMBER OF BUILDINGS IN LOT:	1
MAX HEIGHT:	50'
PARKING SUMMARY:	
PARKING PROVIDED:	199

NORTH

FEET: 60' 30' 0' 60' 120'
INCHES: 1" 0 1" 2"



KEY MAP
SCALE: 1" = 800'

NORTH

DESIGNED:	LEGAL DESCRIPTION:	OWNER/DEVELOPER:		PLANS PREPARED BY:		
DRAFTED:	THAT CERTAIN REAL PROPERTY SITUATED IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, KNOWN AS ASSESSOR PARCELS 2866–002–001, 2866–002–007, 2866–002–045, 2866–002–052, 2866–002–061, 2866–002–063, AND 3271–001–038, BEING A PORTION OF THE RANCHO SAN FRANCISCO, AS PER MAP RECORDED IN BOOK 1 PAGES 521 AND 522 OF PATENTS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.	FIVEPOINT® NEWHALL LAND 25124 SPRINGFIELD COURT SUITE 300 VALENCIA, CA 91355 TELEPHONE: (661) 255–4000 REPRESENTATIVE : MR. MILES HELFRICH	REGISTERED PROFESSIONAL ENGINEER JASON H. FUKUMITSU No. 40695 CIVIL STATE OF CALIFORNIA	HUNSAKER & ASSOCIATES LOS ANGELES, INC. PLANNING ▪ ENGINEERING ▪ SURVEYING 26074 Avenue Hall, Ste 23 ▪ Valencia, CA 91355 PH: (661) 294-2211 ▪ FX: (661) 294-9890 JASON H. FUKUMITSU DATE	MAJOR LAND DIVISION VESTING TENTATIVE PARCEL MAP NO. 18108 EXHIBIT "A" IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES STATE OF CALIFORNIA	SCALE: AS SHOWN DATE: 11/04/2021 JOB No. 0015–043–020 SHEET 3 OF 7 SHEETS
CHECKED: JFukumitsu						

Plan No. HCC093–03

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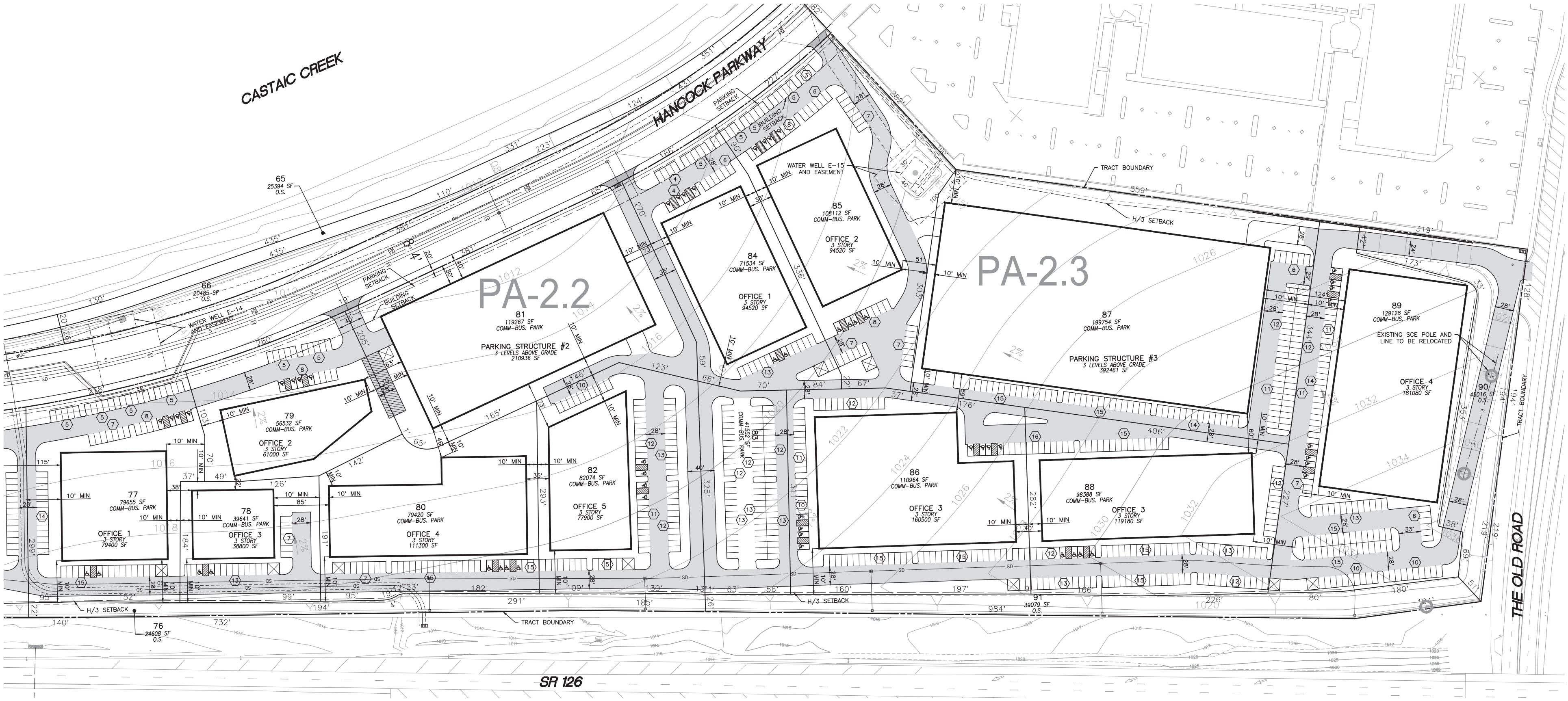


LEGEND

- 100 — LOT NO.
- PA-2.1 — PLANNING AREA NUMBER
- VTPM 18108 BOUNDARY
- RIGHT OF WAY
- 225' — PROPOSED LOT LINE
- PROPOSED EASEMENT
- EXISTING EASEMENT
- H/2 & H/3 SETBACK LINE
- BUILDING/PARKING SETBACK LINE
- 950 — PROPOSED CONTOUR
- DAYLIGHT LINE
- PROPOSED DRIVEWAY
- PRIVATE DRIVE AND FIRE LANE
- FIRE LANE ONLY
- SD — PROPOSED STORM DRAIN
- E — EXISTING SCE POWER LINE
- 66kV — PROPOSED 66KV SCE POWER LINE
- 500kV — FUTURE 500KV SCE POWER LINE
- EXISTING SCE POLE
- PROPOSED SCE POLE
- EXISTING WELL
- X — PARKING COUNT
- TRASH ENCLOSURE
- STORM DRAIN MANHOLE
- EXISTING WATER WELL

PA-2.2

LOTS 77, 78, 79, 80, 82	
TOTAL LOT ACREAGE:	7.8 ACRES
TOTAL SITE AREA:	337322 S.F.
LAND USE:	COMMERCIAL–BUSINESS PARK
OFFICE - THREE STORY	
TOTAL COMMERCIAL SQ. FT:	368400 S.F.
NUMBER OF BUILDINGS:	5
MAX HEIGHT:	50'
PARKING SUMMARY:	
PARKING REQUIRED COMMERCIAL:	921
SURFACE PARKING PROVIDED:	202
TOTAL PARKING PROVIDED:	921 *
ADA PARKING (2% OF TOTAL):	20
ADA VAN (1SP/8 ADA STALLS):	3

* INCLUDES 202 SPACES ON–SITE AND 719 SPACES IN PARKING STRUCTURE #2.

PA-2.3

LOTS 83, 84, 85, 86, 88, 89	
TOTAL LOT ACREAGE:	12.8 ACRES
TOTAL SITE AREA:	559678 S.F.
LAND USE:	COMMERCIAL–BUSINESS PARK
OFFICE - THREE STORY	
TOTAL COMMERCIAL SQ. FT:	649800 S.F.
NUMBER OF BUILDINGS:	5
MAX HEIGHT:	50'
PARKING SUMMARY:	
PARKING REQUIRED COMMERCIAL:	1625
SURFACE PARKING PROVIDED:	551
TOTAL PARKING PROVIDED:	1625 *
ADA PARKING (2% OF TOTAL):	34
ADA VAN (1SP/8 ADA STALLS):	4

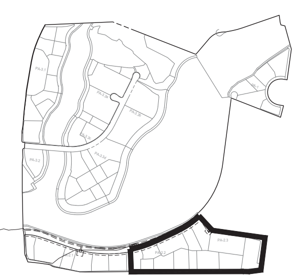
* INCLUDES 551 SPACES ON–SITE AND 1074 SPACES IN PARKING STRUCTURE #3.

PA-2.2

LOT 81	
TOTAL LOT ACREAGE:	2.7 ACRES
TOTAL SITE AREA:	119267 S.F.
TOTAL BUILDING SQ. FT.:	210936
LAND USE:	COMMERCIAL–BUSINESS PARK
PARKING STRUCTURE # 2	
# OF STORIES	3
NUMBER OF BUILDINGS IN LOT:	1
MAX HEIGHT:	50'
PARKING SUMMARY:	
PARKING PROVIDED:	719

PA-2.3

LOT 87	
TOTAL LOT ACREAGE:	4.6 ACRES
TOTAL SITE AREA:	199754 S.F.
TOTAL BUILDING SQ. FT.:	392461
LAND USE:	COMMERCIAL–BUSINESS PARK
PARKING STRUCTURE # 3	
# OF STORIES	3
NUMBER OF BUILDINGS IN LOT:	1
MAX HEIGHT:	50'
PARKING SUMMARY:	
PARKING PROVIDED:	1074



KEY MAP

SCALE: 1" = 800'

NORTH

DESIGNED:

DRAFTED:

CHECKED: JFukumitsu

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VALENCIA, CA 91355
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REPRESENTATIVE : MR. MILES HELFRICH

REGISTERED PROFESSIONAL ENGINEER
JASON H. FUKUMITSU
No. 40695
CIVIL
STATE OF CALIFORNIA

PLANS PREPARED BY:

HUNSAKER & ASSOCIATES
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PLANNING ▪ ENGINEERING ▪ SURVEYING
26074 Avenue Hall, Ste 23 ▪ Valencia, CA 91355
PH: (661) 294-2211 ▪ FX: (661) 294-9890

JASON H. FUKUMITSU DATE

MAJOR LAND DIVISION
VESTING TENTATIVE PARCEL MAP NO. 18108
EXHIBIT "A"

IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES STATE OF CALIFORNIA

SCALE: AS SHOWN
DATE: 11/04/2021
JOB No. 0015–043–020

SHEET 4 OF 7 SHEETS

Plan No. HCC093–04

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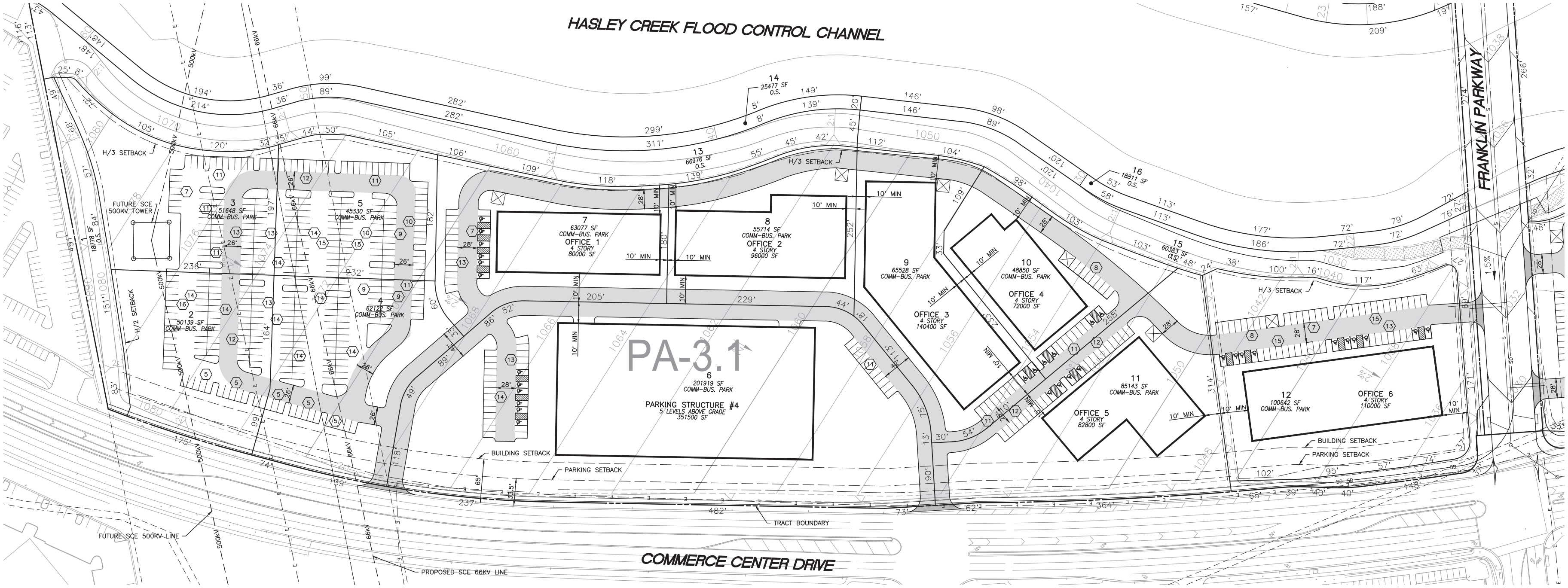

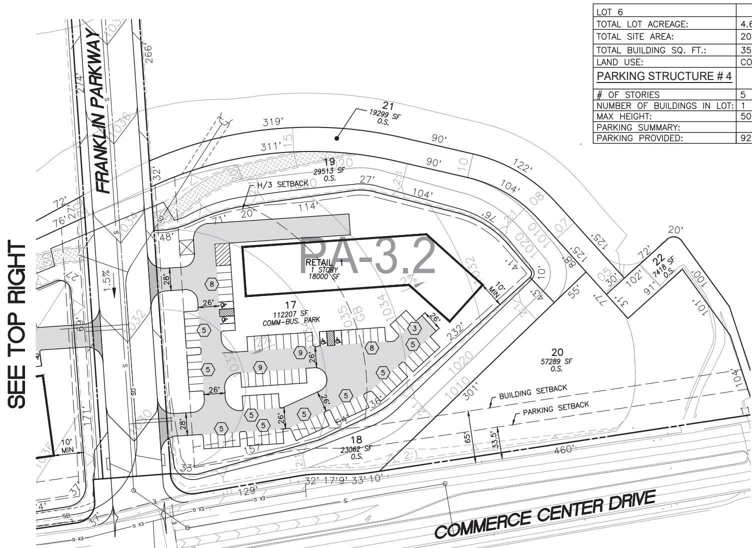

PA-3.1

LOT 6	
TOTAL LOT ACREAGE:	4.6 ACRES
TOTAL SITE AREA:	201919 S.F.
TOTAL BUILDING SQ. FT.:	351500
LAND USE:	COMMERCIAL–BUSINESS PARK
PARKING STRUCTURE # 4	
# OF STORIES	5
NUMBER OF BUILDINGS IN LOT:	1
MAX HEIGHT:	50'
PARKING SUMMARY:	
PARKING PROVIDED:	928

PA-3.1

LOTS 2, 3, 4, 5, 7, 8, 9, 10, 11, 12	
TOTAL LOT ACREAGE:	14.4 ACRES
TOTAL SITE AREA:	628193 S.F.
LAND USE:	COMMERCIAL–BUSINESS PARK
OFFICE - FOUR STORY	
TOTAL COMMERCIAL SQ. FT:	581200 S.F.
NUMBER OF BUILDINGS:	6
MAX HEIGHT:	50'
PARKING SUMMARY:	
PARKING REQUIRED COMMERCIAL:	1453
SURFACE PARKING PROVIDED:	525
TOTAL PARKING PROVIDED:	1453 *
ADA PARKING (2% OF TOTAL):	32
ADA VAN (1SP/8 ADA STALLS):	4

* INCLUDES 525 SPACES ON–SITE AND 928 SPACES IN PARKING STRUCTURE #4.

PA-3.2

LOT 17	
TOTAL LOT ACREAGE:	2.6 ACRES
TOTAL SITE AREA:	112207 S.F.
LAND USE:	COMMERCIAL–BUSINESS PARK
RETAIL - ONE STORY	
TOTAL COMMERCIAL SQ. FT:	18000
NUMBER OF BUILDINGS:	1
MAX HEIGHT:	35'
PARKING SUMMARY:	
PARKING REQUIRED COMMERCIAL:	72
SURFACE PARKING PROVIDED:	82
TOTAL PARKING PROVIDED:	82
ADA PARKING (2% OF TOTAL):	2
ADA VAN (1SP/8 ADA STALLS):	1

NORTH
FEET 60' 30' 0' 60' 120'
INCHES 1" ½" 0" 1" 2"

LEGEND

- 100 — LOT NO.
- PA-2.1 — PLANNING AREA NUMBER
- VTPM 18108 BOUNDARY
- RIGHT OF WAY
- 225' — PROPOSED LOT LINE
- PROPOSED EASEMENT
- EXISTING EASEMENT
- H/2 & H/3 SETBACK LINE
- BUILDING/PARKING SETBACK LINE
- 950 — PROPOSED CONTOUR
- DAYLIGHT LINE
- PROPOSED DRIVEWAY
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- E — EXISTING SCE POWER LINE
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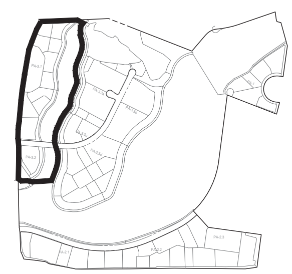
- EXISTING SCE POLE
- PROPOSED SCE POLE
- EXISTING WELL
- X — PARKING COUNT
- TRASH ENCLOSURE
- STORM DRAIN MANHOLE
- EXISTING WATER WELL

NORTH
FEET 60' 30' 0' 60' 120'
INCHES 1" ½" 0" 1" 2"



KEY MAP

SCALE: 1" = 800'

NORTH

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Plan No. HCC093–05

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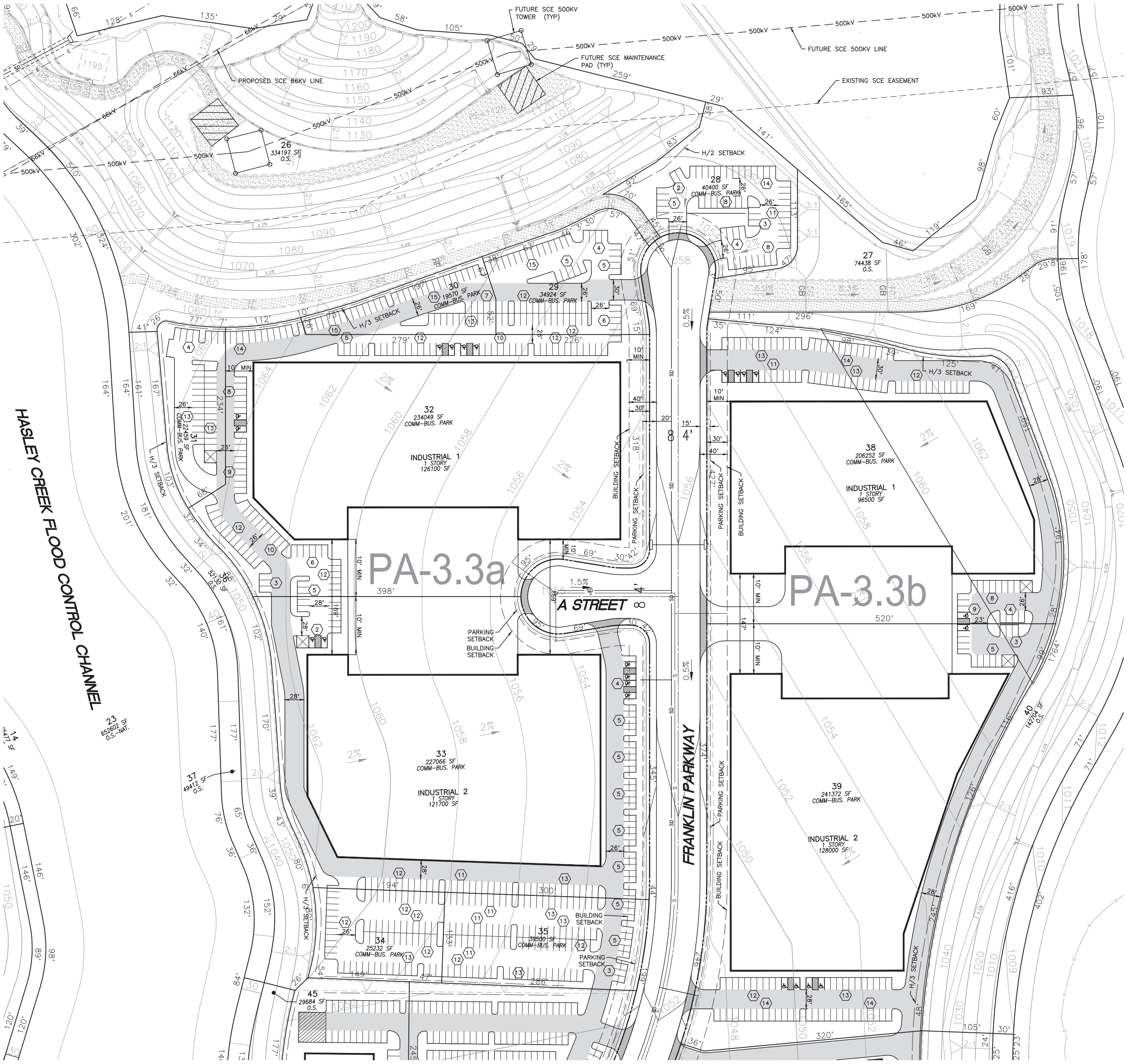


LEGEND

100	LOT NO.
PA-2.1	PLANNING AREA NUMBER
	VTPM 18108 BOUNDARY
	RIGHT OF WAY
225'	PROPOSED LOT LINE
	PROPOSED EASEMENT
	EXISTING EASEMENT
	H/2 & H/3 SETBACK LINE
	BUILDING/PARKING SETBACK LINE
950	PROPOSED CONTOUR
	DAYLIGHT LINE
	PROPOSED DRIVEWAY
	PRIVATE DRIVE AND FIRE LANE
	FIRE LANE ONLY
SD	PROPOSED STORM DRAIN
E	EXISTING SCE POWER LINE
66kV	PROPOSED 66KV SCE POWER LINE
500kV	FUTURE 500KV SCE POWER LINE
	EXISTING SCE POLE
	PROPOSED SCE POLE
	EXISTING WELL
X	PARKING COUNT
	TRASH ENCLOSURE
	STORM DRAIN MANHOLE
	EXISTING WATER WELL

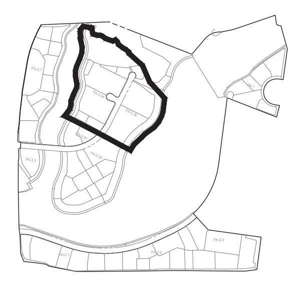
PA-3.3a

LOTS 29, 30, 31, 32, 33, 34, 35,	
TOTAL LOT ACREAGE:	13.8 ACRES
TOTAL SITE AREA:	602800 S.F.
LAND USE:	INDUSTRIAL
INDUSTRIAL - ONE STORY	
TOTAL INDUSTRIAL SQ. FT:	247800 S.F.
NUMBER OF BUILDINGS:	2
MAX HEIGHT:	35'
PARKING SUMMARY:	
PARKING REQUIRED INDUSTRIAL:	496
SURFACE PARKING PROVIDED:	496
TOTAL PARKING PROVIDED:	496
ADA PARKING (2% OF TOTAL):	12
ADA VAN (1SP/8 ADA STALLS):	2

PA-3.3b

LOTS 28, 38, 39	
TOTAL LOT ACREAGE:	11.2 ACRES
TOTAL SITE AREA:	488024 S.F.
LAND USE:	INDUSTRIAL
INDUSTRIAL - ONE STORY	
TOTAL INDUSTRIAL SQ. FT:	224500 S.F.
NUMBER OF BUILDINGS:	2
MAX HEIGHT:	35'
PARKING SUMMARY:	
PARKING REQUIRED INDUSTRIAL:	449
SURFACE PARKING PROVIDED:	200
TOTAL PARKING PROVIDED:	449 *
ADA PARKING (2% OF TOTAL):	10
ADA VAN (1SP/8 ADA STALLS):	2

* INCLUDES 145 SPACES ON-SITE, 55 SPACES IN NORTH OFFSITE PARKING LOT 28 AND 249 SPACES IN SOUTH PARKING STRUCTURE #5.



KEY MAP

SCALE: 1" = 800'

FEET 60' 30' 0' 60' 120'

INCHES 1" 2"

DESIGNED:

DRAFTED:

CHECKED: JFukumitsu

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OWNER/DEVELOPER:

FIVEPOINT

NEWHALL LAND

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VALENCIA, CA 91355

TELEPHONE: (661) 255-4000
REPRESENTATIVE : MR. MILES HELFRICH

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JASON H. FUKUMITSU DATE

MAJOR LAND DIVISION
VESTING TENTATIVE PARCEL MAP NO. 18108
EXHIBIT "A"

IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES STATE OF CALIFORNIA

SCALE:	AS SHOWN
DATE:	11/04/2021
JOB No.	0015-043-020
SHEET 6	OF 7 SHEETS

Plan No. HCC093-06

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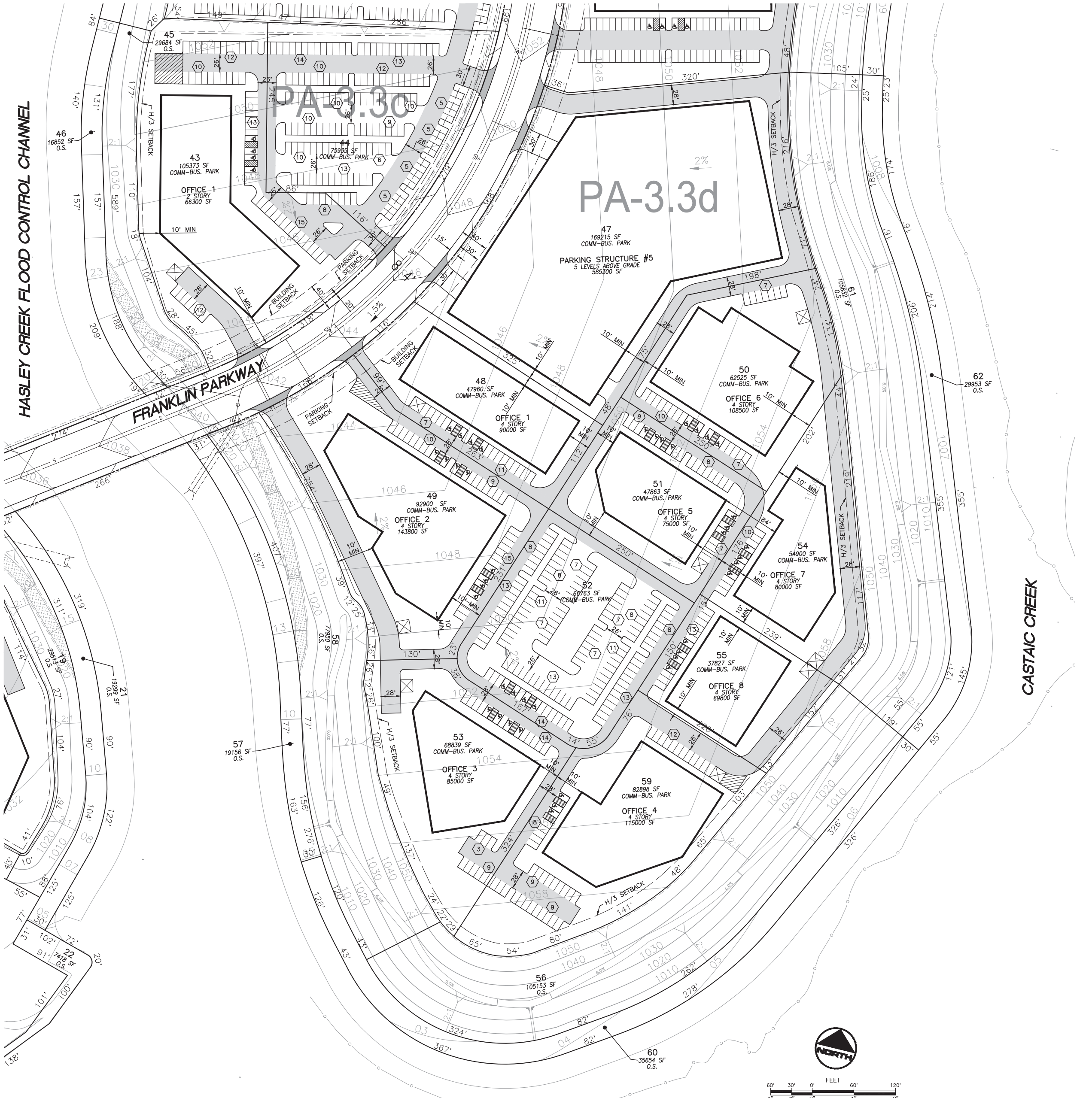

PA-3.3c

LOTS 43, 44	
TOTAL LOT ACREAGE:	4.2 ACRES
TOTAL SITE AREA:	181308 S.F.
LAND USE:	COMMERCIAL–BUSINESS PARK
OFFICE - TWO STORY	
TOTAL COMMERCIAL SQ. FT:	66300 S.F.
NUMBER OF BUILDINGS:	1
MAX HEIGHT:	35'
PARKING SUMMARY:	
PARKING REQUIRED COMMERCIAL:	166
SURFACE PARKING PROVIDED:	201
TOTAL PARKING PROVIDED:	201
ADA PARKING (2% OF TOTAL):	4
ADA VAN (1SP/8 ADA STALLS):	1

PA-3.3d

LOTS 48, 49, 50, 51, 52, 53, 54, 55, 59	
TOTAL LOT ACREAGE:	12.9 ACRES
TOTAL SITE AREA:	562475 S.F.
LAND USE:	COMMERCIAL–BUSINESS PARK
OFFICE - FOUR STORY	
TOTAL COMMERCIAL SQ. FT:	767100 S.F.
NUMBER OF BUILDINGS:	8
MAX HEIGHT:	50'
PARKING SUMMARY:	
PARKING REQUIRED COMMERCIAL:	1918
SURFACE PARKING PROVIDED:	322
TOTAL PARKING PROVIDED:	1918 *
ADA PARKING (2% OF TOTAL):	39
ADA VAN (1SP/8 ADA STALLS):	5

* INCLUDES 322 SPACES ON–SITE AND 1596 IN PARKING STRUCTURE #5.

PA-3.3d

LOT 47	
TOTAL LOT ACREAGE:	3.9 ACRES
TOTAL SITE AREA:	169215 S.F.
TOTAL BUILDING SQ. FT.:	585300
LAND USE:	COMMERCIAL–BUSINESS PARK
PARKING STRUCTURE # 5	
# OF STORIES	5
NUMBER OF BUILDINGS IN LOT:	1
MAX HEIGHT:	50'
PARKING SUMMARY:	
PARKING PROVIDED:	1596 + 249 FROM PA 3.3b

LEGEND

100	LOT NO.
PA-2.1	PLANNING AREA NUMBER
	VTPM 18108 BOUNDARY
	RIGHT OF WAY
225'	PROPOSED LOT LINE
	PROPOSED EASEMENT
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	H/2 & H/3 SETBACK LINE
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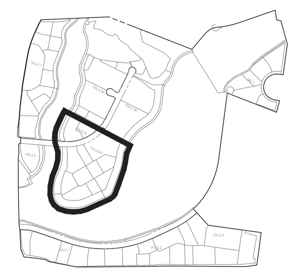

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JASON H. FUKUMITSU DATE

MAJOR LAND DIVISION
VESTING TENTATIVE PARCEL MAP NO. 18108
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SCALE:	AS SHOWN
DATE:	11/04/2021
JOB No.	0015–043–020
SHEET	7
OF	7 SHEETS

Plan No. HCC093–07

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Appendix 5.11b

Water Demand Report

TECHNICAL MEMORANDUM

Updated Water Demand Projections for the Entrada South and Valencia Commerce Center Developments (Valencia, California)

To: Matt Carpenter, Five Point Holdings, LLC

From: John Porcello, GSI Water Solutions, Inc.

Date: April 8, 2022

1. Introduction

This technical memorandum presents water demand projections for the Entrada South and Valencia Commerce Center developments, which are two of the nine West Side communities being developed by Five Point Holdings, LLC (FivePoint)[1], in the Santa Clarita Valley, California.

