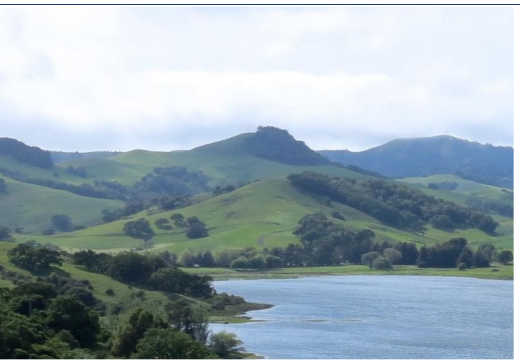
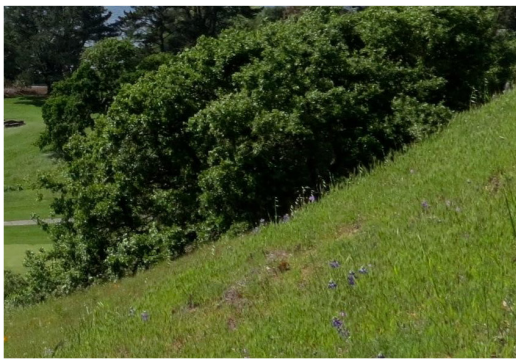
June 2021

2020 Urban Water Management Plan

for North Marin Water District





NORTH MARIN WATER DISTRICT

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NORTH MARIN WATER DISTRICT

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NORTH MARIN WATER DISTRICT

ABBREVIATIONS

AB	Assembly Bill
ABAG	Association of Bay Area