The projected values of long-term average annual water demands for the fully built Entrada South and Valencia Commerce Center developments are provided in Table 1. The remainder of this technical memorandum discusses the water demand calculation methodology (Section 2); the current land use plans and a description of each land use type (Section 3); the water demand factors associated with each type of land use (Section 4); the estimated long-term annual average water demands (Section 5); and a list of references cited in this technical memorandum (Section 6). Supporting information is also provided in the following attachments:

- **Attachment 1:** Detailed Land Use Tables
- **Attachment 2:** Summary of State and Local Laws and Regulations Governing Water Conservation in California
- **Attachment 3:** Derivation of Water Demand Factors
- **Attachment 4:** 2016 Analysis of Dwelling Unit Occupancy Rates
- **Attachment 5:** Water Demand Calculations for Entrada South
- **Attachment 6:** Water Demand Calculations for Valencia Commerce Center

2. Water Demand Calculation Methodology

The water demand projections for Entrada South and Valencia Commerce Center use the same calculation methodology as was presented in GSI Water Solutions, Inc.'s (GSI's) prior technical memoranda (GSI, 2014 and 2016a) for estimating long-term average annual water demands in these and other West Side communities, while taking into account current water conservation standards and measures as summarized

[1] Five Point Holdings, LLC (FivePoint) owns and is developing Entrada South and Valencia Commerce Center through its subsidiaries, The Newhall Land and Farming Company (Newhall) and Stevenson Ranch Venture.

below in Section 4 and in Attachments 2 and 3.[2] The water demand calculation method has been programmed into a series of linked Microsoft Excel spreadsheets that estimate potable and nonpotable water demands. Land use details, which are presented in Section 3 of this technical memorandum, are manually entered in the spreadsheets and are coupled with pre-programmed water demand factors to calculate and categorize the amounts of indoor (potable) water demands, outdoor potable water demands, and outdoor nonpotable water demands.

3. Land Use Plan

Table 2 summarizes the current land use plan for Entrada South and Valencia Commerce Center. Table 2 has two parts:

- The upper portion of Table 2 shows the residential land use plan, including details contained in the vesting tentative tract maps (VTTMs)[3] regarding the number of dwelling units and their acreage on an area-wide basis. Table 2 also differentiates between the three primary types of residential units (single-family residences, detached multi-family residential units [detached condominiums], and attached multi-family residential units [attached condominiums, apartments, and mixed-use developments]).
- The lower portion of Table 2 shows the acreages that will be dedicated to residential units, nonresidential developments, and other noncommercial land uses that provide public services (recreation, arterials, stormwater management facilities, slope stability, open space, and river corridors).

Attachment 1 provides the details of the land uses for the Entrada South and Valencia Commerce Center developments. Key aspects of the tables and the land uses shown in Attachment 1 are as follows:

1. Each table presents the land use information in the form of land use classifications that are used directly by the water demand tool. These classifications and the data that are shown for each land use type have been derived from detailed land use information that is contained in the VTTMs and associated planning data for each village.

2. Each table presents the VTTM Planning Area designations and a description of the product type in each case where this information applies. Additionally:

    a. For residential developments, information is provided on the number of detached condominiums and attached residences, plus the acreages associated with each of these types of residential units. Residential units are planned in Entrada South, consisting solely of multi-family dwellings (and no single-family dwellings). Residential development will not be present in Valencia Commerce Center, which is solely a commercial and industrial development.
    b. For nonresidential developments, the indoor square footage is shown for those facility types whose water use is dependent on the size of the facility.

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[2] In 2012, SCV Water and Newhall agreed to follow the 2010 GSI Water Solutions, Inc. (GSI) technical memorandum methodology for water demand calculations for the West Side communities when the Castaic Lake Water Agency acquired all stock of VWC from Newhall under an eminent domain settlement agreement (the 2012 Settlement Agreement). SCV Water took on the rights, responsibilities, and obligations under the 2012 Settlement Agreement when it was formed as an agency in accordance with Senate Bill 634. The first water demand analysis for the West Side communities (CH2M HILL, 1996) was conducted for the Newhall Ranch Specific Plan. Subsequent revisions to that analysis were conducted at various times during the late 1990s (CH2M HILL, 1999) and through 2001 during final preparation of the Specific Plan and Water Reclamation Plant Environmental Impact Report (EIR) (Impact Sciences, 2003), which was approved by Los Angeles County on May 27, 2003. Additional revisions were conducted to the present to support further land plan revisions and project-level EIRs for individual villages (see, for example, GSI, 2008, 2010, 2014, and 2016a) and to support SCV Water's development of its 2020 Urban Water Management Plan (KJ, 2021).

[3] The vesting tentative tract map (VTTM) applications are used for planning purposes of providing a reasonable estimate of land uses for this water demand projection. The VTTMs and land uses may be refined or changed over time by FivePoint.

3. For the residential developments in Entrada South:

   a. The low-medium residential developments are comprised solely of detached multi-family residences (condominiums).
   b. The medium density residential developments are comprised exclusively of attached multi-family residences (condominiums, duplexes, and townhomes).
   c. The “high and mixed use” category is comprised of attached condominiums and other residences, including residences that are part of larger developments that include retail facilities.

4. For nonresidential developments in both Entrada South and Valencia Commerce Center:

   a. Separate land use categories are defined for retail and office space in mixed-use developments and in purely commercial developments. Industrial business parks are treated as an additional separate land use category.
   b. Two specialty land uses in Entrada South are identified because of the unique nature of their water needs—specifically, hotels and spas and an elementary school.

5. Public noncommercial portions of each village are listed in Table 2 under the heading “Recreation, Arterials, and Open Space.” These land uses focus primarily on irrigation along public rights of way, including transportation corridors, river corridors, irrigated slopes, and stormwater facilities. In Entrada South, parks and recreation centers are also included in the “Recreation, Arterials, and Open Space” land use category and have a mixture of potable water demands and nonpotable (landscape irrigation) demands.

4. Water Demand Factors

The water demand factors for indoor and outdoor uses of water in Entrada South and Valencia Commerce Center are described in detail in Attachment 3. In summary, the indoor and outdoor water demand factors have been derived from review of the State of California’s Green Building Standards Code (CALGreen) and Model Water Efficient Landscape Ordinance (MWELO), and by considering the effects of recent (2018) state legislation on water-use efficiency standards and performance measures (Assembly Bill 1668 and Senate Bill 606). Attachment 2 discusses the requirements of the state codes and legislation.

Summaries of the demand factors are as follows:

- Demand factors for potable water uses are listed in Table 3 for residential development and in Table 4 for nonresidential development and are described in Section 4.1. For indoor water uses, the values of potable demand factors have been developed by applying the results of industry research on water use behavior patterns to the flow rates for indoor fixtures that are specified under the current mandatory water conservation standards contained in CALGreen.
- Demand factors for outdoor uses of potable water pertain to potable non-irrigation needs in residential and nonresidential land uses.
- Demand factors for outdoor irrigation water demands that are anticipated to be met with nonpotable water supplies are listed in Table 5 and are described in Section 4.2. These demand factors are developed under the assumption that irrigation of common landscape areas will meet current requirements contained in MWELO, but with consideration of how future irrigation demands may be affected by climate change and the inefficiencies and periodic degradation that could occur with irrigation systems. These landscape demand factors are based on MWELO-defined rates of irrigation with potable water, even though the demand from these landscapes can be met with nonpotable water and is planned to be met by recycled water use in most (if not all) common areas in Entrada South, Valencia Commerce Center, and other West Side communities.

4.1 Demand Factors for Water Uses Requiring Potable Water Supplies

Following are discussions of potable water demands for residential land uses (Section 4.1.1) and for nonresidential land uses (Section 4.1.2).

4.1.1 Residential Demand Factors for Potable Water

Table 3 shows the daily per-person rates of indoor and outdoor potable water uses (rates that are expressed in units of gallons per capita per day [gpcpd]); the number of persons per dwelling unit that is assumed for each residential land use category; and the combined total rate of daily potable water use per dwelling unit for each residential land use category. As discussed in Attachment 3, in Entrada South the indoor per-capita potable water use rates for residences are between 67 percent and 71 percent of the per-capita potable water use rates that were used in prior analyses conducted before 2020, which preceded the current modern-day water conservation standards (i.e., the standards contained in the latest CALGreen Code and the 2018 legislation).

Residential uses of potable water consist of the following:

- **Indoor Uses.** These uses involve indoor human contact with water in kitchens, bathrooms, laundry facilities, and other washing and serving areas of the household.
- **Outdoor Uses.** Potable water will be the source of supply for outdoor residential water uses that involve human contact, such as filling swimming pools, watering landscaping outside of common areas, and washing cars, pavement, and outdoor surfaces.

Multi-family residential developments have lower per-capita uses of water both indoors and outdoors than single-family residential developments. This is based on (1) the comparatively smaller lot sizes and floor space for multi-family dwellings versus single-family dwellings, (2) fewer persons per dwelling unit (in most cases), and (3) a building footprint that occupies a larger percentage of a lot than in the case of lower-density single-family developments. Accordingly, both the indoor and outdoor per-capita rates of water use are generally lower for attached multi-family residences than for single-family residences.

In late 2015 and early 2016, GSI and Valencia Water Company (VWC) reviewed the population densities (occupancy rates) for each category of residential land uses. The review examined census data for recently constructed developments inside VWC's service area (in the Bridgeport, North Park, and Stevenson Ranch neighborhoods). Census data that were examined consisted of decennial census block data for the year 2010 and annual census block group data from the American Community Survey, collected from 2011 through 2014. As shown in Table 6, the review identified that these recently constructed developments have average occupancy rates of 3.292 persons per household (PPHH) for single-family homes, 2.367 PPHH for condominiums and townhomes, and 2.103 PPHH for apartments. Because these values come from recent census data in new residential construction located within VWD's service area, these average occupancy rates are now used in the water demand projections for Entrada South, Valencia Commerce Center, and other West Side communities. See GSI, 2016b, which is contained in Attachment 4, for details.

4.1.2 Nonresidential Demand Factors for Potable Water

Table 4 shows the daily rates of indoor and outdoor potable water uses for developed facilities that are not residential in nature. For most of the nonresidential land uses, the indoor per-capita water use rates are 90 percent of the per-capita rates that were used in prior analyses conducted before 2020 (analyses which preceded the current water conservation standards).

Interior uses of water on nonresidential lands are calculated from daily water demand factors for potable water use that are based on the size of the facility (in square feet or acres); however, these rates of use (i.e., demand factors) differ for schools (based on the number of students). Exterior uses of potable water are calculated based on the number of acres occupied by the lot containing the facility, with the potable water demand factors accounting for the water uses that require potable water on each different type and size of nonresidential facility.

Uses of nonpotable water in nonresidential developments consist of the following:

- **Indoor Use.** Indoor use rates for potable water range from 0.009 to 0.18 gallon per day per square foot (gpd/ft^2) for facilities with high occupancy during portions of the day, such as retail commercial facilities, business parks, and hotels. School uses are assigned an indoor potable use rate of 20 gallons per student.
- **Outdoor Use.** Potable water will be used outdoors for nonresidential uses that have the potential for human contact with the water (primarily swimming pools, wash water, and some landscape irrigation). The outdoor potable water use rate is specified as 275 gallons per acre per day for industrial facilities.

The commercial land use categories in the water demand tool that apply to Entrada South and Valencia Commerce Center are:

- Mixed-use commercial (retail)
- Mixed-use commercial (office)
- Commercial (retail)
- Commercial (office)
- Business park (industrial)
- Hotel/spa, which is assumed to have a similar indoor potable water use rate as business parks and institutional facilities (0.18 gpd/ft^2)

4.2 Demand Factors for Water Uses That Can Be Met with Nonpotable Water Supplies or Potable Water Supplies if Nonpotable Water is Not Available

Irrigation demands for common-area landscaping can be met with nonpotable water supplies, which may consist of recycled water or other available nonpotable water supplies, or potable water supplies if nonpotable water is not available. Common-area landscaping will be present in areas containing multi-family residential developments, nonresidential developments, recreational facilities, and irrigated slopes. Table 5 shows the exterior nonpotable water demand factors that are used in the water demand tool, as well as the percentage of each type of lot that will be irrigated. Comparisons of these demand factors with those used in prior water demand analyses are also shown.

Irrigation demands are defined from the monthly distribution of reference evapotranspiration rates (ETo) for turf grass. The ETo value describes the amount of evaporation plus plant transpiration that occurs from a standardized grass surface. The water demand projections for Entrada South and Valencia Commerce Center presented in this technical memorandum are based on an ETo value of 67.7 inches per year (approximately 5.65 feet per year), which is the average during the past approximately 10 years of ETo measurements at a monitoring station located at SCV Water's Rio Vista water treatment plant.[4] As discussed in Attachment 3, the 2015 Model Water Efficient Landscape Ordinance specifies an ETo value of 61.5 inches per year for Santa Clarita and limits the maximum allowable water application rate on landscapes using potable water to 55 percent of this lower ETo value for residential landscapes and 45 percent of this lower ETo value for nonresidential landscapes. Using the higher ETo value of 67.7 inches per year provides a conservative (high) estimate of potential outdoor water demands for nonpotable water. The maximum allowable water application rates under MWELO that arise from using an ETo value of

[4] Personal communication from Rick Vasilopulos/SCV Water to John Porcello/GSI, October 4, 2021.

67.7 inches are 37.25 inches per year (approximately 3.1 feet per year) on residential landscapes and 30.5 inches per year (approximately 2.5 feet per year) on nonresidential landscapes.

However, climate change is expected to increase evaporation and hence the ETo value that describes the water requirement of standardized turf grass. Therefore, to avoid underestimating water demands and to be consistent with demand estimation methods used in SCV Water's 2020 Urban Water Management Plan (UWMP) (see KJ, 2021 and MWM, 2021), the ETo values used in the demand calculations for Entrada South and Valencia Commerce Center account for climate-change influences on future water demands. The California Department of Water Resources (DWR) has published local-scale climate-change factors at 6-kilometer (3.75-mile) intervals across the state that can be applied to historical measurements of ETo. GSI has studied these evapotranspiration (ET) change factors at two locations in the Santa Clarita Valley, and for the two future time periods for which DWR has published these factors (representing 2030 and 2070 levels of projected climate change). GSI derived month-by-month values of long-term average climate change from the 2030 and 2070 change factors, using the same approach to these calculations as is used in the 2020 UWMP for estimating demands throughout SCV Water's service area (see MWM, 2021 for details). The ETo change factors range from 1.056 in July (a 5.6 percent increase in ETo) to 1.126 in December (a 12.6 percent increase in ETo). Applying each monthly change factor to the monthly ETo values raises the annual ETo from 67.7 inches to 72.7 inches, which in turn raises the maximum allowable water application rates to 40.0 inches per year (approximately 3.33 feet per year) on residential landscapes (55 percent of ETo) and 32.7 inches per year (approximately 2.73 feet per year) on nonresidential landscapes (45 percent of ETo). See Table 3-7 in Attachment 3 for these calculation details.

In addition to applying climate change factors to the outdoor water demand calculations, the water demand projections for Entrada South and Valencia Commerce Center also incorporate an additional water loss factor to account for potential inefficiencies and deterioration of irrigation systems, consistent with the approach used to develop the 2020 UWMP's water demand forecasts for SCV Water's service area. The overirrigation factor is set at 15 percent. See Section 4.3 of Attachment 3 for details on the establishment of this factor, as well as the details of monthly ETo, climate change factors, the landscape design details, and the calculations of nonpotable water demand factors for each type of irrigated landscape. Table 5 shows the new nonpotable water demand factors that account for the current MWELO conservation standards, climate change, and the 15 percent overirrigation factor. Table 5 shows that the new nonpotable demand factors provide a 31 percent reduction in nonpotable demand on residential lands compared with the nonpotable demand factors used in prior water demand projections (conducted prior to the current MWELO standards). For nonresidential lands, the percentage reductions in the nonpotable demand factors are between 23.5 percent and 43.9 percent, except for schools (a 7.5 percent increase). For the recreation/arterials/open space land use categories, the percentage changes in the nonpotable demand factors range from an 8.9 percent increase to an 18.4 percent decrease.

Although certain industrial water users may be able to use nonpotable supplies in their production processes, the water demand calculation process for Entrada South and Valencia Commerce Center assumes that (1) commercial and industrial facilities will use recycled water solely for landscape irrigation, (2) that all industrial process water needs will be met with potable water supplies, and (3) any nonpotable demand can be met with nonpotable supplies if nonpotable water is not available.

5. Water Demand Summary

The current projections of long-term average annual water demands for the fully built Entrada South and Valencia Commerce Center developments are presented in Table 1. For Entrada South, the current water demand projections are also compared with projections developed in 2014 for the Water Supply Assessment that was adopted by the Valencia Water Company for an earlier version of the Entrada South project (GSI, 2014). Supporting calculations for the current projections are provided in Attachment 5 for Entrada South and Attachment 6 for Valencia Commerce Center.

5.1 Projected Water Demand for Entrada South

Under the current land use plan, and with implementation of current water conservation standards, the long-term average annual water demand for the fully built Entrada South development is estimated to be 847 acre-feet per year (AFY), which as shown in Table 7 is 26 percent lower than the prior projection developed in 2014 for Entrada South (GSI, 2014). Specific aspects of this projection of long-term average annual water demands in Entrada South are as follows:

1. Potable water demand is projected to be 432 AFY, which is 39 percent lower than projected in 2014.
2. Nonpotable water demand is projected to be 415 AFY, which is 6 percent lower than projected in 2014.
3. Based on the projected population of 3,725 residents, the combined residential, nonresidential, and other daily per-capita demands for potable plus nonpotable (recycled) water across Entrada South are projected to be 203 gpcpd.
4. Indoor residential per-capita demands for potable water are estimated to be 50 gpcpd when considering all residences together (see Table 5-3 of Attachment 5).
5. The total water demand in residential developments within Entrada South is projected to be 443 AFY, which (as shown in Table 5-3 of Attachment 5) consists of:
    a. 353 AFY of potable water demand (of which 210 AFY is for indoor use and 143 AFY is for outdoor use), and
    b. 90 AFY of nonpotable water demand (for landscape irrigation on multi-family lots).
6. The total water demand in nonresidential developments within Entrada South is projected to be 144 AFY, which (as shown in Table 5-4 of Attachment 5) consists of 78 AFY of indoor potable water demand and 66 AFY of outdoor nonpotable water demand.
7. The total water demand for recreation/arterials/open space lands within Entrada South is projected to be 260 AFY, which (as shown in Table 5-5 of Attachment 5) consists of 1 AFY of indoor potable water demand and 259 AFY of outdoor nonpotable water demand.

5.2 Projected Water Demand for Valencia Commerce Center

Under the current land use plan, and with implementation of current water conservation standards, the long-term average annual water demand for the fully built Valencia Commerce Center development is estimated to be 481 AFY. Specific aspects of this projection of long-term average annual water demands in Valencia Commerce Center are as follows:

1. Potable water demand is projected to be 253 AFY.
2. Nonpotable water demand is projected to be 228 AFY.
3. Accordingly, the total water demand is projected to be 481 AFY.
4. Daily per-capita demands have not been estimated because Valencia Commerce Center will not contain any residential development.
5. The total water demand in nonresidential developments within Valencia Commerce Center is projected to be 347 AFY, which (as shown in Table 6-2 of Attachment 6) consists of 247 AFY of indoor potable water demand, 6 AFY of outdoor potable water demand, and 94 AFY of outdoor nonpotable water demand.
6. The total water demand for recreation/arterials/open space lands within Valencia Commerce Center is projected to be 134 AFY, which (as shown in Table 6-3 of Attachment 6) consists solely of outdoor nonpotable water demand (with no indoor water demand).

5.3 Projected Water Demands with Higher Overirrigation Factors

As discussed in Attachment 3, the 2020 UWMP's water demand forecasts for SCV Water's service area (MWM, 2021) used higher overirrigation factors than the 15 percent value used in these updated analyses for Entrada South and Valencia Commerce Center. In support of the water demand analysis that was incorporated into the 2020 UWMP, SCV Water conducted a study of developments constructed after promulgation of the 2015 MWELO irrigation standards and found that actual outdoor water uses exceeded MWELO limits by 26.5 percent for residential developments and 25.6 percent for nonresidential developments (Western Policy Research and MWM, 2021). Applying these overirrigation factors (rather than a 15 percent overirrigation factor) to the current land use plans to Entrada South and Valencia Commerce Center (and also expanding the 3.77 percent climate-change factor to include non-irrigation uses of water both outdoors and indoors, as was done in the 2020 UWMP) raises the estimated water demands from 847 to 944 AFY in Entrada South and from 481 to 513 AFY in Valencia Commerce Center.

These higher overirrigation factors likely overestimate water uses for the types of developments that will occur in these two master-planned communities, particularly in Entrada South where the types of residential land uses and the maintenance of irrigation systems will differ from the types of residential properties evaluated in the outdoor water demand study conducted by Western Policy Research and MWM (2021). That study evaluated conditions that differ in two fundamental respects from the conditions that will occur in Entrada South and Valencia Commerce Center.

1. For residential developments and nonresidential developments alike, the outdoor water demand study evaluated total outdoor water use and did not attempt to separate out other outdoor water from irrigation uses, which means actual overirrigation rates were likely lower than the study's estimates of overirrigation. In contrast, the water demand calculation method for Entrada South and Valencia Commerce Center explicitly accounts for non-irrigation outdoor uses of water separately from irrigation uses in residential developments and nonresidential developments,

2. For residential developments, the outdoor water demand study focused exclusively on single-family dwelling units and did not include multi-family dwelling units. Detached condominiums were included in the study but represented only about 20 percent (15 out of 77) of the dwelling units that were studied. The remaining 80 percent of the dwelling units that were studied were single-family homes, which have irrigation systems that are typically maintained by the homeowner. Entrada South is a master-planned community that will contain only detached condominiums and multi-family dwelling units, which will have common-area landscaping with irrigation systems maintained under a master homeowners association. This arrangement will limit irrigation usage to lower levels than identified by the 2020 UWMP analysis.

For these reasons, the combined volume of irrigation uses plus other non-irrigation outdoor uses of water in Entrada South and Valencia Commerce Center are not expected to exceed MWELO limits by as large an amount as the 25.6 to 26.5 percent factors identified in the 2020 UWMP's outdoor water use study. Additionally, Table 3-10 in Attachment 3 shows that the 15 percent overirrigation factor produces a potable outdoor water use rate in Entrada South residential developments (80 gallons per day per dwelling unit; gpd/DU) that is higher than the range of rates (58 to 74 gpd/DU) that is used in the 2020 UWMP water demand analyses for total outdoor water use at detached condominiums having the dwelling unit densities that are planned for Entrada South (ranging from 8 to 40 dwelling units per acre). Additionally, the three residential land uses in Entrada South each have gpd/DU rates for total outdoor water use that are between 1.67 and 2.28 times the total outdoor water use rates from the 2020 UWMP, with this ratio being 2.17 for the aggregate (net) group of residential developments in Entrada South. In summary, these dwelling unit-based rates of water use for Entrada South (using the 15 percent overirrigation factor) provide higher and more conservative estimates of outdoor water use for detached condominiums than have been estimated in the outdoor water use study and 2020 UWMP for detached condominiums in the bulk entirety of the SCV Water service area.

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Tables

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Table 1
Summary of Water Demands for Entrada South and Valencia Commerce Center

	Potable Demand	Nonpotable Demand	Total Demand	Total Population	Per Capita Demands
Entrada South	432	415	847	3,725	203
Valencia Commerce Center	253	228	481	0	–

Notes

(1) Demand values are in units of acre-feet per year (AF/yr), except per-capita demands are in units of gallons per person per day.

(2) Demand estimates incorporate current water conservation standards (CALGreen and MWELO).

(3) The values in this water demand estimate are approximate and are subject to change at the time of preparation of tentative or final land use maps.

Table 2
Land Use Summary from Vesting Tentative Tract Maps

Residential Land Use Plan

Development	Single-Family Lots (Detached Dwellings)		Multi-Family Dwellings (Detached Condominiums)		Multi-Family Dwellings (Attached Condominiums, Apartments, Mixed-Use)		Total	
	Units	Acreage	Units	Acreage	Units	Acreage	Units	Acreage
Entrada South	0	0	371	45	1,203	82	1,574	127
Valencia Commerce Ctr.	0	0	0	0	0	0	0	0

Acreage for Residential, Nonresidential, and Public Noncommercial Land Uses

Development	Residential Development	Nonresidential Development	Public Noncommercial (Recreation, Arterials, Open Space)	Total
Entrada South	127	70	185	382
Valencia Commerce Ctr.	0	118	211	329

Notes

All acreages in this analysis are rounded to the nearest acre for presentation purposes. Actual acreages may vary slightly as shown in Attachment 1.
All data and acreages are subject to change at the time of preparation of tentative or final land use maps.

Table 3
Potable Water Demand Factors for Residential Development

Residential Land Use Category	Indoor Use (gpcpd)	Outdoor Use (gpcpd)	Persons per Dwelling Unit	Total Potable Use (gpd/DU)
Low Medium (Multi-Family Detached)	50	34	2.367	199
Low Medium (Multi-Family Attached)	50	34	2.367	199
Medium (Multi-Family Detached)	50	34	2.367	199
Medium (Multi-Family Attached)	50	34	2.367	199
High and Mixed Use (Multi-Family)	50	34	2.367	199
Apartments (Multi-Family)	50	32	2.103	172

Notes
DU = dwelling units
gpcpd = gallons per capita per day
gpd = gallons per day

Table 4
Potable Water Demand Factors for Nonresidential Development

Nonresidential Land Use Category	Indoor Use		Outdoor Use
	Units	Factor	gpapd
Mixed-Use Commercial (Retail)	gpd/sq. ft.	0.009	0
Mixed-Use Commercial (Office)	gpd/sq. ft.	0.045	0
Commercial (Retail)	gpd/sq. ft.	0.18	0
Business Park (Office)	gpd/sq. ft.	0.045	0
Business Park (Industrial)	gpd/sq. ft.	0.18	275
Institutional	gpd/sq. ft.	0.18	0
Hotel/Spa	gpd/sq. ft.	0.18	0
Hospital	gpd/bed	450	0
Sr. Assisted Living	gpd/bed	90	108
Golf Club House	gpd/sq. ft.	0.009	0
Visitor Serving	gpd/sq. ft.	0.009	275
Water Reclamation Plant	gpapd	200	0
Electrical Substation	gpapd	0	0
Fire Stations	gpd/sq. ft.	0.18	275
Schools	gpd/student	20	13
Recreation Centers	gpapd	90	0
Neighborhood Parks	gpapd	90	0
Lake - Water	gpapd	0	0
Lake - Park Area	gpapd	0	0
Golf Course	gpapd	0	0
Hardscape/Road Section	gpapd	0	0
Landscape Area	gpapd	0	0
Natural Open Space	gpapd	0	0
River Corridor	gpapd	0	0
Non-Irrigated Slopes	gpapd	0	0
Irrigated Slopes, Wet Zones	gpapd	0	0
O.S. Drainage Facilities	gpapd	0	0

Notes
For schools, the exterior value of 13 has units of AF/pool/year (not gpapd)

gpapd = gallons per acre per day, based on average square footage per acre
gpd = gallons per day
sq. ft. = square foot
O.S. = open space

Table 5
Nonpotable Water Demand Factors

Land Use Category	Percent Irrigated with Recycled Water	Nonpotable Irrigation Demand Factors (AF/acre/year)	Comparison with Prior Net-Acreage Demand Factors (AF/acre/year)		
			Prior Rate	Rate Reduction	Percent Reduction
Residential					
Low Medium (Multi-Family Detached)	15%	4.62	6.70	2.08	31.0%
Low Medium (Multi-Family Attached)	15%	4.62	6.70	2.08	31.0%
Medium (Multi-Family Detached)	15%	4.62	6.70	2.08	31.0%
Medium (Multi-Family Attached)	15%	4.62	6.70	2.08	31.0%
High and Mixed Use (Multi-Family)	15%	4.62	6.70	2.08	31.0%
Apartments (Multi-Family)	15%	4.62	6.70	2.08	31.0%
Nonresidential					
Mixed-Use Commercial (Retail)	25%	3.14	5.36	2.22	41.4%
Mixed-Use Commercial (Office)	25%	3.14	5.36	2.22	41.4%
Commercial (Retail)	25%	3.14	5.36	2.22	41.4%
Business Park (Office)	25%	3.14	5.36	2.22	41.4%
Business Park (Industrial)	25%	3.14	5.36	2.22	41.4%
Institutional	25%	3.14	5.60	2.46	43.9%
Hotel/Spa	25%	4.10	5.36	1.26	23.5%
Hospital	25%	4.10	5.60	1.50	26.8%
Sr. Assisted Living	25%	4.10	5.60	1.50	26.8%
Golf Club House	0%	---	---	---	---
Visitor Serving	25%	3.14	5.60	2.46	43.9%
Water Reclamation Plant	25%	3.14	4.48	1.34	29.9%
Electrical Substation	0%	---	---	---	---
Fire Stations	25%	3.14	5.60	2.46	43.9%
Schools	25%	6.02	5.60	-0.42	-7.5%
Recreation, Arterials, Open Space					
Recreation Centers	75%	5.25	5.10	-0.15	-2.9%
Neighborhood Parks	75%	5.25	5.10	-0.15	-2.9%
Golf Course	100%	6.21	5.80	-0.41	-7.1%
Lake (Water Feature)	100%	6.97	6.4	-0.57	-8.9%
Arterial Highway Hardscape / Road Section	0%	---	---	---	---
Arterial Highway Landscaped Areas	100%	3.14	3.47	0.33	9.5%
Natural Open Space	0%	---	---	---	---
River Corridor	0%	---	---	---	---
Non-Irrigated Slopes	0%	---	---	---	---
Irrigated Slopes, Wet Zones	100%	3.14	3.47	0.33	9.5%
O.S. Drainage Facilities	0%	---	---	---	---
O.S. LDZ, O.S. Trail LDZ, SD&SS easements	90%	3.14	3.85	0.71	18.4%

Notes
— = Denotes that this land type is not irrigated.
AF = acre-feet O.S. = open space

Table 6
Single Family and Multi-Family Persons per Household Assessment for Recently-Constructed Residences at the Bridgeport, North Park, and Stevenson Ranch Developments (Using 2010 U.S. Census Block Data)
(Prepared by Valencia Water Company and GSI Water Solutions, Inc. in 2016)

Location	Housing Type	Attached/Detached	Units	Population	PPHH	Notes
Bridgeport	SF	Detached	206	608	2.95	SF Attached around lake and west on NH Ranch Parkway
North Park	SF	Detached	139	436	3.14	
North Park	SF	Detached	214	720	3.36	
North Park	SF	Detached	125	424	3.39	
North Park	SF	Detached	44	153	3.48	High Density Detached
Stevenson Ranch	SF	Detached	128	275	2.15	
Stevenson Ranch	SF	Detached	189	523	2.77	Stevenson Ranch Parkway and The Old Road
Stevenson Ranch	SF	Detached	78	262	3.36	North of Pacific Colony
Stevenson Ranch	SF	Detached	22	80	3.64	
Stevenson Ranch	SF	Detached	146	540	3.70	
Stevenson Ranch	SF	Detached	30	130	4.33	
Westridge	SF	Detached	877	3085	3.52	
Bridgeport	SF	Attached	118	272	2.31	
North Park	SF	Attached	27	44	1.63	
North Park	SF	Attached	46	95	2.07	Village Walk
North Park	SF	Attached	52	123	2.37	
North Park	SF	Attached	20	52	2.60	
North Park	SF	Attached	30	86	2.87	
North Park	SF	Attached	21	64	3.05	Provence
Stevenson Ranch	SF	Attached	24	58	2.42	Marblehead Palisades Condos
Stevenson Ranch	SF	Attached	57	141	2.47	Marblehead Palisades Condos
Bridgeport	MF	Attached	188	402	2.14	Bridgeport Coast Apartments
North Park	MF	Attached	201	416	2.07	Skycrest Apartments

Housing Type	Attached/Detached	Mean PPHH	PPHH Range
SF	Detached	3.292	2.15 to 4.33
SF	Attached	2.367	1.63 to 3.05
MF	Attached	2.103	2.07 to 2.14

Notes
MF = multi family
SF = single family
PPHH = persons per household

Table 7
Changes in Water Demands Projections for Entrada South

Demand Projection	Potable Demand (AFY)	Nonpotable Demand (AFY)	Total Demand (AFY)	Total Population	Per Capita Demands (gpcpd)
2014 Projection	703	440	1,143	4,506	226
2021 Projection	432	415	847	3,725	203
Change from 2014 Projection	-271	-25	-296	-781	-23
Percent Change from 2014 Projection	-39%	-6%	-26%	-17%	-10%

Notes
(1) Demand values are in units of acre-feet per year (AFY), except per-capita demands are in units of gallons per person per day.
(2) Demand estimates in 2014 use demand factors without the current CALGreen and MWELO water conservation standards.
Demand estimates in 2021 incorporate current water conservation standards (CALGreen and MWELO).
(3) The values in this water demand estimate are approximate and are subject to change at the time of preparation of tentative or final land use maps.

AFY = acre-feet per year   gpcpd = gallons per capita per day
CALGreen = State of California's Green Building Standards Code
MWELO = Model Water Efficient Landscape Ordinance

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Attachment 1

Detailed Land Use Tables for Entrada South and Valencia Commerce Center April 2022

All data and acreages in this analysis are approximate and are subject to change at the time of preparation of tentative or final land use maps.

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Land Use Details for Entrada South

Land Use Category	VTTM Planning Area	No. Of Units	Square Footage	Acreage	Product Type	Notes	Number of Dwellings				Acreage			
Residential							SFD	Detached Condos	Attached	Total DU's	SFD	Detached Condos	Attached	Total Acreage
Estate		0	---	0.0			0	0	0	0	0	0	0	0
Low		0	---	0.0			0	0	0	0	0	0	0	0
Low Medium		371	---	45.0	SFD: 5a, 5b, 5c, 6a, 6b, 7b, 8a, 8b, 8c, 8d		0	371	0	371	0	45.0	0	45.0
Medium		894	---	74.4	SFA: 4e, 4f, 4g, 4h, 7a, 7c, 9a, 9b, 10a, 10b, 13a, 13b		0	0	894	894	0	0	74.4	74.4
High and Mixed Use		309	---	7.8	4b		0	0	309	309	0	0	7.8	7.8
Apartments		0	---	0.0			0	0	0	0	0	0	0.0	0.0
Subtotal		**1,574**		**127.2**			**0**	**371**	**1,203**	**1,574**	**0.0**	**45.0**	**82.2**	**127.2**

Non-Residential

Land Use Category	VTTM Planning Area	No. Of Units	Square Footage	Acreage	Product Type	Notes
Mixed Use Commercial - Retail			105,425	1.5	4B, 4C	4B already counted in Residential AC
Mixed Use Commercial - Office			459,575	52.5	1, 2, 3, 4a, 4d, PA-14	
Mixed Use Commercial - Total			**565,000**	**54.0**		
Commercial - Retail			0	0.0		
Commercial - Office			0	0.0		
Commercial-Total			**0**	**0.0**		
Business Park (Office)						
Hotels and Spas			160,000	5.6	PA-12	
SCE Substation						
Fire Station						
Sheriff Station						
Water reclamation plant						
Sr. Assisted Living						
Business Park (Industrial)						
Visitor center						
Golf club house						
Library						
Elementary School(s)				10.3	750 students	
Middle School						
High School						
Subtotal			**725,000**	**69.9**		

Abbreviations: SFD = single-family detached, SFA = single-family attached, DU = dwelling unit
VTTM = Vesting Tentative Tract Map

Recreation, Arterials, and Open Space

Land Use Category	VTTM Planning Area	No. Of Units	Square Footage	Acreage	Product Type	Notes
Water Feature						
Irrigated Slope				50.2		
Irrigated Flat				3.5		
Wet Zone (Unspecified Length)						
30' Wet Zone						
50' Wet Zone						
70' Wet Zone						
Public Roads (excluding parkways/medians)				32.1		
Existing Roads						
Access Road						
Non-Irrigated Slope						
Non-Irrigated Flat						
Non-Irrigated Brush Clearing Zone						
Debris Basin				8.1		
Water Quality				5.2		
Natural OS				58.2		
LDZ OS				4.7		
Trail OS						
Unspecified OS						
Trailhead						
Parkways & Medians				4.1		
Lake						
Sidewalk						
Private Utility						
Bank Protection						
River						
Drainage				10.8		
Golf Course						
Recreation Centers	PA-8		0			
Parks	PA-8		0	8.3		
SD & SS Easement						
Channel						
Subtotal				**185.2**		

	Units	SF (Non-Res)	Acreage
GRAND TOTAL	**1,574**	**725,000**	**382.3**

All data and acreages in this analysis are approximate and are subject to change at the time of preparation of the tentative or final land use maps.

Prepared by GSI Water Solutions and
the Newhall Land and Farming Company

Land Use Details for Valencia Commerce Center

Land Use Category	VTTM Planning Area	No. Of Units	Square Footage	Acreage	Product Type	Notes
Residential						
Estate						
Low						
Low Medium						
Medium						
High and Mixed Use						
Apartments						
Subtotal		**0**		**0.0**		
Non-Residential						
Mixed Use Commercial - Retail						
Mixed Use Commercial - Office	PA-2, PA-3		2,909,700	101.3		Mixed-use office (low rise offices)
Mixed Use Commercial - Total			**2,909,700**	**101.3**		
Commercial - Retail	PA-3		18,000	0.6		
Commercial - Office						
Commercial - Total			**18,000**	**0.6**		
Business Park (Office)						
Hotels and Spas						
SCE Substation						
Fire Station						
Sheriff Station						
Water Reclamation Plant						
Sr. Assisted Living						
Business Park (Industrial)	PA-3		472,300	16.5		
Visitor Center						
Golf Club House						
Library						
Elementary School(s)						
Middle School						
High School						
Subtotal			**3,400,000**	**118.4**		
Recreation, Arterials, and Open Space						
Water Feature						
Irrigated Slope				41.8		
Irrigated Flat						
Wet Zone (Unspecified Length)						
30' Wet Zone						
50' Wet Zone						
70' Wet Zone						
Public Roads (excluding parkways/medians)				11.1		
Existing Roads						
Access Road						
Non-Irrigated Slope						
Non-Irrigated Flat						
Non-Irrigated Brush Clearing Zone						
Debris Basin						
Water Quality						
Natural OS				157.0		
LDZ OS						
Trail OS						
Unspecified OS						
Trailhead						
Parkways & Medians				0.5		
Lake						
Sidewalk						
Private Utility						
Bank Protection						
River						
Drainage						
Golf Course						
Recreation Centers						
Parks						
SD & SS Easement						
Channel						
Subtotal				**210.4**		

	Units	SF (Non-Res)	Acreage
GRAND TOTAL	**0**	**3,400,000**	**328.8**

All data and acreages in this analysis are approximate and are subject to change at the time of preparation of the tentative or final land use maps.

Prepared by GSI Water Solutions and
the Newhall Land and Farming Company

Attachment 2

Summary of State and Local Laws and Regulations Governing Water Conservation in California April 2022

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ATTACHMENT 2: SUMMARY OF STATE AND LOCAL LAWS AND REGULATIONS GOVERNING WATER CONSERVATION IN CALIFORNIA

1. Introduction

Dating back to 2006, a series of noteworthy California laws have been enacted that affect the types and implementation of various water conservation and water use reduction activities and programs that are ongoing throughout the state. Below are discussions of the state's laws and regulations (Section 2); County of Los Angeles (L.A. County or County) ordinances (Section 3); and water use reduction activities and programs being implemented by the Santa Clarita Valley Water Agency (SCV Water), including by its Valencia Water Division (VWD), which is the water provider for the West Side Communities (Section 4). Section 5 contains a list of references cited in this attachment.

2. State Laws and Regulations

Table 2-1 lists the state laws and ordinances that collectively have promoted greater water use efficiency and conservation since the time that the original water demand factors for the West Side Communities were first established. Table 2-1 also identifies the entities and types of development activities to which the state laws and ordinances apply.

2.1 Early Legislation

Four laws were enacted by the California State Legislature from 2006 through 2009 to promote efforts to reduce water use state-wide in response to drought conditions and increasing population. These laws were accompanied by the passage of ordinances by state and local regulatory agencies to implement the legislation.

While three of the laws targeted specific uses, the fourth law (Senate Bill SBX7-7) was a much broader legislation that addressed urban water use on a state-wide scale and that officially sunsetted on December 31, 2020. SBX7-7 required the state to achieve a 20-percent reduction in urban per-capita water use by the end of 2020. Locally, this was implemented in the Urban Water Management Plans (UWMPs) prepared by SCV Water and its predecessor agency (the former Castaic Lake Water Agency [CLWA]). The UWMPs contained demand-reduction targets and associated implementation programs involving best management practices (BMPs) or demand management measures (DMMs) to implement the required 20-percent reduction in urban per-capita water use by the end of 2020. In the Santa Clarita Valley, this was implemented in part by requiring SCV Water, CLWA, and the former local retail water purveyors to establish (in their UWMP) demand-reduction targets and associated implementation programs involving BMPs or DMMs.

Currently, two sets of state rules and regulations govern the design and construction of buildings and landscapes for new developments: the state's green building standards (California's Green Building Standards Code [CALGreen]), and the state's landscape ordinance (Model Water Efficient Landscape Ordinance [MWELO]). Additionally, state legislation promulgated by both the Assembly and the House in 2018 sets future targets for per-person residential indoor water use that municipal water providers must achieve on an average basis within their service area. These three topics are discussed in Sections 2.2 through 2.4.

2.2 California's Green Building Standards (CALGreen)

CALGreen is the state's green building standards code. It is formally known as Title 24, Part 11, the California Green Building Standards Code. CALGreen identifies mandatory and voluntary provisions that apply to the planning, design, operation, construction, use, and occupancy of every newly constructed building or structure on a statewide basis. Certain provisions that are under the jurisdiction of the California Department of Housing and Community Development (HCD) apply to "low-rise residential" facilities, which are defined by

CALGreen as "[a] building that is of Occupancy Group R and is three stories or less, or that is a one- or two-family dwelling or townhouse" (HCD, 2010). CALGreen also requires that each portion of a mixed occupancy building comply with the specific green building measures applicable to that occupancy. Therefore, if a building's design includes commercial and residential uses, then both the non-residential and residential provisions apply to appropriate portions of the building.

The California Building Standards Commission (CBSC) first published CALGreen in mid-2010 as part of the 2010 code adoption process (CBSC, 2010), and CALGreen became effective on January 1, 2011. A comprehensive update of CALGreen is conducted every 3 years or less. The 2013 California Building Standards Code, which includes the 2013 version of CALGreen, was published on July 1, 2013 (CBSC, 2013) and became effective on January 1, 2014. Additional updates to CALGreen were issued on July 1, 2015, July 1, 2016, January 1, 2018, and January 1, 2021 (CBSC, 2015, 2016, 2018, and 2021). Table 2-2 lists the CALGreen standards that were issued on January 1, 2021, and became effective on July 1, 2021, categorized as mandatory versus voluntary measures, and categorizing them by residential and nonresidential requirements.

The 2021 update of CALGreen contains the most current sets of mandatory water use measures for residences (see Division 4.3 of the code) and nonresidential buildings (see Division 5.3 of the code). A more stringent set of voluntary measures is published in Appendix A4 of the code for residences and in Appendix A5 of the code for nonresidential buildings; if these measures are adopted by the local jurisdiction, then some of the measures become mandatory while others remain voluntary.

2.3 State Legislation Revising Future Residential Indoor Water Use Standards

Assembly Bill (AB) 1668 and Senate Bill (SB) 606 were signed into law on May 31, 2018, and together set permanent overall targets for water consumption, with particular focus on indoor uses of water.

AB 1668 requires the establishment of specific long-term standards for per-capita daily indoor residential water use, plus performance measures for commercial, industrial, and institutional water use. The bill requires the California Department of Water Resources (DWR) and the State Water Resources Control Board (SWRCB) to study urban indoor water-use standards and make recommendations for those standards to the state legislature by January 1, 2021. Final standards for urban indoor water-use will be adopted by the state legislature for incorporation into Section 10609.4 of the California Water Code. AB 1668 contains provisional standards for indoor residential water use rates as follows:

- Until January 1, 2025: 55 gallons per capita per day
- Beginning January 1, 2025: The greater of 52.5 gallons per capita per day or a standard recommended by DWR and the SWRCB
- Beginning January 1, 2030: The greater of 50 gallons per capita per day or a standard recommended by DWR and the SWRCB

AB 1668 defines performance measures for commercial, industrial, and institutional (CII) water use as consisting of actions taken by urban retail water suppliers that result in increased water use efficiency for water uses other than process water (defined in Section 10608.12(p) of the State Water Code). The bill amends Section 10608.12(n) of the State Water Code to state that performance measures may include educating CII water users on BMPs, conducting water use audits, and preparing water management plans. AB 1668 requires SWRCB to adopt long-term performance measures for CII water uses by June 30, 2022.

While AB 1668 is focused primarily on indoor water uses of urban water, it also revises State Water Code Section 10608.20(b)(2)(B) to require that landscapes irrigated through dedicated or residential meters or connections must meet the state's standards for irrigated landscape design (discussed in Section 2.4).

SB 606 requires an urban retail water supplier to calculate an urban water use objective no later than November 1, 2023, and by November 1 of each year thereafter. This bill also revises certain provisions in the

Urban Water Management Planning Act, including requiring that urban water suppliers include in their UWMP a drought risk assessment that examines water shortage risks for a 5-year-long drought. In a case where an urban water supplier has not submitted its UWMP to DWR, SB 606 deems the supplier to be ineligible for any water grant or loan, whereas prior law had limited this ineligibility to just certain types of water grants and loans. SB 606 also requires urban water suppliers to prepare, adopt, and periodically review a water shortage contingency plan, conduct an annual supply and demand assessment, and submit an annual water shortage assessment report to DWR.

In August 2018, DWR issued a public-review draft version of a detailed primer discussing these two bills and their implementation (DWR, 2018). As noted on page 7 of the primer, the SWRCB's actions for adopting and implementing water use efficiency standards have been deemed by the legislature to be Class 8 actions for protecting the environment and hence are exempt from the requirements of the California Environmental Quality Act. The primer goes on to note that the new authorities and requirements for urban water use objectives (1) are enforceable after 2022, (2) do not modify the current statewide goal of a 20 percent reduction in urban per-capita water use by 2020, and (3) should result in urban water conservation that exceeds the 2020 targets.

2.4 California's Model Water Efficient Landscape Ordinance (MWELO)

In 2006, the California Assembly passed AB 1881, which is known as the *Water Conservation in Landscaping Act of 2006*. AB 1881 requires cities and counties to develop and implement (1) guidelines for local landscape ordinances and water-efficient landscape design, and (2) regulations and performance standards for energy-efficient landscape materials (including controllers and soil moisture sensors). This legislation also requires that water purveyors, after January 1, 2005, install separate water meters to measure the volume of water used exclusively for landscape purposes.

On September 10, 2009, DWR adopted its MWELO in response to the passage of AB 1881. This ordinance specified calculation methods and key input parameters (such as reference evapotranspiration rates [ETo] values) for determining the Maximum Applied Water Allowance (MAWA), which is the maximum amount of water that can be applied to an irrigated landscape. Local agencies were required to adopt the MWELO or an alternative local ordinance by January 2010. At that time, the City of Santa Clarita notified DWR that it would adopt the state's MWELO ordinance rather than develop its own ordinance (DWR, 2010). In contrast, L.A. County did not provide such a notification, most likely because it had already enacted ordinances in 2009 that specify water use efficiency requirements for landscapes.

DWR enacted new rules that updated the MWELO, effective September 2015. This update of the MWELO is contained in Sections 490 through 495, Chapter 2.7, Division 2, Title 23 in the California Code of Regulations. The 2015 MWELO applies to landscaping and irrigation systems at most new construction sites and in landscapes 500 square feet or larger that are being renovated. DWR enacted the 2015 MWELO in response to the Governor's Executive Order B-29-15 of April 1, 2015, which ordered further cuts in water use and included (in paragraph 11) a directive for DWR to update the MWELO to increase water efficiency standards for new and existing landscapes. Noteworthy aspects of the 2015 MWELO update include the following:

- Appendix A of the 2015 MWELO specifies the ETo that is to be used for evaluating compliance with the MWELO. These rates were updated in some locations from values published in the prior version of the MWELO. In Santa Clarita, Appendix A of the 2015 MWELO specifies an annual water demand for cool-season turf grass to be 61.5 inches per year, which is equivalent to approximately 5.1 feet per year.
- For landscapes using potable water, the 2015 MWELO update limits the maximum allowable water application rate to 55 percent of ETo for residential landscapes and 45 percent of ETo for non-residential landscapes. In Santa Clarita, this equates to 33.8 inches per year (approximately 2.8 feet per year) on residential landscapes and 27.7 inches per year (approximately 2.3 feet per year) on non-residential landscapes.

- For landscapes that meet the 2015 MWELO's definition of a Special Landscape Area (SLA), water application is allowed at rates up to 100 percent of ETo. SLAs include landscapes solely dedicated to edible plants; recreational areas outside of residential land parcels that are designated for active play, recreation, or public assembly; areas irrigated with recycled water; and water features that use recycled water.

Local agencies had until December 1, 2015, to adopt the 2015 MWELO ordinance or to adopt a Local Ordinance at least as effective in conserving water as the 2015 MWELO ordinance. Local agencies working together to develop a Regional Ordinance had until February 1, 2016, to adopt such an ordinance, but they were still subject to the December 2015 reporting requirements described in the 2015 MWELO ordinance.

3. County of Los Angeles Ordinances

L.A. County's Green Building Standards (contained in Title 31 of its municipal code) include requirements for water efficiency and conservation. These requirements were first enacted on December 18, 2008 in the form of two ordinances[1] which amended Title 21 (Subdivisions) and Title 22 (Planning and Zoning) of the L.A. County Code to:

- Establish drought-tolerant landscaping requirements for projects constructed after January 1, 2009 (ordinance number 2008-0064), and
- Establish green building development standards for projects constructed after January 1, 2009 (ordinance number 2008-0065)

On March 29, 2016, the L.A. County Board of Supervisors removed these particular ordinances from Title 21 and Title 22 of the Code and incorporated them into Title 31, along with a new tree-planting ordinance.[2]

The drought-tolerant landscaping ordinance (number 2008-0064) requires that 75 percent of a lot or parcel's landscaped area contain native and/or non-native plants listed by the County as being drought-tolerant. The ordinance also specifies that no more than 25 percent of the total landscaped area on a lot or parcel can consist of turf. The County's list of drought-tolerant plants and turf is organized by ecological zones, as described in the County's drought-tolerant landscaping handbook (L.A. County, 2012). The Santa Clarita Valley is identified in the handbook as residing in *Zone 6 Inland Mountains (Grapevine, Castaic, Santa Clarita).* For this zone and other zones in L.A. County, the handbook identifies the specific trees, vines, perennials, ground covers, hedges, decorative grasses, and turfs that meet the drought-tolerant landscaping requirement. The ordinance applies to residential and non-residential properties, but provides exemptions for public recreational lawns, parks, orchards, and vegetable gardens. The ordinance also states that exemptions may be granted by the L.A. County Department of Public Works for (1) landscaped areas constructed as part of stormwater low impact development facilities, and (2) manufactured cut or fill slopes that have gradients equal to or exceeding a slope of 3:1.

The County's requirements to maintain water efficient landscapes are contained in Title 20 (Utilities), Division 1 (Water), Chapter 20.09, with reference to (and additional requirements in) the County's building code (Title 26). Chapter 20.09 of Title 20 includes requirements for water purveyors to conduct water consumption audits on outdoor landscapes and provide audit results to the County's public works director. Subchapter 20.09.080 specifies that new and rehabilitated landscaping projects will require a permit under Title 26 (the building code).

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[1] Available at http://planning.lacounty.gov/assets/upl/data/ord_green-building-final-ordinances.pdf.
All County-adopted ordinances are available at http://planning.lacounty.gov/ord/adopted
[2] See http://planning.lacounty.gov/assets/upl/project/tpo_adopt_cert.pdf for details of this change.
The new tree planting ordinance is available at http://planning.lacounty.gov/tree

Title 22 (Planning and Zoning) of the County Code also contains development standards that specify the use of drought-tolerant lawn, shrubbery, flowers, or trees in certain land use zones.

- These requirements are specified for zones C-RU (rural commercial) and MXD-RU (rural mixed use development).
- In commercial zone C-MJ (major commercial), the code requires that any installed lawn be drought-tolerant.
- In its Hillside Design Guidelines (Appendix I to Title 22), Chapter V (for sensitive hillside design measures) specifies in Section 5.4 that landscapes on graded slopes and improved open spaces should utilize native and drought-tolerant trees, shrubs, and ground cover over all exposed graded areas. Section 5.3 states that at least two of six state- or County-required minimum standards must be achieved or exceeded, of which conserving water and improving water quality are two of these standards.
- For utility-scale solar energy facilities, Title 22 requires not only the use of non-invasive drought-tolerant vegetation (which must be approved by a County biologist), but also requires that hardscape materials be incorporated into the landscape design.

4. Local Water Conservation and Water Use Reduction Activities

This section of Attachment 2 contains information presented in CLWA's 2015 UWMP (Kennedy/Jenks Consultants et al., 2016) and SCV Water's recently completed 2020 UWMP (KJ, 2021).

The water purveyors in the Santa Clarita Valley have long recognized the need to encourage their customers to use water wisely. Educational programs and customer incentives to reduce water have been in place for many years. The Valencia Water Division (VWD) of SCV Water (formerly the Valencia Water Company [VWC]) has employed a full-time water conservation coordinator since 2005 and has added two more conservation specialists since that time. SCV Water/CLWA has a long history of also utilizing consultant services to implement various programs, including water audits, landscape training, and public outreach. A list of key activities by VWD/VWC through the year 2015 is contained in Table 2-3.

In 2006, VWC became a signatory to the California Urban Water Conservation Council (CUWCC) Memorandum of Understanding (MOU), establishing a firm commitment to the implementation of BMPs or DMMs. In 2007, VWC coordinated the development and execution of an MOU with the other retail water purveyors to develop a Water Use Efficiency Strategic Plan (WUESP; A&N Technical Services, 2008) for the Santa Clarita Valley. The WUESP provided detailed information on available water use efficiency opportunities and defined concepts for program implementation, including a mix of recommended programs, a stakeholder engagement process, and funding mechanisms. While the plan focused on reducing existing demands, the plan also identified building ordinances as an essential tool for further increasing water use efficiency in new construction. The WUESP developed a comprehensive list of new building standards beyond those contained in local ordinances at that time. Those standards identified design improvements in the water-use efficiency of plumbing fixtures that were estimated to capture 60 percent of the expected reduction in water demand envisioned under the WUESP.

The WUESP was updated in 2015 (Maddaus Water Management and Western Policy Research, 2015) and adopted by the CLWA Board of Directors in June 2015. Several of the changes identified in the 2008 and 2015 versions of the WUESP are now captured by recent ordinances – in particular, the state's MWELO for landscaping (effective January 2010 and updated effective September 2015), the CALGreen Building Code (effective January 2011 and updated as recently as 2021, as discussed in Section 2.2), and L.A. County's related ordinances (effective January 2009). VWC and the other purveyors in the Santa Clarita Valley were implementing the majority of the WUESP programs by 2009, including managing and financing the WUESP programs.

As discussed in CLWA's 2010 and 2015 UWMPs (Kennedy/Jenks Consultants et al., 2011 and 2016) and SCV Water's 2020 UWMP (KJ, 2021), VWC/VWD continued to expand its conservation programs and efforts to meet both its SBX7-7 and DMM requirements. CLWA's 2015 UWMP demonstrated compliance by the local water retailers in meeting interim water use targets related to SBX7-7 requirements, and SCV Water's 2020 UWMP demonstrated compliance with its 2020 target. As discussed in Section 8 of the 2020 UWMP, SCV Water was able to meet its 2020 water use reduction targets through conservation and water use efficiency efforts that connected its water customers to the policies, programs, and practices that were necessary to meet these targets. Section 8 of the 2020 UWMP identifies 7 categories of DMMs that have been implemented by CLWA/SCV Water over the past 5 to 10 years in accordance with the UWMP Act:

1. Water waste prevention ordinance
2. Metering
3. Conservation pricing
4. Public education and outreach
5. Programs to assess and manages real losses in the distribution system
6. Water conservation program coordination and staffing support
7. Other DMMs which during the past five year, which have consisted of:
    a. Conservation programs:
        i. Lawn replacement incentives
        ii. Distribution and rebate program for irrigation smart controllers and soil moisture sensors
        iii. Rebates for irrigation efficiency upgrades, under its Healthy and Efficient Landscape Program (HELP)
        iv. Drip irrigation rebates for non-turf irrigation systems
        v. Rebates for purchase and installation of permanent pool covers
        vi. Providing water use efficiency benchmarking data to customers
        vii. Water efficiency checkup and retrofit program for residential and commercial customers, examining both indoor and landscape water uses
        viii. Distribution of residential home water efficiency kits
        ix. Online WaterSMART workshops on improving home water use efficiency
        x. Courtesy notifications of high water use to customers experiencing water use that is unusually high or above efficiency goals
        xi. Customized water efficiency rebates that were available from other southern California water districts from 2015 through 2018
        xii. School retrofit program for water use efficiency upgrades
        xiii. Commercial rebates for ultra-high-efficiency toilets (UHETs), high-efficiency toilets (HETs), and dual flush valve toilets (DFVTs)
        xiv. Commercial low/no water urinal rebates
        xv. Customized drought reports during the 2011-2017 drought
    b. Asset management practices:
        i. Implementation of a comprehensive pipeline replacement program
        ii. Annual electro-potential pipeline-to-soil surveys and evaluations of pipeline systems
        iii. Ongoing updates of the system hydraulic model and system evaluation
        iv. Installation, monitoring, and programming of telemetry equipment
        v. Use, development, and upgrade of GIS systems
        vi. Implementation of a new software system for tracking and scheduling the maintenance, repair, and replacement of system assets
        vii. Development and updating of a long-term repair and rehabilitation schedule and costs

Section 8.3 of the 2020 UWMP identifies that SCV Water plans to update the WUESP in 2022 while maintaining the operational levels identified in the 2015 WUESP for its active water conservation programs.

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Table 2-1
State Laws, Codes, and Other Requirements for Water-Use Efficiency Enacted Since 2006

Year	Who	Description	What	Applicable To	Compliance Date or Effective Date	
2006	California State Assembly	AB 1881	Water Conservation in Landscaping Act of 2006	Local agencies (cities, counties, and/or water purveyors)	1/1/2010	compliance date
2007	California State Assembly	AB 715	Toilets and urinals	New sales and new installations	1/1/2014	effective date
2009	California State Senate	SB 407	Toilets, urinals, showerheads, and interior faucets	Buildings constructed on or before January 1, 1994	1/1/2017	compliance date for single-family residences
					1/1/2019	compliance date for multi-family residences and commercial properties
2009	California State Senate	SBX7-7	Reductions in Gallons per Capita per Day	Statewide water use	12/31/2020	compliance date
2009	California Department of Water Resources (DWR)	Updated Model Water Efficient Landscape Ordinance (MWELO)	Landscape irrigation (system design, scheduling, and application rates); plant selection; landscape maintenance	Landscapes that require a building or landscape permit	9/10/2009	adoption date
2010	California Building Standards Commission	CALGreen Building Standards Code	Indoor and outdoor water use standards	New construction	1/1/2011	effective date
2013	California Building Standards Commission	Current update to CALGreen Building Standards Code	Indoor and outdoor water use standards	New construction	7/1/2021	effective date
2015	Governor	Executive Order B-29-15	Drought-related order that included a directive to DWR to update the MWELO	Landscapes that require a building or landscape permit	4/1/2015	issuance date
2015	California Department of Water Resources (DWR)	Updated Model Water Efficient Landscape Ordinance (MWELO)	Landscape irrigation (system design, scheduling, and application rates); plant selection; landscape maintenance	Landscapes that require a building or landscape permit	7/15/2015 9/15/2015	adoption date effective date
2018	California State Assembly and State Senate	AB 1668 and SB 606	Water management planning	Urban water suppliers (retail and wholesale, indoor and outdoor water uses) and agricultural water suppliers	5/31/2018 1/1/2021 6/30/2022	effective date DWR and SWRCB recommend long-term urban indoor water-use standards to legislature SWRCB adopts long-term CII water use performance measures

Notes

AB = Assembly Bill

CII = commercial/industrial/institutional

DWR = California Department of Water Resources

SB = Senate Bill

SBX7 = Senate Bill during Extended Session 7 of the 2009 Session

SWRCB = State Water Resources Control Board

Table 2-2
CALGreen Indoor Water Use Standards (Effective July 1, 2021)

Fixture	Mandatory Standard	Voluntary Standard
Residential (Division 4.3 for Mandatory Standards and Division A4.3 for Voluntary Standards)		
Toilets (Water Closets)	≤ 1.28 gal/flush	
Urinals	≤ 0.125 gal/flush (wall-mounted) ≤ 0.5 gal/flush (all others)	
Single showerheads	≤ 1.8 gpm @ 80 psi	
Multiple showerheads	≤ 1.8 gpm @ 80 psi (per valve)	
Lavoratory faucets in residences	≤ 1.2 gpm @ 60 psi	
Lavoratory faucets in common areas	≤ 0.5 gpm @ 60 psi	
Kitchen faucets	≤ 1.8 gpm @ 60 psi	≤ 1.5 gpm @ 60 psi
Metering faucets	≤ 0.2 gallons per cycle	
Standard residential dishwashers		≤ 4.25 gallons per cycle and ENERGY STAR certified[1]
Compact residential dishwashers		≤ 3.5 gallons per cycle and ENERGY STAR certified[1]
		Install at least one qualified ENERGY STAR dishwasher or clothes washer.
		Install nonwater urinals, hybrid urinals, or waterless toilets.
		Install a demand-based hot water recirculation system in 1- and 2-family dwellings.
Nonresidential (Division 5.3 for Mandatory Standards and Division A5.3 for Voluntary Standards)		
Toilets (Water Closets)	≤ 1.28 gal/flush	< 1.12 gal/flush
Urinals	≤ 0.125 gal/flush (wall-mounted) ≤ 0.5 gal/flush (all others)	≤ 0.11 gal/flush (wall-mounted) ≤ 0.44 gal/flush (all others)
Single showerheads	≤ 1.8 gpm @ 80 psi	≤ 1.6 gpm @ 80 psi
Multiple showerheads	≤ 1.8 gpm @ 80 psi (per valve)	
Lavoratory faucets	≤ 0.5 gpm @ 60 psi	≤ 0.35 gpm @ 60 psi
Kitchen faucets	≤ 1.8 gpm @ 60 psi	≤ 1.6 gpm @ 60 psi
Wash fountains	≤ 1.8 gpm per 20 rim space inches @ 60 psi	< 1.6 gpm per 20 rim space inches @ 60 psi
Metering faucets	≤ 0.20 gallons per cycle	< 0.18 gallons per cycle
Metering faucets for wash fountains	≤ 0.20 gpm per cycle per 20 rim space inches @ 60 psi	< 0.18 gpm per cycle per 20 rim space inches @ 60 psi
Food waste disposers	≤ 1.0 gpm when not in use ≤ 8.0 gpm when in use	
Food waste pulping system		≤ 2 gpm
Pre-rinse spray valves		≤ 1.6 gpm @ 60 psi
Food steamers		≤ 2 gal/pan/hour, including condensate water (batch-type steamers) ≤ 5 gal/pan/hour, including condensate water (cook-to-order steamers)
Combination ovens		≤ 1.5 gal/pan/hour, including condensate water
Commercial clothes washers		At least 10 percent below CA Energy Commission standards
Commercial dishwashers		Variable (see Table A5.303.3 in Division A5.3 of the 2021 CALGreen code)

Notes

[1] These standards are listed in the "nonresidential voluntary measures" portion of the 2021 CALGreen code update (in Division A5.303.3 of Appendix A5 of the code).

For residential buildings, Tier 1 status is achieved when mandatory measures plus at least 2 voluntary measures are met, and Tier 2 is achieved when mandatory measures plus at least 3 voluntary measures are met.

For nonresidential buildings, Tier 1 or Tier 2 status is achieved with either a minimum 12% or 20% reduction (respectively) in potable water use above a demonstrated baseline amount.

gal= gallons

gpm = gallons per minute

psi = pounds per square inch

Table 2-3
Select Water Conservation Activities by Valencia Water Company through 2015

Year	Who	Description	What
2006	Valencia Water Co.	CUWCC MOU	Commitment to implement BMPs or DMMs
2008	Valencia Water Co. and other local water purveyors	Local purveyors' collective strategy for increasing water use efficiency	Water Use Efficiency Strategic Plan (prepared for Santa Clarita Valley Family of Water Suppliers)
2011	Valencia Water Co.	Revisions to billing rate structure	Switch from volumetric rate structure to tiered rate structure, to support VWC's WaterSMART Allocation program.
2011	Valencia Water Co. and other local water purveyors	2010 UWMP	Established urban water use targets for SBX7-7 (reductions in per-capita water use by the years 2015 and 2020); presented accordant demand estimates every 5 years for the period 2015 through 2050; and presented Demand Management Measures (DMMs) and recycled water usage plans that are designed to meet the SBX7-7 water use reduction targets. Identified landscape irrigation as providing the greatest opportunity to achieve the reductions.
2015	Valencia Water Co. and other local water purveyors	Update of local purveyors' collective strategy for increasing water use efficiency	Update of Water Use Efficiency Strategic Plan (prepared for Santa Clarita Valley Family of Water Suppliers) (adopted by CLWA Board, June 2015)

Notes

BMPs = Best Management Practices

CLWA = Castaic Lake Water Agency

CUWCC = California Urban Water Conservation Council

DMMs = Demand Management Measures

MOU = Memorandum of Understanding

UWMP = Urban Water Management Plan

Attachment 3

Derivation of Water Demand Factors
April 2022

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ATTACHMENT 3: TEXT - DERIVATION OF WATER DEMAND FACTORS

1. Introduction

Water demand factors were first developed and applied to the planning for Newhall Ranch during the mid-1990s (CH2M HILL, 1996). Minor adjustments to the factors being used in the analyses for Entrada South, Valencia Commerce Center, and other West Side communities[1] were made in 2007 by GSI Water Solutions, Inc. (GSI), in coordination with a separate recycled water master plan study (DWE, 2007) conducted for the former Valencia Water Company (VWC), which is now the Valencia Water Division (VWD) of the Santa Clarita Valley Water Agency (SCV Water). The VWD is the retail water provider that is expected to serve the West Side communities. Details regarding the 2007 adjustments to the water demand factors are presented in two separate documents (GSI, 2008; GSI, 2010). Those water demand factors later were used to prepare comprehensive summaries of water demand projections for each village—first in 2010 (GSI, 2010), and then in a later update (GSI, 2016a) that was conducted to incorporate revisions at that time to the land use plans for each community. These factors were also used in an update conducted in 2014 for Entrada South (GSI, 2014).

Since that time, changes in state and local water use regulations and standards have established indoor and outdoor water use requirements and water conservation standards that will reduce the water demands in Entrada South, Valencia Commerce Center, and other West Side communities compared with previous estimates. Accordingly, during 2020, GSI revised the water demand factors based on current state and local water conservation standards and developed new water demand projections (GSI, 2020) to support SCV Water's development of its 2020 Urban Water Management Plan (KJ, 2021). Section 2 describes the approach for estimating new water demand factors and water-use savings under the state's current water conservation standards. Sections 3 and 4 present the calculations of new water demand factors and water-use savings for indoor and outdoor water uses, respectively.

2. Approach for Estimating New Water Demand Factors and Water Savings

GSI has conducted analyses of the amount of water that can be expected to be used annually for each type of land use under the current water conservation standards, as defined in the state's Green Building Standards Code (CALGreen) and the state's requirements for irrigation on urban landscapes (the Model Water Efficiency Landscape Ordinance [MWELO]). GSI conducted separate analyses of the amount of water demand and water-use savings that potentially can be achieved by implementing current water conservation standards for:

- Indoor water use in single-family and multi-family residences and in commercial/industrial/institutional (CII) facilities
- Outdoor water use for (1) potable needs such as swimming pools, washing, and landscape irrigation on certain residential properties, and (2) landscape irrigation with recycled water or other available supplies on residential and nonresidential common spaces and easements

Methods for evaluating indoor and outdoor water demands and water-use savings are discussed in Section 2.1 for indoor water uses and Section 2.2 for outdoor water uses.

[1] The West Side Communities are comprised of the Newhall Ranch Specific Plan villages along with Entrada South, Entrada North, Legacy Village, and Valencia Commerce Center. Five Point Holdings, LLC (FivePoint) is the developer of the West Side Communities.

2.1 Methodology for Evaluating Indoor Water Demands and Water-Use Savings

GSI's methodology for developing indoor water demand factors and estimates of potential indoor water-use savings under the state's current indoor water conservation standard (CALGreen) was as follows:

- **Identify and review available literature quantifying indoor water use details for historical time periods prior to 2000 (i.e., 1990s and earlier).** Publications and prior studies by the American Water Works Association Research Foundation (AWWARF) (1999) and the California Homebuilding Foundation (CONSOL, 2015) quantify historical water usage rates of individual indoor plumbing fixtures from the 1970s through the 1990s. Some of these studies also discuss the frequency of the use of each fixture and appliance. GSI used this information to calculate bulk indoor residential per capita use rates for typical indoor water use conditions prior to the year 2000. See Tables 3-1a and 3-1b for these details.
- **Conduct an initial comparison of historic and modern-day water consumption rates for indoor water uses.** The set of fixture-by-fixture rates and daily bulk indoor water use rates developed in the prior step for historical (1990s-era) conditions was compared in tabular form with the lower water consumption rates that are mandated under current state and local green building standards—particularly Los Angeles County's (L.A. County's) Green Building Standards (Title 31 of its municipal code), which by reference complies with the CALGreen standards that were first published in 2010 (CBSC, 2010) and have since been updated/supplemented approximately every 2 to 3 years (CBSC, 2013, 2015, 2016, 2018, and 2021). GSI then tabulated the fixture-specific differences between the historic and modern-day consumption rates using both the 2015 version of the CALGreen standards (see Table 3-1a) and the 2021 version of the CALGreen standards (see Table 3-1b). Both tables show the resulting reductions in daily indoor water use rates that arise from the CALGreen standards compared with historical (1990s) rates of water use. The reductions in daily indoor water use were evaluated for each residential land use type and for each type of CII facility, as defined in the water demand model (see Tables 3-3, 3-4, 3-5, and 3-6). In preparing these tables, GSI used per capita, per acre, and square footage measures for calculating the bulk daily rates, to be consistent with methods used in the water demand model for each type of residence and CII facility.
- **Cross-check the initial estimates of past and current per capita rates of indoor use against historic population and water reclamation plant (WRP) flow data.** During development of a numerical groundwater flow model for the Santa Clarita Valley (CH2M HILL, 2004), the local water agencies provided monthly and annual WRP flow data dating back to 1980 for the Saugus and Valencia WRPs. For the current evaluation of water demands and potential water-use savings, GSI obtained population and other census data for the City of Santa Clarita and Stevenson Ranch and calculated per capita indoor water use rates using the census data and the WRP flow data. As shown in Table 3-2, the resulting per capita flow rates then were compared with the per capita indoor water use rates developed in the prior steps for (1) historic conditions (the 1990s) and (2) more recent conditions that reflect a mixture of indoor facilities and water uses (old, remodeled homes with updated fixtures and appliances; older homes with little or no updates to fixtures and appliances; and new homes that meet current or recent building standards).
- **Develop a final set of past and current per capita rates of indoor use.** The per capita rates identified from the prior step were then assembled into a table to provide a direct comparison of the volumetric reduction in daily per capita indoor water use from residences from the mid-1990s to the present, and to define the percentage by which historic per capita rates of residential water use would be reduced under the requirements of current green building standards (see Table 3-3) and with consideration of the effects of system losses on indoor water demands. The percentage decline was applied as a scaling factor to develop indoor water use rates for CII facilities (see Tables 3-4 and 3-5) that reflect the effects of current water conservation standards, given that the planned CII facilities inside Entrada South, Valencia Commerce Center, and other West Side communities will largely be commercial and institutional in nature, with industrial facilities consisting solely of light industry in Valencia Commerce Center. Additionally, as indicated in Table 3-4, the measurement units for indoor water demand factors at elementary, middle,

and high schools were changed from gallons per acre per day (gpcpd) to gallons per student per day, with the new demand factor (20 gallons per student per day) derived from water use and demographic data provided by SCV Water for existing schools in the Santa Clarita Valley (as shown in Table 3-6).

2.2 Methodology for Evaluating Outdoor Water Demands and Water-Use Savings

GSI's methodology for developing outdoor water demand factors and estimates of potential outdoor water-use savings under the state's current outdoor water conservation standard (MWELO) was as follows:

- **Calculate the expected reduction in outdoor potable water demands in residential and nonresidential areas.** These demands primarily consist of volumetrically driven water uses (such as filling swimming pools and washing cars) that will decline only modestly under the current water conservation standards for non-irrigation uses of water (see Table 3-5). For single-family residences, the potable demands also include irrigation because these land parcels will not be served with recycled water.
- **Identify and review available state and local code requirements for water efficiency and water use standards on irrigated landscapes.** This effort focused on the requirements contained in the MWELO, for which an extensive change became effective in September 2015. This ordinance specifies calculation methods and key input parameters (such as reference evapotranspiration rates [ETo] values in Santa Clarita) that are used to determine the Maximum Applied Water Allowance (MAWA) for landscapes that are irrigated with potable water. The MWELO ordinance also provides certain exceptions that are granted for Special Landscape Areas, which include areas that are irrigated with recycled water. While the 2015 MWELO was the primary ordinance that GSI used to estimate outdoor water savings, GSI also reviewed L.A. County publications (including L.A. County, 2012) and the County's website for further supplemental information on water demand limits and requirements for landscapes (see Table 3-7). Additionally, at the request of SCV Water, GSI used an ETo value (67.7 inches per year) that is based on measurements collected by SCV Water at its Rio Vista Water Treatment Plant during the past approximately 10 years. This ETo value provided by SCV Water is 6.2 inches per year greater than the ETo value of 61.5 inches per year that is specified in the MWELO, and thereby provides a more conservative analysis of potential irrigation demands.
- **Estimate the typical acreages to be irrigated.** The water demand model estimates irrigation needs based in part on the percentage of land that requires irrigation. This is identified separately for each type of residential, CII, and other land use. For example, residential lots containing single-family residences are estimated to have between 25 and 45 percent of their total acreage consist of landscaping that requires irrigation (depending on the lot size), while irrigated landscaping is estimated to comprise 15 percent of the acreage for multi-family residential lots. In contrast, many CII facilities are estimated to have 25 percent of their total acreage require irrigation, and other properties (such as parks and irrigated slopes) will have even higher percentages (see Table 3-8).
- **Adjust irrigation rates for climate change and overirrigation.** As described in Attachment 3, the irrigation usage rates were adjusted upwards by (1) a factor of 1.0377 to account for climate-change influences on future water demands and (2) an additional factor of 1.15 to account for overirrigation that might arise from inefficiencies and deterioration of irrigation systems over time.

3. Indoor Water Demand Factors and Water-Use Savings

The process of estimating indoor water demand factors is described below on a step-by-step basis, consisting of:

- A review of the details of historical indoor residential water-use estimates from the 1990s for two other Los Angeles area water districts (Section 3.1).
- A comparison of those study results with historical discharges to WRPs in the Santa Clarita Valley (Section 3.2).

- An evaluation of current water conservation standards for indoor water use, and a comparison of the current standards against the historical water use estimates (Section 3.3).
- A comparison of the historical and conservation-related per capita water use values with those used prior to 2020 in the water demand model (Section 3.4).
- A discussion of population density data in Santa Clarita and a comparison of those data with values used for different types of residences in the water demand model (Section 3.5).
- A discussion of indoor consumption rates for nonresidential development (Section 3.6).

3.1 Studies of Historical Indoor Residential Water Use in Nearby Communities

A study by the AWWARF (1999) of indoor water uses in single-family residences served as the primary source of data and details for evaluating historical indoor residential water demand factors. The AWWARF study estimated indoor residential water use for nine water utilities across the United States. The estimates were calculated in two ways: (1) from surveys of residents living in single-family housing inside each water utility service area, and (2) from models of different indoor uses in single-family homes, using data from each water utility. GSI made use of the study's data for two southern California water utilities—the Las Virgenes Municipal Water District (in Calabasas) and the Walnut Valley Water District (in West Covina)—because both utilities are located in the Los Angeles area and likely have had similar past water fixtures and water use behaviors as in the Santa Clarita Valley during the 1990s-era time period that was studied by the AWWARF.

The AWWARF report identified that its findings were based on a total of 783 water use survey respondents from these two California water utilities. The data from the AWWARF report for these two water utilities are presented in Tables 3-1a and 3-1b and include two sets of per capita water use estimates: (1) values listed in the AWWARF report that were based on their modeling of utility-provided data, and (2) GSI's calculations of per capita consumption using the reported individual components of residential water use (as derived from customer survey data provided in the AWWARF report). Indoor residential use based on these two methods ranged from 67.6 to 82.1 gpcpd.

3.2 Comparison with Historical Santa Clarita Discharges to WRPs

As a cross-check on the applicability in Santa Clarita of the historical per capita water use rates derived from the Las Virgenes and Walnut Valley data, GSI calculated per capita inflows to the Valencia and Saugus WRPs for the period 1995 through 1999, using (1) historical population data for SCV Water's service area as published in the 2010 Urban Water Management Plan (UWMP) (KJC et al., 2011) and (2) WRP inflow data from 1995 through 1999 that were compiled during prior groundwater modeling studies (CH2M HILL, 2004). From 1995 through 1999, the population inside SCV Water's service area is estimated to have increased from 171,537 people to 195,556 people, while inflows to the two WRPs (combined) ranged between approximately 14.1 and 16.1 million gallons per day (mgd) on an average daily basis and averaged 15.4 mgd. Year-by-year calculations indicate that per capita inflows ranged from 92.8 gpcpd in 1995 to 78.3 gpcpd in 1997, with an average of 84.5 gpcpd from 1995 through 1999. However, the WRP inflows include a component of flow from CII facilities. Accordingly, consumption rates from residential areas alone will be lower than indicated by the WRP inflow volumes, as is apparent when comparing the calculations that examine the details of historical residential indoor use (67.6 to 82.1 gpcpd) against the higher values derived from WRP inflow data (78.3 to 92.8 gpcpd as shown in Table 3-2).

3.3 Indoor Water Consumption Rates and Water-Use Reductions in Residences Under Current Conservation Standards

To conserve water, the State of California building code contains mandatory water conservation standards for new buildings (CBSC, 2021). These standards include fixture-specific updates and restrictions on water flow. GSI applied the historical water use behavior patterns from the AWWARF (1999) study to the current flow rates for indoor fixtures that are specified under the current mandatory water conservation standards, then recalculated the indoor water demands on a per capita basis. The new estimates for indoor residential water use as of the 2015 update of CALGreen are shown in Table 3-1a for each indoor activity, along with a comparison of the historical rates and conservation-related rates. Table 3-1b shows the same information using the 2021 update of CALGreen. As shown in Table 3-1a, the conservation-based residential indoor water demand under the 2015 update of CALGreen is estimated to be 49.1 gpcpd, which is an 18.5 to 33.1 gpcpd decrease from the GSI-calculated historical rates of 67.6 to 82.1 gpcpd. For the 2021 update of CALGreen, the flow rate requirements for showers/baths and for faucets were lowered, resulting in an overall residential indoor water demand estimate of 45.3 gpcpd, which is a 22.2 to 36.8 gpcpd decrease from the GSI-calculated historical rates of 67.6 to 82.1 gpcpd.

As shown in Table 3-2, population and WRP inflow data from 2017 through 2019 (after the recent drought of 2012 through 2016) show average daily inflow rates to the WRPs ranging between 68.7 and 71.6 gpcpd, with an average during this 5-year period of 70.1 gpcpd. While these flows are notably lower than during the late 1990s, they likely overestimate the per capita use that must be achieved for new construction under the CALGreen building standards because plumbing and water use fixtures have not been upgraded to CALGreen standards in all residential and commercial facilities in the valley. For this reason, and to reduce the potential for underestimation of water demands, the estimate of 49.1 gpcpd that GSI has derived from the 2015 version of CALGreen (before considering fixture leakage and failure) is deemed by GSI to be an appropriate estimate of future indoor per capita use for newly constructed single-family dwellings in the West Side communities.

The AWWARF (1999) residential indoor water use study was performed on single-family residences. However, Entrada South and other West Side communities will have several different housing types and variable densities. As with the indoor residential demand factors used in prior water demand estimates, the updated demand factors that implement indoor water conservation standards in multi-family dwellings are equal to 93 percent of the conservation-based demand factors for low-density single-family dwellings. Accordingly, multiplying the 18.5 to 33.1 gpcpd savings rate for single-family homes (under the 2015 CALGreen standards) by 93 percent results in 17.2 to 30.7 gpcpd of indoor water use savings for multi-family dwellings when implementing indoor water conservation measures in Entrada South and other West Side communities.

3.4 Comparison of Calculated Per Capita Rates with Prior Water Demand Factors

Table 3-2 compares the calculated per capita indoor water use rates for historical conditions and current water conservation standards against (1) the WRP inflows described previously and (2) the indoor water demand factors for residences that have been used in water demand projections conducted prior to 2020 for Entrada South, Valencia Commerce Center, and other West Side communities. The comparisons also differentiate between per capita indoor uses for single-family dwellings versus multi-family dwellings. As shown in Table 3-2, prior water demand analyses have used rates of 80 to 100 gpcpd for low-density (single-family) housing and 70 to 75 gpcpd for high-density (multi-family) housing.

Based on the calculations described in Sections 3.1 through 3.3, under the 2015 update of the CALGreen building standards (CBSC, 2015), the indoor water demand factors are estimated to be 49 gpcpd for the estate and low residential land use categories and 46 gpcpd for the low medium, medium, and high/mixed-use residential categories and for apartments. However, these rates do not account for leakage and failure of plumbing fixtures as they age. Accordingly, as shown in the bottom two rows of Table 3-2, these per capita use rates have been multiplied by a factor of 1.1, to add a 10 percent leakage rate to the estimated indoor uses, resulting in per capita indoor water use estimates of 54 gpcpd for single-family dwellings and 50 gpcpd for multi-family dwellings. Table 3-3 compares the multi-family rates with the historical indoor water consumption rates that have been used prior to 2020 in the water demand model for each of the multi-family residential land use categories evaluated by the water demand model for Entrada South. Indoor per capita water use rates in Entrada South under current water conservation standards are between 67 percent and 71 percent of the indoor per capita rates that do not account for modern-day standards.

3.5 Population Densities

The estimated population of any given community is used to translate the per capita water use reductions to volumes of water savings that are achieved inside the community by implementing water conservation standards. In the water demand model, the population densities are 3.292 persons per household (PPHH) for single-family homes (estate, low, and low medium residential areas), 2.367 PPHH for condominiums and townhomes (medium density and high/mixed use developments), and 2.103 PPHH for apartments. These values were derived by GSI and VWC in early 2016, based on detailed examinations of census data for recently constructed developments inside VWC's service area (USDOC, 2015). Based on these occupancy rates and the number of dwelling units in each land use category (single-family homes, condominiums, townhomes, and apartments), the average population density is 2.37 PPHH in Entrada South. (No residential communities will be constructed in Valencia Commerce Center.) See GSI, 2016b for details.

3.6 Indoor Consumption Rates for Nonresidential Development

Other indoor uses of potable water are those occurring in CII facilities, including recreational facilities. These nonresidential types of land uses also have a set of green building code requirements (including water conservation standards) that will be implemented for water fixtures that are used within any indoor structures that are present on these land parcels.

As shown in Table 3-4, for most of the nonresidential land uses, the indoor per capita water use rates are 90 percent of the per capita rates that were used in prior analyses which preceded current water conservation standards. This percentage reduction for CII uses of indoor water accounts for how certain CII and recreational water uses are volumetrically based rather than rate based. A value of 90 percent was chosen to strike a balance between (1) recognizing that a certain amount of water use reduction would occur under the CALGreen building and water conservation standards while (2) seeking to minimize the potential of underestimating the specific water use needs of each type of nonresidential facility. However, the demand factor that describes the potable water supply need for the future Newhall Ranch WRP was not reduced, because the treatment process needs are not likely to reduce water demands below the amounts estimated in the past.

4. Outdoor Water Demand Factors and Water-Use Savings

This section discusses the water demand factors for outdoor uses of potable water that are estimated for residential areas (Section 4.1) and nonresidential developments (Section 4.2), and the reductions in water demand factors that Five Point Holdings, LLC (FivePoint) will achieve in meeting the state's potable water irrigation standards in areas where FivePoint plans to use recycled water (Section 4.3).

4.1 Demand Factors for Residential Outdoor Uses of Potable Water

Potable outdoor water needs for residential land uses in Entrada South will consist of non-irrigation needs (such as filling swimming pools and washing cars) and will have volumetrically driven water demands that are expected to decline modestly (by 25 percent) from the prior water demand factor of 45 gpcpd to 34 gpcpd under current water conservation standards. As shown in the last column of Table 3-3, the ratio of new to old water demand factors for outdoor potable water uses in multi-family dwellings is approximately 0.75.

4.2 Demand Factors for Nonresidential Outdoor Uses of Potable Water

In nonresidential developments, potable water will not be used for irrigation but will be used to meet other outdoor water needs. Table 3-5 lists the nonresidential water demand factors for outdoor (non-irrigation) potable use that were contained in prior water demand projections (including those presented in GSI, 2010, 2014, and 2016a) and the factors that are used in new model projections under current water conservation standards. As with indoor uses in nonresidential developments, the adjustments from the original to new demand factors for outdoor uses in nonresidential developments were based on a ratio of 0.90 for considering the effects of current water conservation standards. This value was selected for nonresidential outdoor uses of potable water because the potable water use efficiencies that are achievable indoors for nonresidential developments will also be achievable outdoors (and might provide more water savings than is assumed in this analysis).

4.3 Demand Factors for Landscape Irrigation with Nonpotable Water

For landscape irrigation, GSI conducted its analysis of water demand factors and potential outdoor water-use savings under the assumption that FivePoint will design its landscapes in common areas to meet the 2015 MWELO requirements for landscapes that are irrigated with potable water, even though the actual water supply will consist of recycled water in most (if not all) common areas. This distinction is important because on landscapes being irrigated with recycled water, the 2015 MWELO allows water application to occur at rates equal to the ETo for healthy turf grass, whereas the maximum allowable water application rate on landscapes using potable water is limited by the 2015 MWELO to be 55 percent of the ETo for residential landscapes and 45 percent of the ETo for nonresidential landscapes. A landscape using recycled water is classified as a Special Landscape Area (SLA) in the 2015 MWELO and defined in Section 491.ttt of Title 23 as "*an area of the landscape dedicated solely to edible plants, recreational areas, areas irrigated with recycled water, or water features using recycled water*."

The 2015 MWELO specifies the ETo rate for healthy turf grass in Santa Clarita that must be used as the basis for calculating the maximum allowable irrigation application rate (called the MAWA in the 2015 ordinance) for landscapes being irrigated with potable water supplies in Santa Clarita.[2] The MWELO-specified ETo value for Santa Clarita is 61.5 inches per year. Under the MWELO rules, landscapes inside Santa Clarita that are subject to the MWELO rules must limit annual irrigation volumes of potable water to MAWA values of 61.5 inches per year in SLAs (based on nonpotable water use at 100 percent of ETo), 33.8 inches per year in residential landscapes (based on potable water use at 55 percent of ETo), and 27.7 inches per year in nonresidential landscapes (based on potable water use at 45 percent of ETo).

For water supply planning purposes, the MAWA values are calculated using an ETo value that is higher based on two considerations:

- **The average ETo measured during the past 10 years at a monitoring station located at SCV Water's Rio Vista water treatment plant.** This average is 67.7 inches per year.
- **Climate change considerations.** Rising temperatures associated with climate change will increase the ETo value that describes the water requirement of standardized turf grass. GSI has derived month-by-month values of long-term average climate change from change factors for ETo and precipitation provided by the California Department of Water Resources (DWR) on its internet data portal for the Sustainable Groundwater Management Act. The change factors are for 2030 and 2070 levels of climate change and can be applied to historical ETo and precipitation records. Table 3-7 shows the average monthly change factors for both levels of climate change and the 2030/2070 average values of the monthly factors, which were then applied to each month's historical average ETo to derive climate-change-influenced monthly and annual ETo values as shown in the table.

The resulting annual ETo value that arises from local historical data and climate-change considerations is 72.7 inches per year (6.06 feet per year). Table 3-7 presents the monthly distribution of turf evapotranspiration demands under this annual ETo value and identifies the resulting limits on monthly irrigation rates for residential landscapes (40.0 inches per year, which is 55 percent of ETo) and nonresidential landscapes (32.7 inches/year, which is 45 percent of ETo) under the MWELO calculation procedure for landscapes that are irrigated with potable water.

[2] Section 491.mmm of the MWELO rule defines reference evapotranspiration as an estimate of the amount of evapotranspiration occurring from a large field of 4-inch to 7-inch tall cool-season grass that is well watered. ETo differs from one location to another, as listed in Appendix A of the 2015 MWELO.

In comparing pre-2020 water demand models for Entrada South, Valencia Commerce Center, and other West Side communities (i.e., without current landscape irrigation conservation standards) with the standards established by the MWELO (including climate change), the demand factor values and the achievable reductions in irrigation water consumption on a unit land area are presented in Table 3-8 and summarized below:

- **Residential water use:**
  - Demand factor without current standards: 6.7 feet per year (80.4 inches per year)
  - Demand factor with current standards (MWELO):
    - 3.33 feet per year (40.0 inches per year) where using potable water
    - 6.06 feet per year (72.7 inches per year) where using recycled water
  - Amount of water use reduction achieved under the MWELO:
    - 3.37 feet per year (40.4 inches per year) where using potable water
    - 0.64 feet per year (7.7 inches per year) where using recycled water

- **Commercial/industrial/institutional:**
  - Demand factor without current standards: 4.5 to 5.6 feet per year (54 to 67 inches per year)
  - Demand factor with current standards (MWELO):
    - 2.73 feet per year (32.8 inches per year) where using potable water
    - 6.06 feet per year (72.7 inches per year) where using recycled water
  - Amount of water use reduction achieved under the MWELO:
    - 1.77 to 2.87 feet per year (21.2 to 34.4 inches per year) where using potable water
    - 0 feet per year (0 inches per year) where using recycled water

- **Other areas (recreation, arterials, and open spaces):**
  - Demand factor without current standards: 3.47 to 6.4 feet per year (41.6 to 76.8 inches per year)
  - Demand factor with current standards (MWELO):
    - 2.73 feet per year (32.8 inches per year) where using potable water
    - 6.06 feet per year (72.7 inches per year) where using recycled water
  - Amount of water use reduction achieved under the MWELO:
    - 0.74 to 3.67 feet per year (8.9 to 44.0 inches per year) where using potable water
    - 0 to 0.36 feet per year (0 to 4.1 inches per year) where using recycled water

However, for parcels of land that will consist of a mixture of turf and other plants, the water demand calculations assume that (1) recycled water will be used in sufficient quantities to maintain a healthy turf (annual water demand 6.06 feet), and (2) only the non-turf landscapes being irrigated with recycled water will be designed to meet the lower residential (3.33 feet) or nonresidential (2.73 feet) annual limits shown in Table 3-7 for irrigation with potable water. Table 3-8 shows the landscape design details for each type of land use, including the percentage of irrigated land that will consist of turf and an inventory of which irrigated lands will be supplied with potable supplies rather than recycled water. For each land use type, Table 3-8 then shows (1) the MAWA values for landscapes that will be irrigated with potable water versus recycled water, and (2) the resulting net average water use across the entire irrigated landscape for each land use category. As indicated in footnote (b) of Table 3-8, the MAWA values for landscapes using nonpotable water (i.e., landscapes for multi-family lots plus other common-areas) are calculated from the net of reference ETo demands for (1) turf areas under the nonpotable irrigation limit of 6.06 feet per year, and (2) non-turf areas under the applicable potable irrigation limit (which is 3.33 feet per year for residential lands and 2.73 feet per year for nonresidential/recreation/arterials/ open space lands).[3]

[3] See Table 3-7 for the derivation of the potable irrigation limits for residential lands and other (nonresidential) lands.

Note that the values listed in Tables 3-7 and 3-8 do not account for the potential for overirrigation to occur. Table 3-9 shows the MAWA values that arise from multiplying the values in Table 3-8 by a 15 percent overirrigation factor that accounts for potential inefficiencies and deterioration of irrigation systems. The values in Table 3-9 provide the irrigation demand factors that are used in the water demand calculations for Entrada South and Valencia Commerce Center, including consideration of the potential for overirrigation to occur as contemplated in the 2020 UWMP (KJ, 2021). In support of the 2020 UWMP, SCV Water conducted a study of developments constructed after promulgation of the 2015 MWELO irrigation standards and found that actual outdoor water uses exceeded MWELO limits by 26.5 percent for residential developments and 25.6 percent for nonresidential developments (MWM, 2021; Western Policy Research and MWM, 2021). The study noted that the measured water use volumes likely included other outdoor water uses besides irrigation, which means actual overirrigation rates were likely lower than the UWMP's estimates of overirrigation. Because the water demand tool for Entrada South and Valencia Commerce Center explicitly accounts for non-irrigation outdoor uses of water separately from irrigation uses, the combined volume of irrigation uses plus other non-irrigation outdoor uses of water are not expected to exceed MWELO limits by as large an amount as the 25.6 to 26.5 percent factors identified in the SCV Water study. Accordingly, the water demand analyses for Entrada South and Valencia Commerce Center use a lower overirrigation factor, which provides a reasonably conservative estimate that minimizes the potential for underestimating future outdoor water uses in a manner consistent with the 2020 UWMP. This is shown in the case of residential development in Table 3-10, which compares the resulting water use factors (in units of gallons per day per dwelling unit, gpd/DU) for Entrada South residential land uses with the equivalent gpd/DU factors that would arise from applying the 2020 UWMP factors to the residential land use mix for Entrada South. Table 3-10 shows the following:

- The upper half of Table 3-10 shows that before applying an overirrigation factor, the 34 gpcpd rate of potable residential outdoor water use in Entrada South results in an equivalent usage rate of 80 gallons per day per dwelling unit (gpd/DU), which is higher than the range of rates (58 to 74 gpd/DU, as shown in the lower half of Table 3-10) that is used in the 2020 UWMP water demand analyses for total residential outdoor water use at detached condominiums having the dwelling unit densities that will occur in Entrada South (8 to 40 dwelling units per acre), In other words, the residential potable outdoor water uses for Entrada South (which do not include irrigation) are calculated using higher gpd/DU water use factors than the 2020 UWMP factors that represent total outdoor water use with overirrigation for the types of multi-family dwellings planned for Entrada South.
- Additionally, the lower half of Table 3-10 shows that when adding together the outdoor potable and nonpotable water use volumes that have been estimated for Entrada South, the three residential land uses in Entrada South have gpd/DU rates for total outdoor water use that are between 1.67 and 2.28 times the total outdoor water use rates from the 2020 UWMP, with this ratio being 2.17 for the aggregate (net) group of residential developments in Entrada South (based on a net usage of 139 gpd/DU in Entrada South and 64 gpd/DU when applying the 2020 UWMP factors to the Entrada South residential land use mix).

Accordingly, the method used to calculate total outdoor water demands (with a 15 percent overirrigation factor) in Entrada South and Valencia Commerce Center (1) reduces the risk of underestimating future water demands in a manner that is consistent with the 2020 UWMP and (2) conservatively does not take into account the potential for Entrada South, as a master planned community with a master HOA, to achieve higher water conservation levels than the new development assumed in the 2020 UWMP analysis.

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Table 3-1a

Indoor Residential Water Use Details for Single-Family Dwellings under the 2015 CALGreen Standards

Description	Units	1997/98 Literature Value (Modeled from Utility Data)[a,b]	Source	1997/98 Calculated Use (Calculated by GSI from User Survey)[a,c]	Source	Modern-Day Plumbing Code Values (CALGreen 2015)[d]	Source	Reductions Arising from Plumbing Code Compared with 1997/98 Calculated Use[e]
Toilet								
Flush volume (water closets)	gal per flush			3.35	*1*	1.28	*4*	
Flushes	per capita per day			4.71	*1*	[f]		
Toilet total (water closets)	*gpcpd*	*16.9*	*1*	*15.8*	*3*	*6.0*	*3*	*-9.7 to -10.8*
Showers/Baths								
Frequency	per capita per day			0.74	*1*	[f]		
Duration	minutes per event			8.15	*1*	[f]		
Flow rate	gpm			2.1	*1*	2.0	*4*	
Bathing total	*gpcpd*	*11.6*	*1*	*12.9*	*3*	*12.1*	*3*	*-0.8 to 0.5*
Faucet								
Faucet duration	minutes per capita per day			8.6	*1*	[f]		
Faucet flow rate	gpm			2.5	*2*	1.5	*4*	
Faucet total	*gpcpd*	*11.8*	*1*	*21.5*	*3*	*12.9*	*3*	*-8.6 to 1.2*
Dishwasher								
frequency	per capita per day			0.08	*1*	[f]		
volume	gal per cycle			40.9	*1*	4.25	*4*	
Dishwasher total	*gpcpd*	*0.9*	*1*	*3.3*	*3*	*0.3*	*3*	*-2.9 to -0.5*
Clothes washer machine								
frequency	cycle per capita per day			0.37	*1*	[f]		
volume	gal per cycle			47.6	*1*	18	*4*[g]	
Washer total	*gpcpd*	*15.5*	*1*	*17.6*	*3*	*6.7*	*3*	*-11.0 to -8.8*
Other indoor use								
Other domestic use	gpcpd	1.7	*1*	1.7	*1*	[f]		
Leaks	gpcpd	9.4	*1*	9.4	*1*	[f]		
Other Indoor Total	*gpcpd*	*11.1*	*3*	*11.1*	*3*	*11.1*		*0.0 to 0.0*
Total Indoor Water Use	gpcpd	67.6	*1*	82.1	*1*	49.1	*3*	-33.1 to -18.5

Notes

[a] Values for 1997/1998 are based on averages of data from the Las Virgenes Municipal Water District (in Calabasas, CA) and the Walnut Valley Water District (in West Covina, CA).

[b] Totals from individual uses are as presented in AWWARF (1999), as modeled from utility data. Values are for single-family houses.

[c] Totals from individual uses are calculated from flow and user behavior as indicated in the report (AWWARF, 1999). Values are for single-family houses.

[d] Totals from individual uses are calculated from user behavior as indicated in the report (AWWARF, 1999), and flow data in CALGreen building standards (CBSC, 2015). Values are for single-family houses.

[e] Difference is between values calculated in the same way (from behavior and flow data).

[f] Assumes fixtures have changed since 1990s, but indoor water use behavior has not. Calculation uses 1997/98 behavior data.

[g] Based on energy-star high efficiency appliance. Not required by CALGreen, but assumed to be average use of modern-day appliance.

CALGreen = California Green Building Standards Code

gpcpd = gallons per capita per day

gpm = gallons per minute

Sources

1 Average of data collected in 1997 and 1998 from Walnut Valley, CA and Las Virgenes, CA, published in a study sponsored by the AWWA Research Foundation (AWWARF, 1999).

2 Standards from 1992, as published by the California Homebuilding Foundation (CONSOL, 2015).

3 Calculated value.

4 Value listed in the 2015 supplement to the CALGreen Green Building Code (CBSC, 2015).

Table 3-1b

Indoor Residential Water Use Details for Single-Family Dwellings under the 2019/2021 CALGreen Standards

Description	Units	1997/98 Literature Value (Modeled From Utility Data)[a,b]	Source	1997/98 Calculated Use (Calculated by GSI from User Survey)[a,c]	Source	Modern-Day Plumbing Code Values (CALGreen 2021)[d]	Source	Reductions Arising from Plumbing Code Compared with 1997/98 Calculated Use[e]
Toilet								
Flush volume (water closets)	gal per flush			3.35	*1*	1.28	*4*	
Flushes	per capita per day			4.71	*1*	[f]		
Toilet total (water closets)	*gpcpd*	*16.9*	*1*	*15.8*	*3*	*6.0*	*3*	*-9.7 to -10.8*
Showers/Baths								
Frequency	per capita per day			0.74	*1*	[f]		
Duration	minutes per event			8.15	*1*	[f]		
Flow rate	gpm			2.1	*1*	1.8	*4*	
Bathing total	*gpcpd*	*11.6*	*1*	*12.9*	*3*	*10.9*	*3*	*-2.1 to -0.7*
Faucet								
Faucet duration	minutes per capita per day			8.6	*1*	[f]		
Faucet flow rate (lavatory)	gpm			2.5	*2*	1.2	*4*	
Faucet flow rate (kitchen)	gpm			2.5	*2*	1.8	*4*	
Faucet total	*gpcpd*	*11.8*	*1*	*21.5*	*3*	*10.3*	*3*	*-11.2 to -1.4*
Dishwasher								
frequency	per capita per day			0.08	*1*	[f]		
volume	gal per cycle			40.9	*1*	4.25	*5*	
Dishwasher total	*gpcpd*	*0.9*	*1*	*3.3*	*3*	*0.3*	*3*	*-2.9 to -0.5*
Clothes washer machine								
frequency	cycle per capita per day			0.37	*1*	[f]		
volume	gal per cycle			47.6	*1*	18	*5* [g]	
Washer total	*gpcpd*	*15.5*	*1*	*17.6*	*3*	*6.7*	*3*	*-11.0 to -8.8*
Other indoor use								
Other domestic use	gpcpd	1.7	*1*	1.7	*1*	[f]		
Leaks	gpcpd	9.4	*1*	9.4	*1*	[f]		
Other Indoor Total	*gpcpd*	*11.1*	*3*	*11.1*	*3*	*11.1*		*0.0 to 0.0*
Total Indoor Water Use	gpcpd	67.6	*1*	82.1	*1*	45.3	*3*	-36.8 to -22.2

Notes

[a] Values for 1997/1998 are based on averages of data from the Las Virgenes Municipal Water District (in Calabasas, CA) and the Walnut Valley Water District (in West Covina, CA).

[b] Totals from individual uses are as presented in AWWARF (1999), as modeled from utility data. Values are for single family houses.

[c] Totals from individual uses are calculated from flow and user behavior as indicated in the report (AWWARF, 1999). Values are for single family houses.

[d] Totals from individual uses are calculated from user behavior as indicated in the report (AWWARF, 1999), and flow data in CALGreen building standards (CBSC, 2021). Values are for single family houses.

[e] Difference is between values calculated in the same way (from behavior and flow data).

[f] Assumes fixtures have changed since 1990s, but indoor water use behavior has not. Calculation uses 1997/98 behavior data.

[g] Based on energy-star high efficiency appliance. Not required by CALGreen, but assumed to be average use of modern-day appliance.

CALGreen = California Green Building Standards Code
gpcpd = gallons per capita per day
gpm = gallons per minute

Sources

1 Average of data collected in 1997 and 1998 from Walnut Valley, CA and Las Virgenes, CA, published in a study sponsored by the AWWA Research Foundation (AWWARF, 1999).
2 Standards from 1992, as published by the California Homebuilding Foundation (CONSOL, 2015).
3 Calculated value.
4 Value is a mandatory measure listed in Chapter 4 of the 2019 CALGreen Green Building Code (CBSC, 2019) and the July 2021 supplement (CBSC, 2021).
5 Value is a voluntary measure listed in Appendix A4 of the 2019 CALGreen Green Building Code (CBSC, 2019) and the July 2021 supplement (CBSC, 2021).

Table 3-2
Comparison of Historical and Modern-Day Indoor Residential Water Use Factors

Time Period	Housing Type	Indoor Water Use Factors from Studies and Building Standards (Residential Only) [a] (gpcpd)	Indoor Water Use Factors Specified in the NHR Water Demand Model (Residential Only) (gpcpd)	Measured Flows into WRPs in the Santa Clarita Valley (Residential and CII) [b] (gpcpd)
Historical (1990s)	Single-Family	67-82	80-100	1995-1999 Average: 84.5 Range: 78.3 to 92.8
	Multi-Family	62-76	70-75	
Modern-Day Plumbing Code (Without System Leakage)[c]	Single-Family	46	---	2017-2019[e] Average: 70.1 Range: 68.7 to 71.6
	Multi-Family	43	---	
Modern-Day Plumbing Code (Accounting for 10% System Leakage)[d]	Single-Family	51	54	
	Multi-Family	47	50	

Notes

[a] Historical estimates from literature are based on AWWARF surveys of single-family homes in Walnut Valley Water District and Las Virgenes Municipal Water District, 1997/1998.

[b] WRP flows reflect aggregate indoor use by residences and commercial/industrial/institutional (CII) facilities of all ages and various states of remodel.
Historical values are for the period 1995 through 1999, and modern-day values are for the period 2017 through 2019.

[c] Modern day use is based on mandatory flow restrictions for plumbing fixtures in the 2021 supplement to the CALGreen Code (CBSC, 2021).

[d] Values are 1.1 times the CALGreen code values, to account for periodic system leakage and malfunction of indoor fixtures.

[e] Based on 2017-2019 data (WRP influent flows of 19.7 to 19.9 millions gallons per day and population range of 275,000 to 290,000).

AWWARF = American Water Works Association Research Foundation
CALGreen = California Green Building Standards Code
CII = commercial/industrial/institutional
gpcpd = gallons per capita per day
NHR = Newhall Ranch
WRP = water reclamation plant

Table 3-3
Original and New Rates of Potable Water Use for Residential Development

Type of Residential Development	Original Potable Demand Factors				New Potable Demand Factors				Ratio of New/Original Potable Demand Factors	
	Indoor gpcpd	Outdoor gpcpd	Outdoor gpcpd Relative to Total gpcpd	Ratio of Outdoor gpcpd to Indoor gpcpd	Indoor gpcpd	Outdoor gpcpd	Outdoor gpcpd Relative to Total gpcpd	Ratio of Outdoor gpcpd to Indoor gpcpd	Indoor Use	Outdoor Use
Low Medium (Multi-Family Detached)	75	45	37.5%	60.0%	50	34	40.5%	68.0%	0.67	0.75
Low Medium (Multi-Family Attached)	75	45	37.5%	60.0%	50	34	40.5%	68.0%	0.67	0.75
Medium (Multi-Family Detached)	75	45	37.5%	60.0%	50	34	40.5%	68.0%	0.67	0.75
Medium (Multi-Family Attached)	75	45	37.5%	60.0%	50	34	40.5%	68.0%	0.67	0.75
High and Mixed Use (Multi-Family)	75	45	37.5%	60.0%	50	34	40.5%	68.0%	0.67	0.75
Apartments (Multi-Family)	70	42	37.5%	60.0%	50	32	39.0%	64.0%	0.71	0.76

Notes

For multi-family units, potable water use to meet outdoor demands is for all needs other than common-area irrigation. (Common-area irrigation demands will be met with nonpotable water supplies.)

Non-irrigation uses are volume-driven (rather than rate-driven) and decrease modestly from values of 42 to 45 gpcpd without current water conservation standards to values of 32 to 34 gpcpd under current water conservation standards.

AF = acre-feet

gpcpd = gallons per capita per day

Table 3-4
Indoor Rates of Potable Water Use for Nonresidential Developments

	Original Indoor Potable Demand Factors		Amount of Indoor Potable Water Use Reduction Estimated Under Current Water Conservation Standards		New Indoor Potable Demand Factors under Current Water Conservation Standards	
Land Use	Indoor Use		Ratio of New to Old	Rationale	Indoor Use	
	Units	Factor			Units	Factor
Mixed-Use Commercial (Retail)	gpd/sq. ft.	0.010	0.90	Average Indoor Change for All Residential Categories	gpd/sq. ft.	0.009
Mixed-Use Commercial (Office)	gpd/sq. ft.	0.050	0.90	Similar to Indoor Change for Residences Other than Estates	gpd/sq. ft.	0.045
Commercial (Retail)	gpd/sq. ft.	0.200	0.90	Similar to Indoor Change for Residences Other than Estates	gpd/sq. ft.	0.18
Business Park (Office)	gpd/sq. ft.	0.050	0.90	Similar to Indoor Change for Residences Other than Estates	gpd/sq. ft.	0.045
Business Park (Industrial)	gpd/sq. ft.	0.200	0.90	More Modest Reduction than Residences	gpd/sq. ft.	0.18
Institutional	gpd/sq. ft.	0.200	0.90	Similar to Indoor Change for Residences Other than Estates	gpd/sq. ft.	0.18
Hotel/Spa	gpd/sq. ft.	0.200	0.90	Similar to Indoor Change for Residences Other than Estates	gpd/sq. ft.	0.18
Hospital	gpd/bed	500	0.90	Similar to Indoor Change for Residences Other than Estates	gpd/bed	450
Sr. Assisted Living	gpd/bed	100	0.90	Similar to Indoor Change for Residences Other than Estates	gpd/bed	90
Golf Club House	gpd/sq. ft.	0.010	0.90	Similar to Indoor Change for Residences Other than Estates	gpd/sq. ft.	0.009
Visitor Serving	gpd/sq. ft.	0.010	0.90	Similar to Indoor Change for Residences Other than Estates	gpd/sq. ft.	0.009
Water Reclamation Plant	gpapd	200	1.00	No Change Because of Treatment Process Needs	gpapd	200
Electrical Substation	gpapd	0	---	No Interior Potable Water Use	gpapd	0
Fire Stations	gpd/sq. ft.	0.200	0.90	Similar to Indoor Change for Residences Other than Estates	gpd/sq. ft.	0.18
Schools	gpapd	260	---	Not Applicable (Units Have Changed)	gpd/student	20
Recreation Centers	gpapd	100	0.90	More Modest Reduction than Residences	gpapd	90
Neighborhood Parks	gpapd	100	0.90	Similar to Indoor Change for Residences Other than Estates	gpapd	90
Lake - Water	gpapd	0	---	No Interior Potable Water Use	gpapd	0
Lake - Park Area	gpapd	0	---	No Interior Potable Water Use	gpapd	0
Golf Course	gpapd	0	---	No Interior Potable Water Use	gpapd	0
Hardscape/Road Section	gpapd	0	---	No Interior Potable Water Use	gpapd	0
Landscape Area	gpapd	0	---	No Interior Potable Water Use	gpapd	0
Natural Open Space	gpapd	0	---	No Interior Potable Water Use	gpapd	0
River Corridor	gpapd	0	---	No Interior Potable Water Use	gpapd	0
Non-Irrigated Slopes	gpapd	0	---	No Interior Potable Water Use	gpapd	0
Irrigated Slopes, Wet Zones	gpapd	0	---	No Interior Potable Water Use	gpapd	0
O.S. Drainage Facilities	gpapd	0	---	No Interior Potable Water Use	gpapd	0

Notes
gpd = gallons per day
gpapd = gallons per acre per day
sq. ft. = square foot

Table 3-5
Outdoor Rates of Non-Irrigation Potable Water Use for Nonresidential Developments

	Original Outdoor Potable Demand Factors	Amount of Outdoor Potable Water Use Reduction Estimated under Current Water Conservation Standards		New Outdoor Potable Demand Factors under Current Water Conservation Standards
Land Use	Outdoor Use (gpapd)	Adjustment Factor	Rationale	Outdoor Use (gpapd)
Mixed-Use Commercial (Retail)	0	---	No Exterior Potable Water Use	0
Mixed-Use Commercial (Office)	0	---	No Exterior Potable Water Use	0
Commercial (Retail)	0	---	No Exterior Potable Water Use	0
Business Park (Office)	0	---	No Exterior Potable Water Use	0
Business Park (Industrial)	305	0.90	Based on Rounding Up the Amount of Outdoor Change in Residential Areas	275
Institutional	0	---	No Exterior Potable Water Use	0
Hotel/Spa	0	---	No Exterior Potable Water Use	0
Hospital	0	---	No Exterior Potable Water Use	0
Sr. Assisted Living	120	0.90	Based on Rounding Up the Amount of Outdoor Change in Residential Areas	108
Golf Club House	0	---	No Exterior Potable Water Use	0
Visitor Serving	305	0.90	Based on Rounding Up the Amount of Outdoor Change in Residential Areas	275
Water Reclamation Plant	0	---	No Exterior Potable Water Use	0
Electrical Substation	0	---	No Exterior Potable Water Use	0
Fire Stations	305	0.90	Based on Rounding Up the Amount of Outdoor Change in Residential Areas	275
Schools	0	---	New Analysis Uses this for Olympic-Size Pool at High School	13
Recreation Centers	0	---	No Exterior Potable Water Use	0
Neighborhood Parks	0	---	No Exterior Potable Water Use	0
Lake - Water	0	---	No Exterior Potable Water Use	0
Lake - Park Area	0	---	No Exterior Potable Water Use	0
Golf Course	0	---	No Exterior Potable Water Use	0
Hardscape/Road Section	0	---	No Exterior Potable Water Use	0
Landscape Area	0	---	No Exterior Potable Water Use	0
Natural Open Space	0	---	No Exterior Potable Water Use	0
River Corridor	0	---	No Exterior Potable Water Use	0
Non-Irrigated Slopes	0	---	No Exterior Potable Water Use	0
Irrigated Slopes, Wet Zones	0	---	No Exterior Potable Water Use	0
O.S. Drainage Facilities	0	---	No Exterior Potable Water Use	0

Notes
gpapd = gallons per acre per day

Table 3-6
Summary of K-12 School Demographics and Water Use in the Santa Clarita Valley, California

School District	Elementary School					Middle School					High School					Total				
	No. Schools	No. Students	Annual CCF Water Use	gpd per school	gpd per student	No. Schools	No. Students	Annual CCF Water Use	gpd per school	gpd per student	No. Schools	No. Students	Annual CCF Water Use	gpd per school	gpd per student	No. Schools	No. Students	Annual CCF Water Use	gpd per school	gpd per student
Castaic Union	3	1,612	17,028	11,633	21.6	1	539	18,327	37,560	69.7	0	0	---	---	---	4	2,151	35,355	18,115	33.7
Newhall	10	6,535	51,752	10,606	16.2	0	0	---	---	---	0	0	---	---	---	10	6,535	51,752	10,606	16.2
Saugus Union	15	9,924	84,277	11,515	17.4	0	0	---	---	---	0	0	---	---	---	15	9,924	84,277	11,515	17.4
Sulphur Springs[1]	8	4,821	39,052	10,004	16.6	0	0	---	---	---	0	0	---	---	---	8	4,821	39,052	10,004	16.6
William S. Hart Union[2]	0	0	---	---	---	6	6,965	90,071	30,766	26.5	7	14,982	140,301	41,077	19.2	13	21,947	230,372	36,318	21.5
Total	36	22,892	192,109	10,937	17.2	7	7,504	108,398	31,737	29.6	7	14,982	140,301	41,077	19.2	50	45,378	440,808	18,068	19.9

Notes

This analysis is based on data obtained from SCV Water on October 21, 2019.

[1] Excludes Valley View Community School, which has no annual consumption data.

[2] Excludes Castaic High School, which is too new to have any annual consumption data at this time.

CCF = centum cubic feet

gpd = gallons per day

SCV Water = Santa Clarita Valley Water Agency

Table 3-7
Reference Evapotranspiration (ETo) Water Demands and Associated Water Demands in the City of Santa Clarita, California

Month	Estimated Monthly Turf ET Demand as Percent of Annual Demand[a]	Reference ET for Turf Grass (without Climate Change) (ETo, inches)[b]	Annual Limit (inches) without Climate Change[b]		Average DWR Climate Change Factors for 2030 and 2070[c]			Reference ET (for Turf Grass) (with Climate Change) (ETo, inches)[b]	Annual Limit (inches) with Climate Change	
			Residential (55% of ETo)	Nonresidential (45% of ETo)	2030	2070	Average		Residential (55% of ETo)	Nonresidential (45% of ETo)
January	5%	3.1	1.71	1.40	1.066	1.145	1.106	3.43	1.89	1.54
February	5%	3.1	1.71	1.40	1.040	1.105	1.073	3.33	1.83	1.50
March	7%	4.5	2.48	2.03	1.037	1.098	1.068	4.81	2.65	2.16
April	9%	6.2	3.41	2.79	1.043	1.109	1.076	6.67	3.67	3.00
May	10%	6.6	3.63	2.97	1.057	1.110	1.084	7.15	3.93	3.22
June	11%	7.5	4.13	3.38	1.037	1.095	1.066	8.00	4.40	3.60
July	12%	8.4	4.62	3.78	1.033	1.078	1.056	8.87	4.88	3.99
August	13%	8.6	4.73	3.87	1.039	1.079	1.059	9.11	5.01	4.10
September	9%	6.4	3.52	2.88	1.038	1.078	1.058	6.77	3.72	3.05
October	8%	5.7	3.14	2.57	1.046	1.088	1.067	6.08	3.34	2.74
November	6%	4.1	2.26	1.85	1.061	1.135	1.098	4.50	2.48	2.03
December	5%	3.5	1.93	1.58	1.076	1.176	1.126	3.94	2.17	1.77
Annual (inches)		67.7	37.24	30.47				72.66	39.97	32.70
Annual (feet)		5.64	3.10	2.54				6.06	3.33	2.73

Notes

[a] Percentage values are calculated by GSI Water Solutions using the monthly and annual ETo values listed for Santa Clarita in Appendix A of the 2015 version of the MWELO.

[b] ETo values without climate change are based on a recent average annual ET rate of 67.7 inches/year, as measured at SCV Water's Rio Vista Water Treatment Facility.
For comparison, the reference ET value (ETo) specified in MWELO for Santa Clarita is 61.5 inches/year (5.1 feet/year).

[c] Climate change factors are provided by DWR and are the average of values from DWR for the period 1925-2019.
These climate-change factors are for the grid blocks identified as 10052 and 10134 on the DWR data portal where these data are housed.

DWR = California Department of Water Resources

ET = evapotranspiration

ETo = reference evapotranspiration for turf grass = 67.7 inches/year in Santa Clarita; from 10 most recent years of data from SCV Water's Rio Vista monitoring station (received from SCV Water on October 4, 2021).

MWELO = Model Water Efficient Landscape Ordinance (State of California)

Table 3-8
Irrigation Landscape Types and Maximum Allowable Irrigation Rates under the MWELO

Land Use Category	Landscape Design: Irrigated Landscaping Area as a Percentage of Gross Acreage	Landscape Design: Turf Percentage within Irrigated Landscaping Area	Landscape Design: Will Turf Area or Water Feature Use Potable Supply?	Irrigation Rates (feet per year): MAWA Values in Santa Clarita Under the MWELO[a]: Landscapes Using Potable Water	Irrigation Rates (feet per year): MAWA Values in Santa Clarita Under the MWELO[a]: Landscapes Using Recycled Water	Irrigation Rates (feet per year): MAWA Values in Santa Clarita Under the MWELO[a]: Net Allowed for Mixture of Landscapes[b]	Irrigation Rates (feet per year): Irrigation Rates Used in Prior Demand Estimates	Irrigation Rates (feet per year): Reduction under MWELO
Residential Development								
Low Medium (Multi-Family Detached)	15%	25%	No	3.33	6.06	4.02	6.70	2.68
Low Medium (Multi-Family Attached)	15%	25%	No	3.33	6.06	4.02	6.70	2.68
Medium (Multi-Family Detached)	15%	25%	No	3.33	6.06	4.02	6.70	2.68
Medium (Multi-Family Attached)	15%	25%	No	3.33	6.06	4.02	6.70	2.68
High and Mixed Use (Multi-Family)	15%	25%	No	3.33	6.06	4.02	6.70	2.68
Apartments (Multi-Family)	15%	25%	No	3.33	6.06	4.02	6.70	2.68
Nonresidential Development (Commercial/Industrial/Institutional)								
Mixed-Use Commercial (Retail)	25%	0%	No	2.73	6.06	2.73	5.36	2.63
Mixed-Use Commercial (Office)	25%	0%	No	2.73	6.06	2.73	5.36	2.63
Commercial (Retail)	25%	0%	No	2.73	6.06	2.73	5.36	2.63
Business Park (Office)	25%	0%	No	2.73	6.06	2.73	5.36	2.63
Business Park (Industrial)	25%	0%	No	2.73	6.06	2.73	5.36	2.63
Institutional	25%	0%	No	2.73	6.06	2.73	5.60	2.87
Hotel/Spa	25%	25%	No	2.73	6.06	3.57	5.36	1.79
Hospital	25%	25%	No	2.73	6.06	3.57	5.60	2.03
Sr. Assisted Living	25%	25%	No	2.73	6.06	3.57	5.60	2.03
Golf Club House	0%	0%	No	---	---	---	---	---
Visitor Serving	25%	0%	No	2.73	6.06	2.73	5.60	2.87
Water Reclamation Plant	25%	0%	No	2.73	6.06	2.73	4.48	1.75
Electrical Substation	0%	0%	No	---	---	---	---	---
Fire Stations	25%	0%	No	2.73	6.06	2.73	5.60	2.87
Schools (Elementary)	25%	75%	No	2.73	6.06	5.23	5.60	0.37
Schools (Middle/Junior High)	25%	75%	No	2.73	6.06	5.23	5.60	0.37
Schools (High Schools)	25%	75%	No	2.73	6.06	5.23	5.60	0.37
Recreation, Arterials, Open Space								
Recreation Centers	75%	55%	No	2.73	6.06	4.57	5.10	0.53
Neighborhood Parks	75%	55%	No	2.73	6.06	4.57	5.10	0.53
Golf Course	100%	80%	No	2.73	6.06	5.40	5.80	0.40
Lake - Water (Using Reclaimed Supply Only)	100%	0%	No	---	6.06	6.06	6.40	0.34
Lake - Park Area (Using Reclaimed Supply Only)	100%	75%	No	---	6.06	6.06	6.40	0.34
Hardscape/Road Section of Arterial Highways	0%	0%	No	---	---	---	---	---
Landscape Area of Arterial Highways	100%	0%	No	2.73	6.06	2.73	3.47	0.74
Natural Open Space	0%	0%	No	---	---	---	---	---
River Corridor	0%	0%	No	---	---	---	---	---
Non-Irrigated Slopes	0%	0%	No	---	---	---	---	---
Irrigated Slopes, Wet Zones	100%	0%	No	2.73	6.06	2.73	3.47	0.74
O.S. Drainage Facilities	0%	0%	No	---	---	---	---	---
O.S. LDZ, O.S. Trail LDZ, SD&SS easements	90%	0%	No	2.73	6.06	2.73	3.85	1.12

Notes

[a] MAWA values are based on a recent average annual ET rate of 67.7 inches/year (5.64 feet/year) as measured at SCV Water's Rio Vista Water Treatment Facility, multiplied by average DWR climate change factors for 2030 and 2070 levels of future climate change. For comparison, the reference ET value (ETo) specified in MWELO for Santa Clarita is 61.5 inches/year (5.1 feet/year).

[b] For multi-family residences, nonresidential developments, and recreation/arterials/open space lands, this value is the net use when applying recycled water at (1) reference ET (ETo) rates on turf and (2) MWELO-specified potable-water limits on other landscapes.

DWR = California Department of Water Resources MWELO = Model Water Efficient Landscape Ordinance (State of California)

Table 3-9
Irrigation Landscape Types and Maximum Allowable Irrigation Rates under the MWELO Including a 15 Percent Overirrigation Factor

	Landscape Design			Irrigation Rates (feet per year)				
				Maximum Applied Water Allowance (MAWA) Values With 15 Percent Overirrigation Factor				
Land Use Category	Irrigated Landscaping Area as a Percentage of Gross Acreage	Turf Percentage within Irrigated Landscaping Area	Will Turf Area or Water Feature Use Potable Supply?	Landscapes Using Potable Water	Landscapes Using Recycled Water	Net Allowed for Mixture of Landscapes [b]	Irrigation Rates Used in Prior Demand Estimates	Reduction under MWELO
Residential Development								
Low Medium (Multi-Family Detached)	15%	25%	No	3.83	6.97	4.62	6.70	2.08
Low Medium (Multi-Family Attached)	15%	25%	No	3.83	6.97	4.62	6.70	2.08
Medium (Multi-Family Detached)	15%	25%	No	3.83	6.97	4.62	6.70	2.08
Medium (Multi-Family Attached)	15%	25%	No	3.83	6.97	4.62	6.70	2.08
High and Mixed Use (Multi-Family)	15%	25%	No	3.83	6.97	4.62	6.70	2.08
Apartments (Multi-Family)	15%	25%	No	3.83	6.97	4.62	6.70	2.08
Nonresidential Development (Commercial/Industrial/Institutional)								
Mixed-Use Commercial (Retail)	25%	0%	No	3.14	6.97	3.14	5.36	2.22
Mixed-Use Commercial (Office)	25%	0%	No	3.14	6.97	3.14	5.36	2.22
Commercial (Retail)	25%	0%	No	3.14	6.97	3.14	5.36	2.22
Business Park (Office)	25%	0%	No	3.14	6.97	3.14	5.36	2.22
Business Park (Industrial)	25%	0%	No	3.14	6.97	3.14	5.36	2.22
Institutional	25%	0%	No	3.14	6.97	3.14	5.60	2.46
Hotel/Spa	25%	25%	No	3.14	6.97	4.10	5.36	1.26
Hospital	25%	25%	No	3.14	6.97	4.10	5.60	1.50
Sr. Assisted Living	25%	25%	No	3.14	6.97	4.10	5.60	1.50
Golf Club House	0%	0%	No	---	---	---	---	---
Visitor Serving	25%	0%	No	3.14	6.97	3.14	5.60	2.46
Water Reclamation Plant	25%	0%	No	3.14	6.97	3.14	4.48	1.34
Electrical Substation	0%	0%	No	---	---	---	---	---
Fire Stations	25%	0%	No	3.14	6.97	3.14	5.60	2.46
Schools (Elementary)	25%	75%	No	3.14	6.97	6.02	5.60	-0.42
Schools (Middle/Junior High)	25%	75%	No	3.14	6.97	6.02	5.60	-0.42
Schools (High Schools)	25%	75%	No	3.14	6.97	6.02	5.60	-0.42
Recreation, Arterials, Open Space								
Recreation Centers	75%	55%	No	3.14	6.97	5.25	5.10	-0.15
Neighborhood Parks	75%	55%	No	3.14	6.97	5.25	5.10	-0.15
Golf Course	100%	80%	No	3.14	6.97	6.21	5.80	-0.41
Lake - Water (Using Reclaimed Supply Only)	100%	0%	No	---	6.97	6.97	6.40	-0.57
Lake - Park Area (Using Reclaimed Supply Only)	100%	75%	No	---	6.97	6.97	6.40	-0.57
Hardscape/Road Section of Arterial Highways	0%	0%	No	---	---	---	---	---
Landscape Area of Arterial Highways	100%	0%	No	3.14	6.97	3.14	3.47	0.33
Natural Open Space	0%	0%	No	---	---	---	---	---
River Corridor	0%	0%	No	---	---	---	---	---
Non-Irrigated Slopes	0%	0%	No	---	---	---	---	---
Irrigated Slopes, Wet Zones	100%	0%	No	3.14	6.97	3.14	3.47	0.33
O.S. Drainage Facilities	0%	0%	No	---	---	---	---	---
O.S. LDZ, O.S. Trail LDZ, SD&SS easements	90%	0%	No	3.14	6.97	3.14	3.85	0.71

Notes

[a] MAWA values are based on a recent average annual ET rate of 67.7 inches/year (5.64 feet/year) as measured at SCV Water's Rio Vista Water Treatment Facility, multiplied by average DWR climate change factors for 2030 and 2070 levels of future climate change, and further multiplied by a 15 percent overirrigation factor. For comparison, the reference ET value (ETo) specified in MWELO for Santa Clarita is 61.5 inches/year (5.1 feet/year).

[b] For multi-family residences, nonresidential developments, and recreation/arterials/open space lands, this value is the net use when applying recycled water at (1) reference ET (ETo) rates on turf and (2) MWELO-specified potable-water limits on other landscapes.

DWR = California Department of Water Resources MWELO = Model Water Efficient Landscape Ordinance (State of California)

Table 3-10
Comparison of Residential Water Demand Factors for Entrada South and the 2020 UWMP

Entrada South	Residential Land Use Details				Potable Outdoor Use			Nonpotable Use	Total Outdoor Use
Residential Land Use Category	Acreage	% of Residential Acreage	No. of DUs	DUs/acre	PPHH	gpcpd	gpd/DU	gpd/DU	gpd/DU
Low Medium (Detached)	45.0	35.4%	371	8.24	2.367	34	80	77	157
Medium (Attached)	74.4	58.5%	894	12.02	2.367	34	80	52	132
High and Mixed Use	7.8	6.1%	309	39.62	2.367	34	80	17	97
Sum	127.2	100.0%	1,574	---					

Entrada South	Entrada South	Name of Equivalent	2020 UWMP	Entrada South	Entrada South Departure from 2020 UWMP	
Residential Land Use Category	DUs/acre	Land Use Category in 2020 UWMP	gpd/DU	gpd/DU	gpd/DU Difference	gpd/DU Ratio
Low Medium (Detached)	8.24	detcondo2 (6-10 DUs/acre)	74	157	83	2.12
Medium (Attached)	12.02	detcondo1 (10 DUs/acre or more)	58	132	74	2.28
High and Mixed Use	39.62	detcondo1 (10 DUs/acre or more)	58	97	39	1.67
	Net for Multi-Family Dwellings in Entrada South		64	139	75	2.17

Notes
All residential land uses are multi-family dwellings.
2020 UWMP land use categories and water demand factors are from Table 3 of Appendix H of MWM (2021).
The nonpotable use rates of 17 to 77 gpd/DU are calculated in the water demand model, based on the population densities and on the nonpotable demand factors (which include climate change and overirrigation).

DU = dwelling units DUs/acre = dwelling units per acre gpcpd = gallons per capita per day gpd/DU = gallons per day per dwelling unit PPHH = persons per household

Attachment 4

2016 Analysis of Dwelling Unit Occupancy Rates

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Technical Memorandum

To: Dirk Marks – Castaic Lake Water Agency
Lisa Maddaus – Maddaus Water Management

Copy: Mary Lou Cotton – Kennedy Jenks Consultants
Ken Peterson – Valencia Water Company
Matt Dickens – Valencia Water Company
Steve Zimmer– Newhall Land and Farming Company
Corey Harpole – Newhall Land and Farming Company
Alex Herrell – Newhall Land and Farming Company

From: John Porcello – GSI Water Solutions, Inc.
Cindy Ryals – GSI Water Solutions, Inc.

Date: February 10, 2016

Re: Evaluation of Dwelling Unit Occupancy Rates for Newhall Ranch and the West Side Communities

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Introduction

A population analysis was issued in November 2014 for the Castaic Lake Water Agency (CLWA) by Maddaus Water Management (Maddaus, 2014), in support of CLWA's activities to (1) develop its 2015 Water Use Efficiency Strategic Plan (Maddaus and Western Policy Research, 2015) and (2) begin preparation and reporting activities for its 2015 Urban Water Management Plan (UWMP). In both plans, the population analysis is critical input for estimating current and projected future water demands and daily per-person (per-capita) rates of water use within a given water provider's service area. For each type of residential land use, two key values used in the population analysis that affect projections of future water demands are (1) the number of dwelling units in a given retail water purveyor's service area and (2) the occupancy rate (population density), which is the number of persons per household (PPHH) for each classification of single family (SF) and multi-family (MF) structures in the water service area.

At the request of the Newhall Land and Farming Company (NLF) and CLWA, GSI Water Solutions, Inc. (GSI), reviewed the population analysis conducted by Maddaus for the portion of the CLWA service area containing the retail service area of the Valencia Water Company (VWC). The analysis compared 2010 occupancy rates estimated by Maddaus across the VWC service area (from 2010 U.S. Census data) with (1) census analyses in relatively newer portions of the VWC service area (where the median year built is 2000 or newer); (2) more recent (2011 through 2014) census-based occupancy rates of the newest developments in this same area and (3) buyer profile data collected by NLF in its newest developments from 2010 to the present. This comparative analysis was conducted to understand the applicability of the 2010-bsaed Maddaus occupancy rates to the specific types of residential structures and developments that are planned in the West Side Communities, which are expected to be gradually built and occupied beginning in 2018 and continuing to full build out in 2034. Results of the analysis are presented in Table 1, which lists the occupancy rates in order from smallest to highest values for the net average PPHH (which is the net area-wide average occupancy rate across the entire mixture of single-family and multi-family housing in a given area).

The remainder of this technical memorandum presents the following:

- Estimates of current occupancy rates inside the VWC service area
- Estimates of occupancy rates in existing recently-constructed residences inside VWC's service area and future planned residential construction in the West Side Communities
- Recommended occupancy rates for future residences in the West Side Communities
- Updates to land use details for the West Side Communities

Estimates of Current Occupancy Rates inside the VWC Service Area

The person per household (PPHH) occupancy rates calculated by Maddaus (2014) are based on an evaluation of U.S. Census data that incorporates decennial census block data from 2010 with block group data from the American Community Survey (ACS), collected from 2006 through 2011. ACS data are issued by the U.S. Census Bureau (USCB), and reflect changing trends in population statistics over time. The ACS survey is distributed to a portion of the population annually, and the responses over a 5-year period are grouped to provide a streamlined understanding of a population's characteristics over time (USCB, 2008). Although ACS data are not available at the block level and only are published as aggregated values over 3-year or 5-year periods, the ACS data provide more detailed statistics than decennial census data. The Maddaus analysis results for occupancy rates of single-family and multi-family residences are shown in Table 1, and include a net average occupancy rate for the mixture of all dwelling unit types (single- and multi-family buildings) of 2.71 PPHH (as calculated by GSI using the population distribution reported by Maddaus [2014]). As shown in Table 1, this net average occupancy rate estimated for VWC's service area is lower than reported in the 2010 U.S. Census (USCB, 2015) for the City of Santa Clarita (2.98 PPHH) and Stevenson Ranch (3.14 PPHH).

Because of the differences in collection methods and representative time frames for the decennial census data versus the 5-year ACS data, GSI reviewed the same population statistics using just the data issued by ACS and only at the tract level. GSI's results were similar to the Maddaus values for net average occupancy rates in VWC's service area. However, several additional sources of information indicate that occupancy rates may differ for the specific types of planned residential structures in the future West Side Communities, as discussed below.

Occupancy Rate Estimates for Existing Recently-Constructed Residences in VWC's Service Area and Planned Residential Construction in Future West Side Communities

As stated previously, Maddaus (2014) used a combination of decennial census data and ACS 5-year aggregate data for the period 2006 through 2011 to derive occupancy rates based on land use. The results for the different land uses, also shown in the first row of Table 1, are:

- Single family houses – 2.97 PPHH
- Condominiums/Townhomes – 2.97 PPHH
- Apartments – 1.87 PPHH
- VWC service area – 2.71 PPHH

The VWC service area occupancy rate estimates reported by Maddaus (2014) relied on data which included neighborhoods that were developed over the past four to five decades. Accordingly, the current area-wide occupancy rates in the VWC service area may not be representative of the newest developments that are now present nor the future types of residences to be built in the West Side Communities. To evaluate this, GSI reviewed multiple sources of population and projected development information, including information showing general trends in occupancy rates over time, to estimate future occupancy rates for Newhall Ranch and the West Side Communities. GSI considers these analyses to provide more representative estimates of current development and occupancy trends, and hence future population projections. The various sources of information reviewed and the findings of each analysis are discussed below.

Valencia Water Company – Selected Census Block Data Based on Locations that Include Apartment Complexes

VWC staff reviewed decennial (2010) census data at the block level for Bridgeport, North Park, and Stevenson Ranch, which are all recently-constructed neighborhoods with a mixture of houses, condominiums, townhomes, and apartment complexes. Their findings are presented in Table 2. In these neighborhoods, VWC found average occupancy rate values of 3.06 PPHH for SF detached units, 2.43 PPHH for SF attached units, and 2.10 PPHH for MF attached units (apartments). Of note are (1) the lower average occupancy rate for condominiums and townhomes (2.43 PPHH) than the Maddaus estimate for all categories of SF units (2.97 PPHH); (2) the wide range of occupancy rates for condominiums and townhomes (1.63 to 3.05 PPHH); and (3) the higher estimated occupancy rates for apartments (average of 2.10 PPHH) compared with the Maddaus estimate (1.87 PPHH).

NLF – Buyer Profile Surveys

NLF surveys the buyers of new properties for demographic information, which includes questions about the number of people living in the dwelling unit. NLF queried their database to provide this information, based on 1,233 profile surveys received from June 2010 through early February 2016. The average occupancy rates identified by this query are as follows:

- Single family houses – 3.41 PPHH
- Detached Condominiums/Townhomes – 2.54 PPHH
- Attached Condominiums/Townhomes – 2.34 PPHH

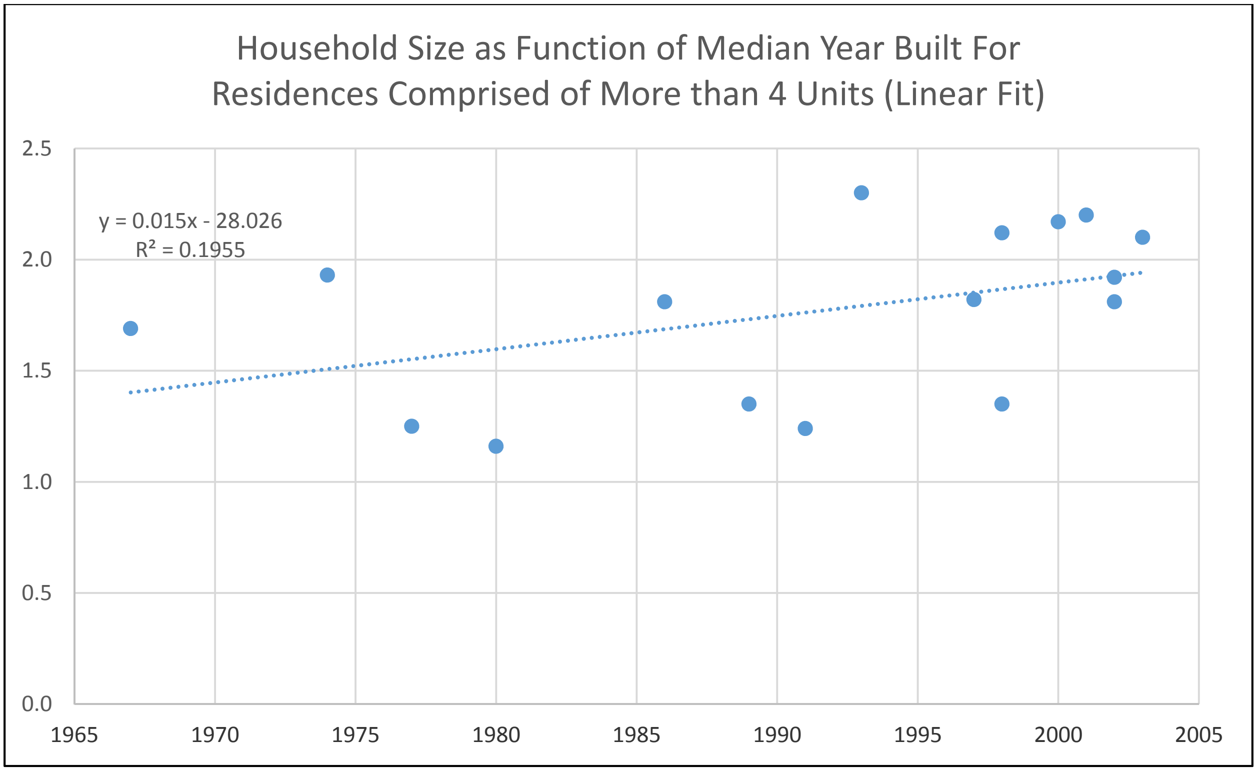
The results of this query are presented in Table 3, and provide more recent occupancy rate information than 2010 census data. Compared with the 2010 average occupancy rate derived by Maddaus for all SFD dwellings in VWC's service area (2.97 PPHH), the NLF survey values are 0.44 PPH higher for single family houses, 0.43 PPHH lower for detached condominiums/ townhomes, and 0.63 PPHH lower for attached condominiums/townhomes.

GSI – American Community Survey Census Data

To verify the findings of both the VWC and NLF evaluations, GSI evaluated two sets of data from ACS. First, the average occupancy rate was compared with the median year a home was built to confirm a reported trend towards higher occupancy rates in more recent homes. This evaluation used 2010 decennial census data for household size and 2006 through 2010 ACS data for the median year of built structures. Second, occupancy rate values based on land use type were calculated from ACS census data for 2011 through 2014 and compared to the values calculated from 2010 census data.

For both comparisons, tract level data were used to provide a more robust comparison between the scales of available ACS data and the decennial census data (rather than comparing data attained from different collection methods for the different scales). ACS data were needed because of the level of detail provided about number of housing units in a structure and the year that housing units were built.

GSI found an increasing trend over time in the household size of apartments, which are assumed to be the structures consisting of more than 4 housing units. This data trend is shown in the chart on the next page. Housing occupancy rates for these types of housing unit appear to be trending up during the past 10 to 15 years, compared with the early years of development.



For all tracts inside VWC's service area, and using 2010 through 2014 ACS data (as opposed to the earlier 5-year period of 2006 through 2011), GSI calculated the following average PPHH occupancy rates for different sizes of housing units:

- 1 unit (attached and detached) – 3.1 PPHH
- 2-4 unit structures – 2.3 PPHH
- >4 unit structures – 1.8 PPHH
- All units combined – 2.9 PPHH

These values are very similar to the 2010 values presented by Maddaus, because they include the entire VWC service area. In the five census tracts inside VWC's service area where the median year-built of all residences (SF and MF combined) is the year 2000 or newer, the tract-level census data in 2010 and in 2011 through 2014 indicate that the PPHH for apartments (i.e., the " > 4 unit structures " category) ranges from 1.81 to 2.20, with a mean PPHH of 2.05 and a standard deviation of 0.15 (see Table 4). When compared with the average apartment occupancy rate of 1.87 PPHH developed by Maddaus (2014) for the entire VWC service area, these higher values for newly-constructed apartments indicate that occupancy rates for apartments are increasing over time.

Recommended Occupancy Rates for Future Residences in the West Side Communities

The West Side Communities represent the majority of the future development that will occur within the VWC service area. Below is a summary of the occupancy rates that GSI recommends be used in future population projects and water demand estimates.

Apartments

Based on the review of 2011 through 2014 ACS data, GSI recommends the use of 2.20 PPHH, which is the mean value + 1 standard deviation and provides a reasonable (and not too low) estimate of occupancy rates in future newly constructed apartments in the West Side Communities. This value also is similar to VWC's analysis of new apartments (using 2010 block data), for which the mean value + 1 standard deviation sums to a value of 2.15 PPHH. GSI's recommended value of 2.20 PPHH provides a water use estimate that acknowledges the likely lower occupancy rates of apartments than other multi-family dwellings, while also reducing the chance of underestimating actual indoor water needs in apartment units.

Condominiums/Townhomes

For condominiums and townhomes, census tract data evaluated by VWC in recent developments indicate an average of 2.43 PPHH, with a standard deviation of 0.44 PPHH. The mean value + 1 standard deviation sums to a value of 2.87 PPHH. GSI recommends using a value of 2.60 PPHH in future water demand estimates because (1) this is between than the VWC mean value and the VWC "mean + 1 standard deviation" value; (2) VWC's analysis indicates that occupancy rates can be as high as at least 3.05 PPHH; (3) NLF's Buyer Profile Database indicates an average PPHH of 2.54 for detached condominiums/townhomes and 2.34 for attached condominiums/townhomes; and (4) the recommended value of 2.60 PPHH reduces the chance of underestimating actual indoor water needs in condominiums and townhomes.

Single-Family Detached Homes

Similarly, NLF's Buyer Profile Database indicates an average occupancy rate of 3.41 PPHH for single-family homes during the past five to six years (June 2010 through early February 2016). VWC's evaluation of 2010 census block data in recent developments indicates that single-family homes average 3.06 PPHH with a standard deviation of 0.55 PPHH and values as high as at least 3.64 PPHH. Accordingly, GSI recommends the use of a 3.40 PPHH occupancy rate, which is 0.21 PPHH lower than the mean value + 1 standard deviation from the VWC analysis (3.61 PPHH), and is similar to the average from the NLF surveys (3.41 PPHH). This value is also similar to (1) SCAG and OVOV projections in the SCAG North LA Subregion (range 3.19 PPHH [from the OVOV EIR] to 3.42 PPHH [from the SCAG 2008 RTP]); and (2) SCAG projections for unincorporated LA County (range 3.25 to 3.56 PPHH [from the SCAG 2016 RTP]), where these statistics reflect the predominance of single-family dwellings.[1]

[1] SCAG stands for Southern California Association of Governments. OVOV stands for One Valley – One Vision. RTP stands for Regional Transportation Plan.

Accordingly, the 3.40 PPHH value is a reasonable (and not too low) estimate of occupancy for future newly constructed detached single-family homes in the West Side Communities, based on the aforementioned analyses and the desire to not underestimate potential water needs in these housing units.

Update to Land Use Details for West Side Communities

The water demand models for the West Side Communities use a different land use classification system for residential housing types than are used in the Maddaus water demand models. Tables 5 and 6 present information on the number of dwelling units and acreages for each of the West Side and Maddaus land use categories. Table 5 presents this information for full build-out conditions, which NLF expects to be obtained by the end of the year 2034. Table 6 presents the same information at the end of 2020, which is the time when the Maddaus model transitions from an econometric analysis (through the year 2020) to a land-use based analysis.

Tables 5 and 6 also present the recommendation for occupancy rates to use in the West Side Communities, based on the assessment of more recent population information (described above) than was used in the original Maddaus (2014) population analysis. As shown in Table 1, these rates result in average occupancy rates of 2.80 PPHH for Newhall Ranch and 2.78 PPHH for the collective group of nine West Side Communities (which includes Newhall Ranch).

References Cited

Maddaus Water Management. 2014. *DRAFT – CLWA Population Assessment and GPCD Review*. Prepared for Stephanie Anagnoson, Castaic Lake Water Agency. November 20, 2014.

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United States Census Bureau (USCB). 2015. *2010 and Historic Census Data.* Accessed online on December 8, 2015 at http://www.census.gov/ .

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Table 1
Comparison of Occupancy Rate Estimates
Valencia, California

Area	Occupancy Rate (PPHH) for Single-Family Houses	Occupancy Rate (PPHH) for Condominiums and Townhomes	Occupancy Rate (PPHH) for Apartments	Net Average Occupancy Rate (PPHH)	Source
VWC Service Area in 2010 (Using Census Blocks)	2.97	2.97	1.87	2.71	Maddaus, Nov. 2014 (U.S. Census 2010 Block Data)
Projection for Future West Side Communities	3.40	2.60	2.20	2.78	GSI Analysis of Net PPHH and GSI Recommendations for Each Residence Type
Projection for Future Newhall Ranch	3.40	2.60	2.20	2.80	GSI Analysis of Net PPHH and GSI Recommendations for Each Residence Type
City of Santa Clarita in 2010	---	---	---	2.98	U.S. Census 2010 (Table Data)
VWC Service Area (2010 Census Block Data Analysis) (Recently Constructed Developments)	2.15 to 3.64 3.06 (avg) 0.55 (std. dev.) 3.61 (avg. + 1 std. dev.)	1.63 to 3.05 2.43 (avg) 0.44 (std. dev.) 2.87 (avg. + 1 std. dev.)	2.07 to 2.14 (2.10 avg) 0.05 (std. dev.) 2.15 (avg. + 1 std. dev.)	---	VWC Analysis of U.S. Census 2010 Block Data
VWC Service Area (2011-2014 Census Tract Data Analysis) (5 Census Tracts With Median Year Built of 2000 or More Recent)	---	---	1.81 to 2.20 (2.05 avg) 0.15 (std. dev.) 2.20 (avg. + 1 std. dev.)	2.28 to 3.12 (2.72 avg) 0.28 (std. dev.) 3.00 (avg. + 1 std. dev.)	GSI Analysis of U.S. Census 2011-2014 Tract Data
NLF Recently Constructed Developments	3.41	2.54 (detached) 2.34 (attached)	---	3.14 (Excluding Apartments)	NLF Buyer Profile Surveys (June 2010 through February 2016)
Stevenson Ranch in 2010	---	---	---	3.14	U.S. Census 2010 (Table Data)

Notes
PPHH = persons per household   VWC = Valencia Water Company   Data are listed from lowest to highest values of the net average PPHH.

Table 2

Single Family and Multi-Family Persons Per Household Assessment For Recently-Constructed Residences at the Bridgeport, North Park, and Stevenson Ranch Developments (Using 2010 U.S. Census Block Data)

Prepared by Valencia Water Company and GSI Water Solutions

Location	Housing Type	Attached/Detached	Units	Population	PPHH	Notes
Bridgeport	SF	Detached	206	608	2.95	SF Attached around lake and west on NH Ranch Parkway
North Park	SF	Detached	44	153	3.48	High Density Detached
Stevenson Ranch	SF	Detached	189	523	2.77	Stevenson Ranch Parkway and The Old Road
Stevenson Ranch	SF	Detached	128	275	2.15	
Stevenson Ranch	SF	Detached	22	80	3.64	
Stevenson Ranch	SF	Detached	78	262	3.36	North of Pacific Colony
North Park	SF	Attached	52	123	2.37	
North Park	SF	Attached	27	44	1.63	
North Park	SF	Attached	30	86	2.87	
North Park	SF	Attached	20	52	2.60	
North Park	SF	Attached	21	64	3.05	Provence
North Park	SF	Attached	46	95	2.07	Village Walk
Stevenson Ranch	SF	Attached	24	58	2.42	Marblehead Palisades Condos
Stevenson Ranch	SF	Attached	57	141	2.47	Marblehead Palisades Condos
Bridgeport	MF	Attached	188	402	2.14	Bridgeport Coast Apartments
North Park	MF	Attached	201	416	2.07	Skycrest Apartments

Location	Housing Type	Attached/Detached	Mean PPHH	Std. Dev.	Range	Mean + 1 Std. Dev.
All of Above	SF	Detached	3.06	0.55	2.15 to 3.64	3.61
All of Above	SF	Attached	2.43	0.44	1.63 to 3.05	2.87
All of Above	MF	Attached	2.10	0.05	2.07 to 2.14	2.15

Table 3

NLF Buyers Survey

Valencia, CA

Prepared by Newhall Land and Farming Company

Neighborhood	Product Type	No. of Beds	Avg. Sq.Ft.	Avg. HH Size
Attached				
Artisan	2-Story Town	3	1724	2.69
Claridad	2-Story Town	2-3	1397	2.09
Esperto	2/3 Story Town	2-3	1470	2.12
Hartford	2-Story Town	2-3	1683	2.20
Kensington	3-Story Town	4-5	2511	4.20
Cielo	3-Story Live/Work Town	2-3	2400	2.63
Overall Average				**2.34**
Single Family Detached Clusters				
Aqua	SFD Cluster	2-3	1205	2.00
Aria	SFD Cluster	3-5	1989	2.72
Providence	SFD Cluster	4-5	2225	2.83
Sol	SFD Cluster	4-5	1748	2.82
Terra	SFD Cluster	2-3	1590	2.19
Overall Average				**2.54**
Traditional Single Family Detached				
Belmont	SFD	3-6	3322	3.08
Brookville	SFD	4-5	2844	3.41
Capri	SFD	4-5	2811	3.05
Charleston	SFD	4-5	4117	3.27
Classics	SFD	4-6	4150	3.94
Estrella	SFD	4-5	2270	3.51
Heirloom	SFD	4-5	3480	3.60
Highgate	SFD	3-5	2786	3.14
Lavello	SFD	4-5	2763	3.67
Lexington	SFD	4-5	3511	3.73
Milan	SFD	3-4	3336	3.76
Monument	SFD	4-6	3770	3.41
Mosaic	SFD	4-5	3131	3.39
Toscana	SFD Alley	4	2472	3.20
Overall Average				**3.41**
Overall Average for All Product Types				**3.07**

Weighted Average		
Type	**Total People**	**Avg. HH Size**
SFD Cluster	518	2.54
SFD	2728	3.41
Attached	528	2.34
Overall	**3774**	**3.14**
SFD Cluster	518	2.54
SFD	2728	3.41
Overall	**3246**	**3.27**

Source: 1,233 individual Valencia Buyer Profiles from West Creek, West Hills, RiverVillage, and Villa Metro, collected between June 2010 and February 2016.

Table 4
Estimated Occupancy Rates in Developments with Median Year-Built of 2000 or Newer

Valencia, California

Tract No.	Median Yr Built	>4+ Units PPHH (Apartments)	Avg. PPHH (All Residences)
9203.39	2000	2.17	3.12
9201.14	2001	2.20	2.72
9201.09	2002	1.92	2.59
9203.28	2002	1.81	2.28
9201.08	2003	2.10	2.88
Min		1.81	2.28
Median		2.10	2.72
Mean		2.05	2.72
Max		2.20	3.12
Std. Dev.		0.15	0.28
Mean + 1 Std. Dev.		**2.20**	**3.00**

Table 5
Residential Land Uses and Occupancy Rates at Build-Out (Year 2034)
West Side Communities (9 Villages Combined)
Prepared by Newhall Land and Farming Company and GSI Water Solutions

LAND USE CATEGORIES, ACREAGES, AND DWELLING UNITS							FUTURE WEST SIDE OCCUPANCY RATES	
Maddaus's Water Demand Model			Newhall Land's Water Demand Model				Newhall Land's Water Demand Model	
Land Use Category	Acreage	Number of DU's	Land Use Category	Housing	Acreage	Number of DU's	Old Occupancy Rate (PPHH)	New Occupancy Rate (PPHH)
Single Family (<1 DU/acre)	263.3	589	Estate	Single-Family	61.2	65	3.40	3.40
			Low	Single-Family	202.1	524	3.40	3.40
Single Family (1-5 DU/acre)	395.3	3,199	Low Medium	Single-Family	809.4	6,550	3.40	3.40
Single Family (6-10 DU/acre)	414.1	3,351						
Condos/Townhomes	727.6	10,024	Medium (Detached Condos)	Multi-Family	475.2	5,676	2.60	2.60
			High and Mixed Use	Multi-Family	252.4	4,348	2.60	2.60
Apartments	236.5	4,337	Apartments	Multi-Family	236.5	4,337	2.60	2.20
Mobile Homes	0	0	---	---	---	---	---	---
Senior (Active)	0	0	---	---	---	---	---	---
TOTAL	**2,036.8**	**21,500**	**TOTAL**	**---**	**2,036.8**	**21,500**	**61,613**	**59,877**
							Total Population	

DU = dwelling unit PPHH = persons per household

Table 6
Estimated Residential Land Uses and Occupancy Rates for December 31, 2020
West Side Communities (9 Villages Combined)
Prepared by Newhall Land and Farming Company and GSI Water Solutions

LAND USE CATEGORIES, ACREAGES, AND DWELLING UNITS								FUTURE WEST SIDE OCCUPANCY RATES	
Maddaus's Water Demand Model			Newhall Land's Water Demand Model					Newhall Land's Water Demand Model	
Land Use Category	Acreage	Number of DU's	Land Use Category	Housing	Acreage	Number of DU's		Old Occupancy Rate (PPHH)	New Occupancy Rate (PPHH)
Single Family (<1 DU/acre)	0.0	0	Estate	Single-Family	0.0	0		3.40	3.40
			Low	Single-Family	0.0	0		3.40	3.40
Single Family (1-5 DU/acre)	3.9	32	Low Medium	Single-Family	8.0	65		3.40	3.40
Single Family (6-10 DU/acre)	4.1	33							
Condos/Townhomes	15.6	215	Medium (Detached Condos)	Multi-Family	10.2	122		2.60	2.60
			High and Mixed Use	Multi-Family	5.4	93		2.60	2.60
Apartments	32.2	590	Apartments	Multi-Family	32.2	590		2.60	2.20
Mobile Homes	0	0	---	---	---	---		---	---
Senior (Active)	0	0	---	---	---	---		---	---
TOTAL	**55.8**	**870**	**TOTAL**	**---**	**55.8**	**870**		**2,314**	**2,078**
								Total Population	

DU = dwelling unit PPHH = persons per household

Attachment 5

Water Demand Calculations for Entrada South
April 2022

Table 5-1
Land Use Plan Statistics
Entrada Village South

	Has Water	Area (acres)			Dwelling Units		
Land Use	**Demands?**	**Detached**	**Attached**	**Total**	**Detached**	**Attached**	**Total**
Residential Development							
Estate (Single-Family Detached)	Yes	0.0	0.0	0.0	0	0	0
Low (Single-Family Detached)	Yes	0.0	0.0	0.0	0	0	0
Low Medium (Single-Family Detached)	Yes	0.0	0.0	0.0	0	0	0
Low Medium (Multi-Family Detached)	Yes	45.0	0.0	45.0	371	0	371
Low Medium (Multi-Family Attached)	Yes	0.0	0.0	0.0	0	0	0
Medium (Multi-Family Detached)	Yes	0.0	0.0	0.0	0	0	0
Medium (Multi-Family Attached)	Yes	0.0	74.4	74.4	0	894	894
High and Mixed Use (Multi-Family)	Yes	0.0	7.8	7.8	0	309	309
Apartments (Multi-Family)	Yes	0.0	0.0	0.0	0	0	0
Subtotals		**45.0**	**82.2**	**127.2**	**517**	**1,057**	**1,574**
Nonresidential Development							
Mixed-Use Commercial							
Retail	Yes			1.50	Mixed use retail (including library)		
Office	Yes			52.50	Mixed use office		
Commercial	Yes			0.0	Commercial retail		
Business Park	Yes			0.0	Industrial + office that is in the commercial category		
Visitor Serving	Yes			0.0	Visitor center		
Water Reclamation Plant	Yes			0.0	Newhall WRP (assigned to Landmark)		
Electrical Substation	No			0.0	Has no water use		
Fire Station	Yes			0.0	Fire station(s)		
Hotel/Spa	Yes			5.6	Hotel/spa		
Sr. Assisted Living	Yes			0.0	Sr. Assisted Living (built into Residential Mixed Use)		
Golf Club House	Yes			0.0	Golf club house		
Schools	Yes						
Elementary (1)	Yes			10.3			
Middle (0)	Yes			0.0			
High (0)	Yes			0.0			
Subtotal				**69.9**			
Recreation, Arterials, Open Space							
Recreation							
Recreation Centers	Yes			0.0	Rec center (community park)		
Neighborhood Parks	Yes			8.3	Park (community park)		
Lake - Water	Yes			0.0	Water feature		
Lake - Park Area	Yes			0.0	Assume this is in "Lake-Water" category		
Golf Course	Yes			0.0	Irrigated - excludes the club house		
Arterial Highways							
Hardscape/Road Section	No			32.1	Not irrigated		
Landscape Area	Yes			4.1	Landscape in parkways and medians		
Major Open Areas							
Natural Open Space	No			58.2	Open space that is not part of "High Country" category		
River Corridor	No			0.0	Included in "Natural Open Space & High Country"		
Non-Irrigated Slopes	No			0.0	Previously "Community Open Area"		
Irrigated Slopes, Wet Zones	Yes			53.7	Previously "Community Slopes"		
O.S. Drainage Facilities	No			13.3	Debris basins, water quality basins		
O.S. LDZ, O.S. Trail LDZ, SD&SS easements	Yes			15.5	Previously "Ungraded Areas and Easements"		
Subtotal				**185.2**			
Totals				**382.3**	**517**	**1,057**	**1,574**

Updated April 2022 by GSI Water Solutions, Inc.

All data and acreages in this analysis are approximate and are subject to change at the time of preparation of the final land use map.

Table 5-2
Verification of Updated Population and Density
Entrada Village South

RESIDENTIAL LAND USE	Acreage	Dwelling Units Detached	Dwelling Units Attached	Occupancy persons/DU	Population Estimate
Estate (Single-Family Detached)	0.0	0	0	3.292	0
Low (Single-Family Detached)	0.0	0	0	3.292	0
Low Medium (Single-Family Detached)	0.0	0	0	3.292	0
Low Medium (Multi-Family Detached)	45.0	371	0	2.367	878
Low Medium (Multi-Family Attached)	0.0	0	0	2.367	0
Medium (Multi-Family Detached)	0.0	0	0	2.367	0
Medium (Multi-Family Attached)	74.4	0	894	2.367	2,116
High and Mixed Use (Multi-Family)	7.8	0	309	2.367	731
Apartments (Multi-Family)	0.0	0	0	2.103	0
TOTAL	**127.2**	**371**	**1,203**		**3,725**

Average Occupancy

Population / Total Dwelling Units	3,725 / 1,574	**2.37 persons/DU**

Updated April 2022 by GSI Water Solutions, Inc.
DU = dwelling unit

All data and acreages in this analysis are approximate and are subject to change at the time of preparation of the final land use map.

Table 5-3
Water Demand Calculations for Residential Development
Entrada Village South

Land Use	Acreage			Dwelling Units		Estimated Water Demand											
						Potable Use						Nonpotable Use				Total Use	
	Total	Detached	Attached	Detached	Attached	Interior Use gpcpd (a)	Exterior Use gpcpd (b)	Occupancy p/DU (c)	Interior (AFY)	Exterior (AFY)	**Subtotal (AFY)**	Irrigated Area (d)	Acreage Multi-Family Units (Nonpotable Water)	Annual Use Rate (AF/ac)	**Subtotal (AFY)**	(AFY)	Gallons Per Day Per Dwelling Unit
Estate (Single-Family Detached)	0.0	0.0	0.0	0	0	54	475	3.292	**0**	**0**	**0**	45%	0.0	0.0	**0**	**0**	**---**
Low (Single-Family Detached)	0.0	0.0	0.0	0	0	54	200	3.292	**0**	**0**	**0**	35%	0.0	0.0	**0**	**0**	**---**
Low Medium (Single-Family Detached)	0.0	0.0	0.0	0	0	54	80	3.292	**0**	**0**	**0**	25%	0.0	0.0	**0**	**0**	**---**
Low Medium (Multi-Family Detached)	45.0	45.0	0.0	371	0	50	34	2.367	**50**	**34**	**84**	15%	45.0	4.6	**32**	**116**	**279**
Low Medium (Multi-Family Attached)	0.0	0.0	0.0	0	0	50	34	2.367	**0**	**0**	**0**	15%	0.0	4.6	**0**	**0**	**---**
Medium (Multi-Family Detached)	0.0	0.0	0.0	0	0	50	34	2.367	**0**	**0**	**0**	15%	0.0	4.6	**0**	**0**	**---**
Medium (Multi-Family Attached)	74.4	0.0	74.4	0	894	50	34	2.367	**119**	**81**	**200**	15%	74.4	4.6	**52**	**252**	**252**
High and Mixed Use (Multi-Family)	7.8	0.0	7.8	0	309	50	34	2.367	**41**	**28**	**69**	15%	7.8	4.6	**6**	**75**	**217**
Apartments (Multi-Family)	0.0	0.0	0.0	0	0	50	32	2.103	**0**	**0**	**0**	15%	0.0	4.6	**0**	**0**	**---**
Total Water Demands									**210**	**143**	**353**				**90**	**443**	
Per-Capita Use (gallons/person/day)									**50**	**34**	**85**				**22**	**106**	

Notes:
(a) gpcpd = gallons per capita per day.
Interior water uses include drinking, bathing, laundry, sanitation, etc.
(b) gpcpd = gallons per capita per day.
Exterior water uses include landscape irrigation, washing cars, filling swimming pools, etc.
(c) p/DU = persons per dwelling unit.
(d) Irrigated areas include common areas, greenbelt irrigation within residential neighborhoods, etc.
The percentage value is the percentage of the gross lot area that is irrigated with nonpotable water.

Updated April 2022 by GSI Water Solutions, Inc.
AFY = acre-feet per year AF/ac = acre-foot per acre

Single-family residences shown in green. Multi-family detached residences shown in blue. Multi-family attached residences shown in reddish-brown.

The values shown in this analysis are approximate and are subject to change at the time of preparation of the final land use map.

Table 5-4
Water Demand Calculations for Nonresidential Development
Entrada Village South

Land Use	Acreage (a)	Floor Space (sq. ft.)	Estimated Water Demand											
			Potable Use					Nonpotable Use			Total			
			Interior Rate (a)	Exterior Rate gpapd (b)	Interior Use (AFY)	Exterior Use (AFY)	Subtotal (AFY)	Percent Irrigable Land	Annual Use (AF/ac)	Subtotal (AFY)	Total Use (AFY)	Units	No. of Units	Gallons Per Day Per Unit
Mixed-Use Commercial														
Retail (including library)	1.5	105,425	0.009	0	2	0	**2**	25%	3.14	**2**	**4**	TSF	105	**34**
Office	52.5	459,575	0.045	0	24	0	**24**	25%	3.14	**42**	**66**	TSF	460	**128**
Commercial (Retail)	0.0	0	0.180	0	0	0	**0**	25%	3.14	**0**	**0**	TSF	0	**0**
Business Park (Office)	0.0	17,025	0.045	0	1	0	**1**	25%	3.14	**0**	**1**	TSF	17	**52**
Business Park (Industrial)	0.0	0	0.180	275	0	0	**0**	25%	3.14	**0**	**0**	TSF	0	**0**
Visitor Serving	0.0	0	0.009	275	0	0	**0**	25%	3.14	**0**	**0**	TSF	0	**0**
Water Reclamation Plant	0.0	0	0.180	0	0	0	**0**	25%	3.14	**0**	**0**	TSF	0	**0**
Electrical Substation	0.0	0	0.000	0	0	0	**0**	0%	0.00	**0**	**0**	TSF	0	**0**
Fire Stations	0.0	0	0.180	275	0	0	**0**	25%	3.14	**0**	**0**	TSF	0	**0**
Institutional	0.0	0	0.180	0	0	0	**0**	25%	3.14	**0**	**0**	TSF	0	**0**
Hotel/Spa	5.6	165,000	0.180	0	34	0	**34**	25%	4.10	**6**	**40**	ROOM	100	**357**
Hospital	0.0	0	450	0	0	0	**0**	25%	4.10	**0**	**0**	TSF	0	**0**
Sr. Assisted Living	0.0	0	90	108	0	0	**0**	25%	4.10	**0**	**0**	ROOM	0	**0**
Golf Club House	0.0	0	0.009	0	0	0	**0**	0%	3.14	**0**	**0**	TSF	0	**0**
Schools														
Elementary (1)	10.3		20	0	17	0	**17**	25%	6.02	**16**	**33**	STUDENTS	750	**39.3**
Middle (0)	0.0		20	0	0	0	**0**	25%	6.02	**0**	**0**	STUDENTS	0	**0.0**
High (0)	0.0		20	13.0	0	0	**0**	25%	6.02	**0**	**0**	STUDENTS	0	**0.0**
Total Water Demands					**78**	**0**	**78**			**66**	**144**			

Notes:
(a) Interior water uses include drinking and sanitation.
Units are in gallons per day per square foot for the commercial, business park, visitor serving, water reclamation plant, institutional, hotel/spa, and fire station land uses.
Units are in gallons per day per acre for the water treatment plant and electrical substation land uses.
Units are in gallons per day per student for schools.
Units are in gallons per day per bed for the hospital and Sr. Assisted Living land use categories. In Table 5-1, the Sr. Assisted Living acreage is shown in the "High and Mixed Use (Multi-Family)" land use category.
(b) Potable water is used for outdoor uses that have potential human contact (e.g., swimming pools, wash water, some landscape irrigation). Units are in gallons per acre per day.
For Hospitals and for Sr. Assisted Living, the units are gallons per day per bed. For schools, this is the AF/year used by 1 Olympic-size swimming pool per high school (flushed 6 times/year);
other outdoor needs are met with nonpotable water.

Updated April 2022 by GSI Water Solutions, Inc.
AFY = acre-feet per year   AF/ac = acre-foot per acre   gpapd = gallons per acre per day   TSF = thousands of square feet

The values shown in this analysis are approximate and are subject to change at the time of preparation of the final land use map.

Table 5-5
Water Demand Calculations for Recreation, Arterial, and Open Space Land Uses
Entrada Village South

Land Use	Acreage	Estimated Water Demand						
		Potable Use		Nonpotable Use			Total (AFY)
		Potable Use gpapd	Subtotal (AFY)	Percent Irrigable Land	Annual Use (AF/ac)	Subtotal (AFY)	
Recreation							
Recreation Centers	0.0	90	**0**	75%	5.25	**0**	**0**
Neighborhood Parks	8.3	90	**1**	75%	5.25	**33**	**34**
Lake - Water	0.0	0	**0**	100%	6.97	**0**	**0**
Lake - Park Area	0.0	0	**0**	100%	6.97	**0**	**0**
Golf Course	0.0	0	**0**	100%	6.21	**0**	**0**
Arterial Highways							
Hardscape/Road Section	32.1	0	**0**	0%	0	**0**	**0**
Landscape Area	4.1	0	**0**	100%	3.14	**13**	**13**
Major Open Areas							
Natural Open Space	58.2	0	**0**	0%	0	**0**	**0**
River Corridor	0.0	0	**0**	0%	0	**0**	**0**
Non-Irrigated Slopes	0.0	0	**0**	0%	0	**0**	**0**
Irrigated Slopes, Wet Zones	53.7	0	**0**	100%	3.14	**169**	**169**
O.S. Drainage Facilities	13.3	0	**0**	0%	0	**0**	**0**
O.S. LDZ, O.S. Trail LDZ, SD&SS easements	15.5	0	**0**	90%	3.14	**44**	**44**
Total Water Demands			**1**			**259**	**260**

Updated April 2022 by GSI Water Solutions, Inc.
AFY = acre-feet per year AF/ac = acre-foot per acre gpapd = gallons per acre per day

Att5_Demand_EntradaSouth_WithSchool_20220408.xlsx[DemandOpenSpace]

The values shown in this analysis are approximate and are subject to change at the time of preparation of the final land use map.

Table 5-6 Summary of Water Demands Entrada Village South			
	Water Demand (AFY)		
Land Use	Potable	Nonpotable	Total
Residential Development			
Estate (Single-Family Detached)	0	0	0
Low (Single-Family Detached)	0	0	0
Low Medium (Single-Family Detached)	0	0	0
Low Medium (Multi-Family Detached)	84	32	116
Low Medium (Multi-Family Attached)	0	0	0
Medium (Multi-Family Detached)	0	0	0
Medium (Multi-Family Attached)	200	52	252
High and Mixed Use (Multi-Family)	69	6	75
Apartments (Multi-Family)	0	0	0
Subtotals	**353**	**90**	**443**
Nonresidential Development			
Mixed-Use Commercial			
Retail (including library)	2	2	4
Office	24	42	66
Commercial (Retail)	0	0	0
Business Park (Office)	1	0	1
Business Park (Industrial)	0	0	0
Visitor Serving	0	0	0
Water Reclamation Plant	0	0	0
Electrical Substation	0	0	0
Fire Stations	0	0	0
Institutional	0	0	0
Hotel/Spa	34	6	40
Hospital	0	0	0
Sr. Assisted Living	0	0	0
Golf Club House	0	0	0
Schools	17	16	33
Subtotals	**78**	**66**	**144**
Recreation, Arterials, Open Space			
Recreation			
Recreation Centers	0	0	0
Neighborhood Parks	1	33	34
Lake - Water	0	0	0
Lake - Park Area	0	0	0
Golf Course	0	0	0
Arterial Highways			0
Hardscape/Road Section	0	0	0
Landscape Area	0	13	13
Major Open Areas			0
Natural Open Space	0	0	0
River Corridor	0	0	0
Non-Irrigated Slopes	0	0	0
Irrigated Slopes, Wet Zones	0	169	169
O.S. Drainage Facilities	0	0	0
O.S. LDZ, O.S. Trail LDZ, SD&SS easements	0	44	44
Subtotals	**1**	**259**	**260**
Totals	**432**	**415**	**847**

Updated April 2022 by GSI Water Solutions, Inc.
AFY = acre-feet per year

The values shown in this analysis are approximate and are subject to change at the time of preparation of the final land use map.

Attachment 6

Water Demand Calculations
for Valencia Commerce Center
April 2022

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Table 6-1
Land Use Plan Statistics
Valencia Commerce Center

Land Use	Has Water Demands?	Area (acres)			Dwelling Units		
		Detached	Attached	Total	Detached	Attached	Total
Residential Development							
Estate (Single-Family Detached)	Yes	0.0	0.0	0.0	0	0	0
Low (Single-Family Detached)	Yes	0.0	0.0	0.0	0	0	0
Low Medium (Single-Family Detached)	Yes	0.0	0.0	0.0	0	0	0
Low Medium (Multi-Family Detached)	Yes	0.0	0.0	0.0	0	0	0
Low Medium (Multi-Family Attached)	Yes	0.0	0.0	0.0	0	0	0
Medium (Multi-Family Detached)	Yes	0.0	0.0	0.0	0	0	0
Medium (Multi-Family Attached)	Yes	0.0	0.0	0.0	0	0	0
High and Mixed Use (Multi-Family)	Yes	0.0	0.0	0.0	0	0	0
Apartments (Multi-Family)	Yes	0.0	0.0	0.0	0	0	0
Subtotals		**0.0**	**0.0**	**0.0**	**0**	**0**	**0**
Nonresidential Development							
Mixed-Use Commercial							
Retail	Yes			0.0	Mixed use retail (including library)		
Office	Yes			101.3	Mixed use office		
Commercial	Yes			0.6	Commercial retail		
Business Park	Yes			16.5	Industrial + office that is in the commercial category		
Visitor Serving	Yes			0.0	Visitor center		
Water Reclamation Plant	Yes			0.0	Newhall WRP (assigned to Landmark)		
Electrical Substation	No			0.0	Has no water use		
Fire Station	Yes			0.0	Fire station(s)		
Hotel/Spa	Yes			0.0	Hotel/spa		
Sr. Assisted Living	Yes			0.0	Sr. Assisted Living		
Golf Club House	Yes			0.0	Golf club house		
Schools	Yes						
Elementary (0)	Yes			0.0			
Middle (0)	Yes			0.0			
High (0)	Yes			0.0			
Subtotal				**118.4**			
Recreation, Arterials, Open Space							
<u>Recreation</u>							
Recreation Centers	Yes			0.0	Rec center (community park)		
Neighborhood Parks	Yes			0.0	Park (community park)		
Lake - Water	Yes			0.0	Water feature		
Lake - Park Area	Yes			0.0	Assume this is in "Lake-Water" category		
Golf Course	Yes			0.0	Irrigated - excludes the club house		
<u>Arterial Highways</u>				0.0			
Hardscape/Road Section	No			11.1	Not irrigated		
Landscape Area	Yes			0.5	Landscape in parkways and medians		
<u>Major Open Areas</u>							
Natural Open Space	No			157.0	Open space that is not part of "High Country" category		
River Corridor	No			0.0	Included in "Natural Open Space & High Country"		
Non-Irrigated Slopes	No			0.0	Previously "Community Open Area"		
Irrigated Slopes, Wet Zones	Yes			41.8	Previously "Community Slopes"		
O.S. Drainage Facilities	No			0.0	Debris basins, water quality basins		
O.S. LDZ, O.S. Trail LDZ, SD&SS easements	Yes			0.0	Previously "Ungraded Areas and Easements"		
Subtotal				**210.4**			
Totals				**328.8**	**0**	**0**	**0**

Updated April 2022 by GSI Water Solutions, Inc.

All data and acreages in this analysis are approximate and are subject to change at the time of preparation of the final land use map.

Table 6-2
Water Demand Calculations for Nonresidential Development
Valencia Commerce Center

Land Use	Acreage (a)	Floor Space (sq. ft.)	Estimated Water Demand: Potable Use: Interior Rate (a)	Exterior Rate gpapd (b)	Interior Use (AFY)	Exterior Use (AFY)	Subtotal (AFY)	Nonpotable Use: Percent Irrigable Land	Annual Use (AF/ac)	Subtotal (AFY)	Total: Total Use (AFY)	Units	No. of Units	Gallons Per Day Per Unit
Mixed-Use Commercial														
Retail (including library)	0.0	0	0.009	0	0	0	**0**	25%	3.14	**0**	**0**	TSF	0	**0**
Office	101.3	2,909,700	0.045	0	147	0	**147**	25%	3.14	**80**	**227**	TSF	2,910	**70**
Commercial (Retail)	0.6	18,000	0.180	0	4	0	**4**	25%	3.14	**1**	**5**	TSF	18	**248**
Business Park (Office)	0.0	0	0.045	0	0	0	**0**	25%	3.14	**0**	**0**	TSF	0	**0**
Business Park (Industrial)	16.5	472,300	0.180	275	96	6	**102**	25%	3.14	**13**	**115**	TSF	472	**217**
Visitor Serving	0.0	0	0.009	275	0	0	**0**	25%	3.14	**0**	**0**	TSF	0	**0**
Water Reclamation Plant	0.0	0	0.180	0	0	0	**0**	25%	3.14	**0**	**0**	TSF	0	**0**
Electrical Substation	0.0		0.000	0	0	0	**0**	0%	0.00	**0**	**0**	TSF	0	**0**
Fire Stations	0.0	0	0.180	275	0	0	**0**	25%	3.14	**0**	**0**	TSF	0	**0**
Institutional	0.0	0	0.180	0	0	0	**0**	25%	3.14	**0**	**0**	TSF	0	**0**
Hotel/Spa	0.0	0	0.180	0	0	0	**0**	25%	4.10	**0**	**0**	ROOM	100	**0**
Hospital	0.0		450	0	0	0	**0**	25%	4.10	**0**	**0**	TSF	0	**0**
Sr. Assisted Living	0.0		90	108	0	0	**0**	25%	4.10	**0**	**0**	ROOM	0	**0**
Golf Club House	0.0	0	0.009	0	0	0	**0**	0%	3.14	**0**	**0**	TSF	0	**0**
Schools														
Elementary (0)	0.0		20	0	0	0	**0**	25%	6.02	**0**	**0**	STUDENTS	0	**0.0**
Middle (0)	0.0		20	0	0	0	**0**	25%	6.02	**0**	**0**	STUDENTS	0	**0.0**
High (0)	0.0		20	13	0	0	**0**	25%	6.02	**0**	**0**	STUDENTS	0	**0.0**
Total Water Demands					**247**	**6**	**253**			**94**	**347**			

Notes:
(a) Interior water uses include drinking and sanitation.
Units are in gallons per day per square foot for the commercial, business park, visitor serving, water reclamation plant, institutional, hotel/spa, and fire station land uses.
Units are in gallons per day per acre for the water treatment plant and electrical substation land uses.
Units are in gallons per day per student for schools.
Units are in gallons per day per bed for the hospital and Sr. Assisted Living land use categories. In Table 6-1, the Sr. Assisted Living acreage is shown in the "High and Mixed Use (Multi-Family)" land use category.
(b) Potable water is used for outdoor uses that have potential human contact (e.g., swimming pools, wash water, some landscape irrigation). Units are in gallons per acre per day.
For Hospitals and for Sr. Assisted Living, the units are gallons per day per bed. For schools, this is the AF/year used by 1 Olympic-size swimming pool per high school (flushed 6 times/year); other outdoor needs are met with nonpotable water.

Updated April 2022 by GSI Water Solutions, Inc.
AFY = acre-feet per year   AF/ac = acre-foot per acre   gpapd = gallons per acre per day   TSF = thousands of square feet

The values shown in this analysis are approximate and are subject to change at the time of preparation of the final land use map.

Table 6-3
Water Demand Calculations for Recreation, Arterial, and Open Space Land Uses
Valencia Commerce Center

Land Use	Acreage	Estimated Water Demand						
		Potable Use		Nonpotable Use				
		Potable Use gpapd	Subtotal (AFY)	Percent Irrigable Land	Annual Use (AF/ac)	Subtotal (AFY)	Total (AFY)
Recreation							
Recreation Centers	0.0	90	**0**	75%	5.25	**0**	**0**
Neighborhood Parks	0.0	90	**0**	75%	5.25	**0**	**0**
Lake - Water	0.0	0	**0**	100%	6.97	**0**	**0**
Lake - Park Area	0.0	0	**0**	100%	6.97	**0**	**0**
Golf Course	0.0	0	**0**	100%	6.21	**0**	**0**
Arterial Highways							
Hardscape/Road Section	11.1	0	**0**	0%	0	**0**	**0**
Landscape Area	0.5	0	**0**	100%	3.14	**2**	**2**
Major Open Areas							
Natural Open Space	157.0	0	**0**	0%	0	**0**	**0**
River Corridor	0.0	0	**0**	0%	0	**0**	**0**
Non-Irrigated Slopes	0.0	0	**0**	0%	0	**0**	**0**
Irrigated Slopes, Wet Zones	41.8	0	**0**	100%	3.14	**132**	**132**
O.S. Drainage Facilities	0.0	0	**0**	0%	0	**0**	**0**
O.S. LDZ, O.S. Trail LDZ, SD&SS easements	0.0	0	**0**	90%	3.14	**0**	**0**
Total Water Demands			**0**			**134**	**134**

Updated April 2022 by GSI Water Solutions, Inc.
AFY = acre-feet per year AF/ac = acre-foot per acre gpapd = gallons per acre per day

Att6_Demand_VCC_20220408.xlsx[DemandOpenSpace]

The values shown in this analysis are approximate and are subject to change at the time of preparation of the final land use map.

Table 6-4
Summary of Water Demands
Valencia Commerce Center

Land Use	Water Demand (AFY) Potable	Nonpotable	Total
Residential Development			
Estate (Single-Family Detached)	0	0	0
Low (Single-Family Detached)	0	0	0
Low Medium (Single-Family Detached)	0	0	0
Low Medium (Multi-Family Detached)	0	0	0
Low Medium (Multi-Family Attached)	0	0	0
Medium (Multi-Family Detached)	0	0	0
Medium (Multi-Family Attached)	0	0	0
High and Mixed Use (Multi-Family)	0	0	0
Apartments (Multi-Family)	0	0	0
Subtotals	**0**	**0**	**0**
Nonresidential Development			
Mixed-Use Commercial			
Retail (including library)	0	0	0
Office	147	80	227
Commercial (Retail)	4	1	5
Business Park (Office)	0	0	0
Business Park (Industrial)	102	13	115
Visitor Serving	0	0	0
Water Reclamation Plant	0	0	0
Electrical Substation	0	0	0
Fire Stations	0	0	0
Institutional	0	0	0
Hotel/Spa	0	0	0
Hospital	0	0	0
Sr. Assisted Living	0	0	0
Golf Club House	0	0	0
Schools	0	0	0
Subtotals	**253**	**94**	**347**
Recreation, Arterials, Open Space			
Recreation			
Recreation Centers	0	0	0
Neighborhood Parks	0	0	0
Lake - Water	0	0	0
Lake - Park Area	0	0	0
Golf Course	0	0	0
Arterial Highways			0
Hardscape/Road Section	0	0	0
Landscape Area	0	2	2
Major Open Areas			0
Natural Open Space	0	0	0
River Corridor	0	0	0
Non-Irrigated Slopes	0	0	0
Irrigated Slopes, Wet Zones	0	132	132
O.S. Drainage Facilities	0	0	0
O.S. LDZ, O.S. Trail LDZ, SD&SS easements	0	0	0
Subtotals	**0**	**134**	**134**
Totals	**253**	**228**	**481**

Updated April 2022 by GSI Water Solutions, Inc.
AFY = acre-feet per year

The values shown in this analysis are approximate and are subject to change at the time of preparation of the final land use map.

Appendix 5.11c

Confirmatory Water Demand Memo

MEMORANDUM

Consistency of WSA Water Demand Projections for Entrada South and Valencia Commerce Center (Valencia, California)

To: Alex Herrell, The Newhall Land and Farming Company

From: John Porcello, GSI Water Solutions, Inc.

Date: October 18, 2023

Introduction

On May 11, 2022, the Santa Clarita Valley Water Agency (SCV Water) published its Water Supply Assessment (WSA) for the Entrada South and Valencia Commerce Center Project (Project), which is a mixed-use community with residential and non-residential space located in an unincorporated portion of the Santa Clarita Valley in northwestern Los Angeles County, California. The WSA (SCV Water, 2022) was developed using the engineering site plans contained in Vesting Tentative Tract Map (VTTM) No. 53295 for Entrada South and Vesting Tentative Parcel Map (VTPM) No. 18108 for Valencia Commerce Center. The WSA estimated the Project's water demands to average 1,411 acre-feet per year (AFY). SCV Water is the public water system that will be providing water to the Project.

The WSA's average water demand estimate of 1,411 AFY for the Project is higher than the projected demand of 1,328 AFY that was previously estimated by GSI Water Solutions, Inc. (GSI), in an April 2022 report for the Project titled *Updated Demand Projections for Entrada South and Valencia Commerce Center Developments* (GSI, 2022). The purpose of this memorandum is to explain the consistency of the WSA and GSI's water demand estimates for the Project. As shown below, GSI's water demand estimates for the Project as presented in this memorandum are consistent with the WSA and reach the same water demand conclusions as the WSA.

Assumptions Regarding Demand Factors Used in the WSA and 2022 Demand Estimates

SCV Water relied on two conservative water demand assumptions in the WSA that caused the Project's total water demand to be slightly higher than the estimates in GSI's April 2022 report. The differences between the water demand estimates in the WSA versus GSI's 2022 assessment arise predominantly from different assumptions about landscape irrigation. GSI's 2022 assessment assumes that the irrigation design requirements contained in California's Model Water Efficient Landscape Ordinance (MWELO) will be implemented in the Project area and that the actual irrigation practices for installed landscapes will follow MWELO guidelines. To be consistent with SCV Water's 2020 Urban Water Management Plan (KJ, 2021), the WSA assumes that irrigation and outdoor water use will not fully achieve the MWELO standards.

An additional—but smaller—difference between the WSA and the GSI 2022 assessment is the method of accounting for the influence of climate change influences on water demands. The WSA applied a climate change factor of 3.77 percent to all water demands (indoor water demands, outdoor non-irrigation demands, and outdoor irrigation demands). In contrast, GSI's 2022 assessment applied a higher climate change factor

(7.3 percent) to landscape irrigation demands but did not apply climate change factors to other outdoor water demands or to indoor water demands.

Consistency of Calculation Methods

The calculation methods used for the WSA are consistent with the methods used in GSI's 2022 assessment. The GSI 2022 and WSA calculation methods both use information on acreages of individual land use types, the population density of residential units, the square footage of commercial developments, and water demand factors for each land use type. The only differences between the WSA and GSI 2022 estimates are the water demand factors, which are higher in the WSA based on:

- Applying a 3.77 percent increase for climate change to all water demands on all land use types.
- Applying an overirrigation factor of 26.5 percent to all outdoor water uses in residential developments; the WSA applies this factor to irrigation uses and all outdoor non-irrigation uses.
- Applying an overirrigation factor of 25.6 percent to all outdoor water uses in commercial developments and in other nonresidential areas (recreational lands, roadway medians, and other irrigated common areas); the WSA applies this factor not only to irrigation uses, but all outdoor non-irrigation uses as well.

Comparisons of the GSI 2022 and WSA values of the indoor and outdoor water demand factors are provided in the following tables:

- For **potable water demand factors** in **residential** developments, see Table 1. The WSA applied a climate change factor of 3.77 percent and an overirrigation factor of 26.5 percent to the water demand factors used in the GSI 2022 assessment.
- For **potable water demand factors** in **nonresidential** developments, see Table 2. The WSA applied a climate change factor of 3.77 percent and an overirrigation factor of 25.6 percent to the water demand factors used in the GSI 2022 assessment.
- For **nonpotable water demand factors** in **all land uses**, see Table 3. The WSA applied a climate change factor of 3.77 percent and overirrigation factors of 26.5 percent (for residential developments) and 25.6 percent (for all other land uses) to the water demand factors used in the 2020 assessment for the West Side Communities (GSI, 2020).[1]

Attachments 1 and 2 present detailed calculations of water demands for, respectively, Entrada South and Valencia Commerce Center, using the WSA demand factors presented in Tables 1 through 3. Table 4 presents the breakdown of potable and nonpotable demands for each of these two developments and for the Project as a whole. The calculation of the total demand for the Project is shown to be 1,411 AFY, which agrees with the Project's average water demand estimate published in the WSA (SCV Water, 2022). Additionally, the demands for indoor potable water use, outdoor potable water use, and nonpotable (outdoor) water use are consistent with the WSA.

In conclusion, GSI's water demand estimates for the Project, as presented in this memorandum, are consistent with the WSA and reach the same water demand conclusions as the WSA.

[1] The 2020 and 2022 assessments both assumed the MWELO would be implemented in the Project area. Because the 2022 assessment for the Project incorporated a climate change factor into the values of the nonpotable demand factors, the WSA instead applied its 3.77 percent climate change factor to the demand factors from GSI's 2020 assessment, because the 2020 demand factors did not include a climate change influence.

References

GSI. 2020. *Updated Water Demand Projections for West Side Communities (Valencia, California).* Draft Technical Memorandum to Santa Clarita Valley Water Agency from John Porcello, GSI Water Solutions, Inc. (GSI). August 18, 2020.

GSI. 2022. *Updated Water Demand Projections for the Entrada South and Valencia Commerce Center Developments (Valencia, California).* Draft Technical Memorandum to Matt Carpenter, Five Point Holdings, LLC, from John Porcello, GSI Water Solutions, Inc. (GSI). April 8, 2022.

KJ. 2021. *2020 Urban Water Management Plan for Santa Clarita Valley Water Agency (Final).* Prepared for Santa Clarita Valley Water Agency. Prepared by Kennedy/Jenks Consultants, Inc (KJ). June 28, 2021.

SCV Water. 2022. *Water Supply Assessment, Entrada South and Valencia Commerce Center Project (VTTM No. 53295 and VTPM No. 18108).* Prepared by Santa Clarita Valley Water Agency (SCV Water). May 11, 2022.

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Tables

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Table 1
GSI and WSA Demand Factors for Potable Water Use in Residential Developments

Type of Residential Development	Indoor Potable Demand Factors			Outdoor Potable Demand Factors		
	Indoor gpcpd (GSI)	Climate-Change Factor (WSA)	Indoor gpcpd (WSA)	Outdoor gpcpd (GSI)	Climate-Change Factor (WSA)	Outdoor gpcpd (WSA)
Low Medium (Multi-Family Detached)	50	1.0377	51.9	34	1.0377	45
Low Medium (Multi-Family Attached)	50	1.0377	51.9	34	1.0377	45
Medium (Multi-Family Detached)	50	1.0377	51.9	34	1.0377	45
Medium (Multi-Family Attached)	50	1.0377	51.9	34	1.0377	45
High and Mixed Use (Multi-Family)	50	1.0377	51.9	34	1.0377	45
Apartments (Multi-Family)	50	1.0377	51.9	32	1.0377	43

Notes

(1) For multi-family units, the use of potable water to meet outdoor demands is for all needs other than common-area irrigation. Common-area irrigation demands will be met with nonpotable water supplies.

(2) For indoor uses, the WSA values equal the GSI values multiplied by a climate-change factor of 1.0377.

(3) For outdoor uses, the WSA values equal the GSI values multiplied by a climate-change factor of 1.0377 and an overirrigation factor of 1.265.

Abbreviations: gpcpd = gallons per capita per day GSI = GSI Water Solutions, Inc. WSA = Water Supply Assessment

Table 2
GSI and WSA Demand Factors for Potable Water Use in Nonresidential Developments

Land Use	Indoor Potable Demand Factors			Outdoor Potable Demand Factors		
	Units	GSI	WSA	Units	GSI	WSA
Mixed-Use Commercial (Retail)	gpd/sq. ft.	0.009	0.0093	gpapd	0	0
Mixed-Use Commercial (Office)	gpd/sq. ft.	0.045	0.047	gpapd	0	0
Commercial (Retail)	gpd/sq. ft.	0.18	0.186	gpapd	0	0
Business Park (Office)	gpd/sq. ft.	0.045	0.047	gpapd	0	0
Business Park (Industrial)	gpd/sq. ft.	0.18	0.186	gpapd	275	361
Institutional	gpd/sq. ft.	0.18	0.186	gpapd	0	0
Hotel/Spa	gpd/sq. ft.	0.18	0.186	gpapd	0	0
Hospital	gpd/bed	450	467	gpapd	0	0
Sr. Assisted Living	gpd/bed	90	93	gpapd	108	142
Golf Club House	gpd/sq. ft.	0.009	0.0093	gpapd	0	0
Visitor Serving	gpd/sq. ft.	0.009	0.0093	gpapd	275	361
Water Reclamation Plant	gpapd	200	208	gpapd	0	0
Electrical Substation	gpapd	0	0	gpapd	0	0
Fire Stations	gpd/sq. ft.	0.18	0.19	gpapd	275	361
Schools	gpapd	20	20.8	AFY	13	13.5
Recreation Centers	gpapd	90	93	gpapd	0	0
Neighborhood Parks	gpapd	90	93	gpapd	0	0
Lake - Water	gpapd	0	0	gpapd	0	0
Lake - Park Area	gpapd	0	0	gpapd	0	0
Golf Course	gpapd	0	0	gpapd	0	0
Hardscape/Road Section	gpapd	0	0	gpapd	0	0
Landscape Area	gpapd	0	0	gpapd	0	0
Natural Open Space	gpapd	0	0	gpapd	0	0
River Corridor	gpapd	0	0	gpapd	0	0
Non-Irrigated Slopes	gpapd	0	0	gpapd	0	0
Irrigated Slopes, Wet Zones	gpapd	0	0	gpapd	0	0
O.S. Drainage Facilities	gpapd	0	0	gpapd	0	0

Notes

(1) For indoor uses, the WSA values equal the GSI values multiplied by a climate-change factor of 1.0377.

(2) For outdoor uses, the WSA values equal the GSI values multiplied by a climate-change factor of 1.0377 and an overirrigation factor of 1.256.

Abbreviations: AFY = acre-feet per year; gpd = gallons per day; gpapd = gallons per acre per day; GSI = GSI Water Solutions, Inc.; sq. ft. = square foot; WSA = Water Supply Assessment

Table 3
Irrigation Landscape Types and GSI and WSA Demand Factors for Irrigation Using Nonpotable Water

Land Use Category	Landscape Types and Design			Nonpotable Irrigation Demand Factors (feet per year)		
	Irrigated Landscaping Area as a Percentage of Gross Acreage	Turf Percentage within Irrigated Landscaping Area	Will Turf Area or Water Feature Use Potable Supply?	GSI Demand Factors Using MWELO and No Climate Change (GSI, 2020)	GSI Demand Factors with 3.77% Increase in ET Demands Due to Climate Change	WSA Demand Factors Incorporating Climate Change and Overirrigation
Residential Development						
Low Medium (Multi-Family Detached)	15%	25%	No	3.8	3.94	4.99
Low Medium (Multi-Family Attached)	15%	25%	No	3.8	3.94	4.99
Medium (Multi-Family Detached)	15%	25%	No	3.8	3.94	4.99
Medium (Multi-Family Attached)	15%	25%	No	3.8	3.94	4.99
High and Mixed Use (Multi-Family)	15%	25%	No	3.8	3.94	4.99
Apartments (Multi-Family)	15%	25%	No	3.8	3.94	4.99
Nonresidential Development (Commercial/Industrial/Institutional)						
Mixed-Use Commercial (Retail)	25%	0%	No	2.5	2.59	3.26
Mixed-Use Commercial (Office)	25%	0%	No	2.5	2.59	3.26
Commercial (Retail)	25%	0%	No	2.5	2.59	3.26
Business Park (Office)	25%	0%	No	2.5	2.59	3.26
Business Park (Industrial)	25%	0%	No	2.5	2.59	3.26
Institutional	25%	0%	No	2.5	2.59	3.26
Hotel/Spa	25%	25%	No	3.3	3.42	4.31
Hospital	25%	25%	No	3.3	3.42	4.31
Sr. Assisted Living	25%	25%	No	3.3	3.42	4.31
Golf Club House	0%	0%	No	---	---	---
Visitor Serving	25%	0%	No	2.5	2.59	3.26
Water Reclamation Plant	25%	0%	No	2.5	2.59	3.26
Electrical Substation	0%	0%	No	---	---	---
Fire Stations	25%	0%	No	2.5	2.59	3.26
Schools (Elementary)	25%	75%	No	4.9	5.08	6.39
Schools (Middle/Junior High)	25%	75%	No	4.9	5.08	6.39
Schools (High Schools)	25%	75%	No	4.9	5.08	6.39
Recreation, Arterials, Open Space						
Recreation Centers	75%	55%	No	4.3	4.46	5.61
Neighborhood Parks	75%	55%	No	4.3	4.46	5.61
Golf Course	100%	80%	No	5.0	5.19	6.52
Lake - Water (Using Reclaimed Supply Only)	100%	0%	No	5.6	5.81	7.30
Lake - Park Area (Using Reclaimed Supply Only)	100%	75%	No	---	---	---
Hardscape/Road Section of Arterial Highways	0%	0%	No	---	---	---
Landscape Area of Arterial Highways	100%	0%	No	2.5	2.59	3.26
Natural Open Space	0%	0%	No	---	---	---
River Corridor	0%	0%	No	---	---	---
Non-Irrigated Slopes	0%	0%	No	---	---	---
Irrigated Slopes, Wet Zones	100%	0%	No	2.5	2.59	3.26
O.S. Drainage Facilities	0%	0%	No	---	---	---
O.S. LDZ, O.S. Trail LDZ, SD&SS easements	90%	0%	No	2.5	2.59	3.26

Note

The WSA rates reflect a 3.77% increase in ET demands due to climate change, plus overirrigation factors of 1.265 for residential land uses and 1.256 for all other land uses.

Abbreviations: ET = evapotranspiration GSI = GSI Water Solutions, Inc. MWELO = Model Water Efficient Landscape Ordinance WSA = Water Supply Assessment

Table 4
Summary of Water Demands Calculated by GSI Using WSA Water Demand Factors for Entrada South and Valencia Commerce Center

Development	Indoor Potable Demand (AFY)	Outdoor Potable Demand (AFY)	Total Potable Demand (AFY)	Nonpotable Demand (AFY)	Total Demand (AFY)
Entrada South	297	188	485	430	915
Valencia Commerce Center	255	7	262	234	496
Total Project Demand	**552**	**195**	**747**	**664**	**1,411**

Note

The values in this water demand estimate are approximate and are subject to change at the time of preparation of tentative or final land use maps.

Abbreviations: AFY = acre-feet per year WSA = Water Supply Assessment (SCV Water, May 11, 2022)

Attachment 1

Water Demand Calculations for Entrada South Using WSA Water Demand Factors October 2023

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Table 1-1
Land Use Plan Statistics
Entrada Village South

Land Use	Has Water Demands?	Area (acres)			Dwelling Units		
		Detached	Attached	Total	Detached	Attached	Total
Residential Development							
Estate (Single-Family Detached)	Yes	0.0	0.0	0.0	0	0	0
Low (Single-Family Detached)	Yes	0.0	0.0	0.0	0	0	0
Low Medium (Single-Family Detached)	Yes	0.0	0.0	0.0	0	0	0
Low Medium (Multi-Family Detached)	Yes	45.0	0.0	45.0	371	0	371
Low Medium (Multi-Family Attached)	Yes	0.0	0.0	0.0	0	0	0
Medium (Multi-Family Detached)	Yes	0.0	0.0	0.0	0	0	0
Medium (Multi-Family Attached)	Yes	0.0	74.4	74.4	0	894	894
High and Mixed Use (Multi-Family)	Yes	0.0	7.8	7.8	0	309	309
Apartments (Multi-Family)	Yes	0.0	0.0	0.0	0	0	0
Subtotals		**45.0**	**82.2**	**127.2**	**517**	**1,057**	**1,574**
Nonresidential Development							
Mixed-Use Commercial							
Retail	Yes			1.50	Mixed use retail (including library)		
Office	Yes			52.50	Mixed use office		
Commercial	Yes			0.0	Commercial retail		
Business Park	Yes			0.0	Industrial + office that is in the commercial category		
Visitor Serving	Yes			0.0	Visitor center		
Water Reclamation Plant	Yes			0.0	Newhall WRP (assigned to Landmark)		
Electrical Substation	No			0.0	Has no water use		
Fire Station	Yes			0.0	Fire station(s)		
Hotel/Spa	Yes			5.6	Hotel/spa		
Sr. Assisted Living	Yes			0.0	Sr. Assisted Living (built into Residential Mixed Use)		
Golf Club House	Yes			0.0	Golf club house		
Schools	Yes						
Elementary (1)	Yes			10.3			
Middle (0)	Yes			0.0			
High (0)	Yes			0.0			
Subtotal				**69.9**			
Recreation, Arterials, Open Space							
Recreation							
Recreation Centers	Yes			0.0	Rec center (community park)		
Neighborhood Parks	Yes			8.3	Park (community park)		
Lake - Water	Yes			0.0	Water feature		
Lake - Park Area	Yes			0.0	Assume this is in "Lake-Water" category		
Golf Course	Yes			0.0	Irrigated - excludes the club house		
Arterial Highways							
Hardscape/Road Section	No			32.1	Not irrigated		
Landscape Area	Yes			4.1	Landscape in parkways and medians		
Major Open Areas							
Natural Open Space	No			58.2	Open space that is not part of "High Country" category		
River Corridor	No			0.0	Included in "Natural Open Space & High Country"		
Non-Irrigated Slopes	No			0.0	Previously "Community Open Area"		
Irrigated Slopes, Wet Zones	Yes			53.7	Previously "Community Slopes"		
O.S. Drainage Facilities	No			13.3	Debris basins, water quality basins		
O.S. LDZ, O.S. Trail LDZ, SD&SS easements	Yes			15.5	Previously "Ungraded Areas and Easements"		
Subtotal				**185.2**			
Totals				**382.3**	**517**	**1,057**	**1,574**

Updated April 2022 by GSI Water Solutions, Inc.

All data and acreages in this analysis are approximate and are subject to change at the time of preparation of the final land use map.

Table 1-2
Verification of Updated Population and Density
Entrada Village South

RESIDENTIAL LAND USE	Acreage	Dwelling Units Detached	Dwelling Units Attached	Occupancy persons/DU	Population Estimate
Estate (Single-Family Detached)	0.0	0	0	3.292	0
Low (Single-Family Detached)	0.0	0	0	3.292	0
Low Medium (Single-Family Detached)	0.0	0	0	3.292	0
Low Medium (Multi-Family Detached)	45.0	371	0	2.367	878
Low Medium (Multi-Family Attached)	0.0	0	0	2.367	0
Medium (Multi-Family Detached)	0.0	0	0	2.367	0
Medium (Multi-Family Attached)	74.4	0	894	2.367	2,116
High and Mixed Use (Multi-Family)	7.8	0	309	2.367	731
Apartments (Multi-Family)	0.0	0	0	2.103	0
TOTAL	**127.2**	**371**	**1,203**		**3,725**

Average Occupancy

Population / Total Dwelling Units	3,725 / 1,574	**2.37 persons/DU**

Updated April 2022 by GSI Water Solutions, Inc.
DU = dwelling unit

All data and acreages in this analysis are approximate and are subject to change at the time of preparation of the final land use map.

Table 1-3
Water Demand Calculations for Residential Development (Using WSA Demand Factors)
Entrada Village South

Land Use	Acreage			Dwelling Units		Estimated Water Demand: Potable Use						Nonpotable Use				Total Use	
	Total	Detached	Attached	Detached	Attached	Interior Use gpcpd (a)	Exterior Use gpcpd (b)	Occupancy p/DU (c)	Interior (AFY)	Exterior (AFY)	**Subtotal (AFY)**	Irrigated Area (d)	Acreage Multi-Family Units (Nonpotable Water)	Annual Use Rate (AF/ac)	**Subtotal (AFY)**	(AFY)	Gallons Per Day Per Dwelling Unit
Estate (Single-Family Detached)	0.0	0.0	0.0	0	0	56	512	3.292	**0**	**0**	**0**	45%	0.0	0.0	**0**	**0**	**---**
Low (Single-Family Detached)	0.0	0.0	0.0	0	0	56	224	3.292	**0**	**0**	**0**	35%	0.0	0.0	**0**	**0**	**---**
Low Medium (Single-Family Detached)	0.0	0.0	0.0	0	0	56	92	3.292	**0**	**0**	**0**	25%	0.0	0.0	**0**	**0**	**---**
Low Medium (Multi-Family Detached)	45.0	45.0	0.0	371	0	51.9	45	2.367	**51**	**44**	**95**	15%	45.0	4.99	**33**	**128**	**308**
Low Medium (Multi-Family Attached)	0.0	0.0	0.0	0	0	51.9	45	2.367	**0**	**0**	**0**	15%	0.0	4.99	**0**	**0**	**---**
Medium (Multi-Family Detached)	0.0	0.0	0.0	0	0	51.9	45	2.367	**0**	**0**	**0**	15%	0.0	4.99	**0**	**0**	**---**
Medium (Multi-Family Attached)	74.4	0.0	74.4	0	894	51.9	45	2.367	**123**	**107**	**230**	15%	74.4	4.99	**56**	**286**	**286**
High and Mixed Use (Multi-Family)	7.8	0.0	7.8	0	309	51.9	45	2.367	**43**	**37**	**80**	15%	7.8	4.99	**6**	**86**	**248**
Apartments (Multi-Family)	0.0	0.0	0.0	0	0	51.9	43	2.103	**0**	**0**	**0**	15%	0.0	4.99	**0**	**0**	**---**
Total Water Demands									**217**	**188**	**405**				**95**	**500**	
Per-Capita Use (gallons/person/day)									**52**	**45**	**97**				**23**	**120**	

Notes:
(a) gpcpd = gallons per capita per day.
Interior water uses include drinking, bathing, laundry, sanitation, etc.
(b) gpcpd = gallons per capita per day.
Exterior water uses include landscape irrigation, washing cars, filling swimming pools, etc.
(c) p/DU = persons per dwelling unit.
(d) Irrigated areas include common areas, greenbelt irrigation within residential neighborhoods, etc.
The percentage value is the percentage of the gross lot area that is irrigated with nonpotable water.

Updated October 2023 by GSI Water Solutions, Inc.
AFY = acre-feet per year AF/ac = acre-foot per acre
WSA = Water Supply Assessment (SCV Water, May 11, 2022)

Single-family residences shown in green. Multi-family detached residences shown in blue. Multi-family attached residences shown in reddish-brown.

The values shown in this analysis are approximate and are subject to change at the time of preparation of the final land use map.

Att1_Demand_EntradaSouth_WithSchool_20220408_UsingSCVDemandFactors.xlsx[DemandResidential]

Table 1-4
Water Demand Calculations for Nonresidential Development (Using WSA Demand Factors)
Entrada Village South

Land Use	Acreage (a)	Floor Space (sq. ft.)	Estimated Water Demand: Potable Use: Interior Rate (a)	Exterior Rate gpapd (b)	Interior Use (AFY)	Exterior Use (AFY)	Subtotal (AFY)	Nonpotable Use: Percent Irrigable Land	Annual Use (AF/ac)	Subtotal (AFY)	Total: Total Use (AFY)	Units	No. of Units	Gallons Per Day Per Unit
Mixed-Use Commercial														
Retail (including library)	1.5	105,425	0.009	0	2	0	**2**	25%	3.26	**1**	**3**	TSF	105	**25**
Office	52.5	442,550	0.047	0	23	0	**23**	25%	3.26	**43**	**66**	TSF	443	**133**
Commercial (Retail)	0.0	0	0.186	0	0	0	**0**	25%	3.26	**0**	**0**	TSF	0	**0**
Business Park (Office)	0.0	17,025	0.047	0	1	0	**1**	25%	3.26	**0**	**1**	TSF	17	**52**
Business Park (Industrial)	0.0	0	0.186	361	0	0	**0**	25%	3.26	**0**	**0**	TSF	0	**0**
Visitor Serving	0.0	0	0.009	361	0	0	**0**	25%	3.26	**0**	**0**	TSF	0	**0**
Water Reclamation Plant	0.0	0	0.186	0	0	0	**0**	25%	3.26	**0**	**0**	TSF	0	**0**
Electrical Substation	0.0	0	0.000	0	0	0	**0**	0%	0	**0**	**0**	TSF	0	**0**
Fire Stations	0.0	0	0.187	361	0	0	**0**	25%	3.26	**0**	**0**	TSF	0	**0**
Institutional	0.0	0	0.186	0	0	0	**0**	25%	3.26	**0**	**0**	TSF	0	**0**
Hotel/Spa	5.6	165,000	0.186	0	35	0	**35**	25%	4.30	**6**	**41**	ROOM	100	**366**
Hospital	0.0	0	467	0	0	0	**0**	25%	4.30	**0**	**0**	TSF	0	**0**
Sr. Assisted Living	0.0	0	93	142	0	0	**0**	25%	4.30	**0**	**0**	ROOM	0	**0**
Golf Club House	0.0	0	0.009	0	0	0	**0**	0%	3.26	**0**	**0**	TSF	0	**0**
Schools														
Elementary (1)	10.3		21	0	18	0	**18**	25%	6.39	**16**	**34**	STUDENTS	750	**40.5**
Middle (0)	0.0		21	0	0	0	**0**	25%	6.39	**0**	**0**	STUDENTS	0	**0.0**
High (0)	0.0		21	13.5	0	0	**0**	25%	6.39	**0**	**0**	STUDENTS	0	**0.0**
Total Water Demands					**79**	**0**	**79**			**66**	**145**			

Notes:
(a) Interior water uses include drinking and sanitation.
Units are in gallons per day per square foot for the commercial, business park, visitor serving, water reclamation plant, institutional, hotel/spa, and fire station land uses.
Units are in gallons per day per acre for the water treatment plant and electrical substation land uses.
Units are in gallons per day per student for schools.
Units are in gallons per day per bed for the hospital and Sr. Assisted Living land use categories. In Table 5-1, the Sr. Assisted Living acreage is shown in the "High and Mixed Use (Multi-Family)" land use category.
(b) Potable water is used for outdoor uses that have potential human contact (e.g., swimming pools, wash water, some landscape irrigation). Units are in gallons per acre per day.
For Hospitals and for Sr. Assisted Living, the units are gallons per day per bed. For schools, this is the AF/year used by 1 Olympic-size swimming pool per high school (flushed 6 times/year);
other outdoor needs are met with nonpotable water.

Updated October 2023 by GSI Water Solutions, Inc.
AFY = acre-feet per year AF/ac = acre-foot per acre gpapd = gallons per acre per day TSF = thousands of square feet
WSA = Water Supply Assessment (SCV Water, May 11, 2022)

The values shown in this analysis are approximate and are subject to change at the time of preparation of the final land use map.

Table 1-5
Water Demand Calculations for Recreation, Arterial, and Open Space Land Uses (Using WSA Demand Factors)
Entrada Village South

Land Use	Acreage	Estimated Water Demand					
		Potable Use		Nonpotable Use			
		Potable Use gpapd	Subtotal (AFY)	Percent Irrigable Land	Annual Use (AF/ac)	Subtotal (AFY)	Total (AFY)
Recreation							
Recreation Centers	0.0	93	**0**	75%	5.60	**0**	**0**
Neighborhood Parks	8.3	93	**1**	75%	5.60	**35**	**36**
Lake - Water	0.0	0	**0**	100%	7.30	**0**	**0**
Lake - Park Area	0.0	0	**0**	100%	7.30	**0**	**0**
Golf Course	0.0	0	**0**	100%	6.52	**0**	**0**
Arterial Highways							
Hardscape/Road Section	32.1	0	**0**	0%	0	**0**	**0**
Landscape Area	4.1	0	**0**	100%	3.26	**13**	**13**
Major Open Areas							
Natural Open Space	58.2	0	**0**	0%	0	**0**	**0**
River Corridor	0.0	0	**0**	0%	0	**0**	**0**
Non-Irrigated Slopes	0.0	0	**0**	0%	0	**0**	**0**
Irrigated Slopes, Wet Zones	53.7	0	**0**	100%	3.26	**175**	**175**
O.S. Drainage Facilities	13.3	0	**0**	0%	0	**0**	**0**
O.S. LDZ, O.S. Trail LDZ, SD&SS easements	15.5	0	**0**	90%	3.26	**46**	**46**
Total Water Demands			**1**			**269**	**270**

Updated October 2023 by GSI Water Solutions, Inc.
AFY = acre-feet per year AF/ac = acre-foot per acre gpapd = gallons per acre per day
WSA = Water Supply Assessment (SCV Water, May 11, 2022)

Att1_Demand_EntradaSouth_WithSchool_20220408_UsingSCVDemandFactors.xlsx[DemandOpenSpace]

The values shown in this analysis are approximate and are subject to change at the time of preparation of the final land use map.

Table 1-6
Summary of Water Demands (Using WSA Demand Factors)
Entrada Village South

Land Use	Water Demand (AFY) Potable	Nonpotable	Total
Residential Development			
Estate (Single-Family Detached)	0	0	0
Low (Single-Family Detached)	0	0	0
Low Medium (Single-Family Detached)	0	0	0
Low Medium (Multi-Family Detached)	95	33	128
Low Medium (Multi-Family Attached)	0	0	0
Medium (Multi-Family Detached)	0	0	0
Medium (Multi-Family Attached)	230	56	286
High and Mixed Use (Multi-Family)	80	6	86
Apartments (Multi-Family)	0	0	0
Subtotals	**405**	**95**	**500**
Nonresidential Development			
Mixed-Use Commercial			
Retail (including library)	2	1	3
Office	23	43	66
Commercial (Retail)	0	0	0
Business Park (Office)	1	0	1
Business Park (Industrial)	0	0	0
Visitor Serving	0	0	0
Water Reclamation Plant	0	0	0
Electrical Substation	0	0	0
Fire Stations	0	0	0
Institutional	0	0	0
Hotel/Spa	35	6	41
Hospital	0	0	0
Sr. Assisted Living	0	0	0
Golf Club House	0	0	0
Schools	18	16	34
Subtotals	**79**	**66**	**145**
Recreation, Arterials, Open Space			
Recreation			
Recreation Centers	0	0	0
Neighborhood Parks	1	35	36
Lake - Water	0	0	0
Lake - Park Area	0	0	0
Golf Course	0	0	0
Arterial Highways			0
Hardscape/Road Section	0	0	0
Landscape Area	0	13	13
Major Open Areas			0
Natural Open Space	0	0	0
River Corridor	0	0	0
Non-Irrigated Slopes	0	0	0
Irrigated Slopes, Wet Zones	0	175	175
O.S. Drainage Facilities	0	0	0
O.S. LDZ, O.S. Trail LDZ, SD&SS easements	0	46	46
Subtotals	**1**	**269**	**270**
Totals	**485**	**430**	**915**

Updated October 2023 by GSI Water Solutions, Inc.
AFY = acre-feet per year   WSA = Water Supply Assessment (SCV Water, May 11, 2022)

The values shown in this analysis are approximate and are subject to change at the time of preparation of the final land use map.

Attachment 2

Water Demand Calculations for Valencia Commerce Center Using WSA Water Demand Factors October 2023

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Table 2-1
Land Use Plan Statistics
Valencia Commerce Center

Land Use	Has Water Demands?	Area (acres) Detached	Area (acres) Attached	Area (acres) Total	Dwelling Units Detached	Dwelling Units Attached	Dwelling Units Total
Residential Development							
Estate (Single-Family Detached)	Yes	0.0	0.0	0.0	0	0	0
Low (Single-Family Detached)	Yes	0.0	0.0	0.0	0	0	0
Low Medium (Single-Family Detached)	Yes	0.0	0.0	0.0	0	0	0
Low Medium (Multi-Family Detached)	Yes	0.0	0.0	0.0	0	0	0
Low Medium (Multi-Family Attached)	Yes	0.0	0.0	0.0	0	0	0
Medium (Multi-Family Detached)	Yes	0.0	0.0	0.0	0	0	0
Medium (Multi-Family Attached)	Yes	0.0	0.0	0.0	0	0	0
High and Mixed Use (Multi-Family)	Yes	0.0	0.0	0.0	0	0	0
Apartments (Multi-Family)	Yes	0.0	0.0	0.0	0	0	0
Subtotals		**0.0**	**0.0**	**0.0**	**0**	**0**	**0**
Nonresidential Development							
Mixed-Use Commercial							
Retail	Yes			0.0	Mixed use retail (including library)		
Office	Yes			101.3	Mixed use office		
Commercial	Yes			0.6	Commercial retail		
Business Park	Yes			16.5	Industrial + office that is in the commercial category		
Visitor Serving	Yes			0.0	Visitor center		
Water Reclamation Plant	Yes			0.0	Newhall WRP (assigned to Landmark)		
Electrical Substation	No			0.0	Has no water use		
Fire Station	Yes			0.0	Fire station(s)		
Hotel/Spa	Yes			0.0	Hotel/spa		
Sr. Assisted Living	Yes			0.0	Sr. Assisted Living		
Golf Club House	Yes			0.0	Golf club house		
Schools	Yes						
Elementary (0)	Yes			0.0			
Middle (0)	Yes			0.0			
High (0)	Yes			0.0			
Subtotal				**118.4**			
Recreation, Arterials, Open Space							
Recreation							
Recreation Centers	Yes			0.0	Rec center (community park)		
Neighborhood Parks	Yes			0.0	Park (community park)		
Lake - Water	Yes			0.0	Water feature		
Lake - Park Area	Yes			0.0	Assume this is in "Lake-Water" category		
Golf Course	Yes			0.0	Irrigated - excludes the club house		
Arterial Highways				0.0			
Hardscape/Road Section	No			11.1	Not irrigated		
Landscape Area	Yes			0.5	Landscape in parkways and medians		
Major Open Areas							
Natural Open Space	No			157.0	Open space that is not part of "High Country" category		
River Corridor	No			0.0	Included in "Natural Open Space & High Country"		
Non-Irrigated Slopes	No			0.0	Previously "Community Open Area"		
Irrigated Slopes, Wet Zones	Yes			41.8	Previously "Community Slopes"		
O.S. Drainage Facilities	No			0.0	Debris basins, water quality basins		
O.S. LDZ, O.S. Trail LDZ, SD&SS easements	Yes			0.0	Previously "Ungraded Areas and Easements"		
Subtotal				**210.4**			
Totals				**328.8**	**0**	**0**	**0**

Updated April 2022 by GSI Water Solutions, Inc.

All data and acreages in this analysis are approximate and are subject to change at the time of preparation of the final land use map.

Table 2-2
Water Demand Calculations for Nonresidential Development (Using WSA Demand Factors)
Valencia Commerce Center

Land Use	Acreage (a)	Floor Space (sq. ft.)	Estimated Water Demand											
			Potable Use					Nonpotable Use			Total			
			Interior Rate (a)	Exterior Rate gpapd (b)	Interior Use (AFY)	Exterior Use (AFY)	Subtotal (AFY)	Percent Irrigable Land	Annual Use (AF/ac)	Subtotal (AFY)	Total Use (AFY)	Units	No. of Units	Gallons Per Day Per Unit
Mixed-Use Commercial														
Retail (including library)	0.0	0	0.009	0	0	0	**0**	25%	3.26	**0**	**0**	TSF	0	**0**
Office	101.3	2,909,700	0.047	0	152	0	**152**	25%	3.26	**82**	**234**	TSF	2,910	**72**
Commercial (Retail)	0.6	18,000	0.186	0	4	0	**4**	25%	3.26	**1**	**5**	TSF	18	**248**
Business Park (Office)	0.0	0	0.047	0	0	0	**0**	25%	3.26	**0**	**0**	TSF	0	**0**
Business Park (Industrial)	16.5	472,300	0.186	361	99	7	**106**	25%	3.26	**13**	**119**	TSF	472	**225**
Visitor Serving	0.0	0	0.009	361	0	0	**0**	25%	3.26	**0**	**0**	TSF	0	**0**
Water Reclamation Plant	0.0	0	0.186	0	0	0	**0**	25%	3.26	**0**	**0**	TSF	0	**0**
Electrical Substation	0.0		0.000	0	0	0	**0**	0%	0	**0**	**0**	TSF	0	**0**
Fire Stations	0.0	0	0.187	361	0	0	**0**	25%	3.26	**0**	**0**	TSF	0	**0**
Institutional	0.0	0	0.186	0	0	0	**0**	25%	3.26	**0**	**0**	TSF	0	**0**
Hotel/Spa	0.0	0	0.186	0	0	0	**0**	25%	4.30	**0**	**0**	ROOM	100	**0**
Hospital	0.0		467	0	0	0	**0**	25%	4.30	**0**	**0**	TSF	0	**0**
Sr. Assisted Living	0.0		93	142	0	0	**0**	25%	4.30	**0**	**0**	ROOM	0	**0**
Golf Club House	0.0	0	0.009	0	0	0	**0**	0%	3.26	**0**	**0**	TSF	0	**0**
Schools														
Elementary (0)	0.0		21	0	0	0	**0**	25%	6.39	**0**	**0**	STUDENTS	0	**0.0**
Middle (0)	0.0		21	0	0	0	**0**	25%	6.39	**0**	**0**	STUDENTS	0	**0.0**
High (0)	0.0		21	14	0	0	**0**	25%	6.39	**0**	**0**	STUDENTS	0	**0.0**
Total Water Demands					**255**	**7**	**262**			**96**	**358**			

Notes:
(a) Interior water uses include drinking and sanitation.
Units are in gallons per day per square foot for the commercial, business park, visitor serving, water reclamation plant, institutional, hotel/spa, and fire station land uses.
Units are in gallons per day per acre for the water treatment plant and electrical substation land uses.
Units are in gallons per day per student for schools.
Units are in gallons per day per bed for the hospital and Sr. Assisted Living land use categories. In Table 6-1, the Sr. Assisted Living acreage is shown in the "High and Mixed Use (Multi-Family)" land use category.
(b) Potable water is used for outdoor uses that have potential human contact (e.g., swimming pools, wash water, some landscape irrigation). Units are in gallons per acre per day.
For Hospitals and for Sr. Assisted Living, the units are gallons per day per bed. For schools, this is the AF/year used by 1 Olympic-size swimming pool per high school (flushed 6 times/year); other outdoor needs are met with nonpotable water.

Updated October 2023 by GSI Water Solutions, Inc.
AFY = acre-feet per year AF/ac = acre-foot per acre gpapd = gallons per acre per day TSF = thousands of square feet
WSA = Water Supply Assessment (SCV Water, May 11, 2022)

The values shown in this analysis are approximate and are subject to change at the time of preparation of the final land use map.

Table 2-3
Water Demand Calculations for Recreation, Arterial, and Open Space Land Uses (Using WSA Demand Factors)
Valencia Commerce Center

Land Use	Acreage	Estimated Water Demand						
		Potable Use		Nonpotable Use				
		Potable Use gpapd	Subtotal (AFY)	Percent Irrigable Land	Annual Use (AF/ac)	Subtotal (AFY)	Total (AFY)
Recreation							
Recreation Centers	0.0	93	**0**	75%	5.60	**0**	**0**
Neighborhood Parks	0.0	93	**0**	75%	5.60	**0**	**0**
Lake - Water	0.0	0	**0**	100%	7.30	**0**	**0**
Lake - Park Area	0.0	0	**0**	100%	7.30	**0**	**0**
Golf Course	0.0	0	**0**	100%	6.52	**0**	**0**
Arterial Highways							
Hardscape/Road Section	11.1	0	**0**	0%	0	**0**	**0**
Landscape Area	0.5	0	**0**	100%	3.26	**2**	**2**
Major Open Areas							
Natural Open Space	157.0	0	**0**	0%	0	**0**	**0**
River Corridor	0.0	0	**0**	0%	0	**0**	**0**
Non-Irrigated Slopes	0.0	0	**0**	0%	0	**0**	**0**
Irrigated Slopes, Wet Zones	41.8	0	**0**	100%	3.26	**136**	**136**
O.S. Drainage Facilities	0.0	0	**0**	0%	0	**0**	**0**
O.S. LDZ, O.S. Trail LDZ, SD&SS easements	0.0	0	**0**	90%	3.26	**0**	**0**
Total Water Demands			**0**			**138**	**138**

Updated October 2023 by GSI Water Solutions, Inc.
AFY = acre-feet per year AF/ac = acre-foot per acre gpapd = gallons per acre per day
WSA = Water Supply Assessment (SCV Water, May 11, 2022)

Att2_Demand_VCC_20220408_UsingSCVDemandFactors.xlsx[DemandOpenSpace]

The values shown in this analysis are approximate and are subject to change at the time of preparation of the final land use map.

Table 2-4
Summary of Water Demands (Using WSA Demand Factors)
Valencia Commerce Center

Land Use	Water Demand (AFY)		
	Potable	**Nonpotable**	**Total**
Residential Development			
Estate (Single-Family Detached)	0	0	0
Low (Single-Family Detached)	0	0	0
Low Medium (Single-Family Detached)	0	0	0
Low Medium (Multi-Family Detached)	0	0	0
Low Medium (Multi-Family Attached)	0	0	0
Medium (Multi-Family Detached)	0	0	0
Medium (Multi-Family Attached)	0	0	0
High and Mixed Use (Multi-Family)	0	0	0
Apartments (Multi-Family)	0	0	0
Subtotals	**0**	**0**	**0**
Nonresidential Development			
Mixed-Use Commercial			
Retail (including library)	0	0	0
Office	152	82	234
Commercial (Retail)	4	1	5
Business Park (Office)	0	0	0
Business Park (Industrial)	106	13	119
Visitor Serving	0	0	0
Water Reclamation Plant	0	0	0
Electrical Substation	0	0	0
Fire Stations	0	0	0
Institutional	0	0	0
Hotel/Spa	0	0	0
Hospital	0	0	0
Sr. Assisted Living	0	0	0
Golf Club House	0	0	0
Schools	0	0	0
Subtotals	**262**	**96**	**358**
Recreation, Arterials, Open Space			
Recreation			
Recreation Centers	0	0	0
Neighborhood Parks	0	0	0
Lake - Water	0	0	0
Lake - Park Area	0	0	0
Golf Course	0	0	0
Arterial Highways			0
Hardscape/Road Section	0	0	0
Landscape Area	0	2	2
Major Open Areas			0
Natural Open Space	0	0	0
River Corridor	0	0	0
Non-Irrigated Slopes	0	0	0
Irrigated Slopes, Wet Zones	0	136	136
O.S. Drainage Facilities	0	0	0
O.S. LDZ, O.S. Trail LDZ, SD&SS easements	0	0	0
Subtotals	**0**	**138**	**138**
Totals	**262**	**234**	**496**

Updated October 2023 by GSI Water Solutions, Inc.
AFY = acre-feet per year   WSA = Water Supply Assessment (SCV Water, May 11, 2022)

The values shown in this analysis are approximate and are subject to change at the time of preparation of the final land use map.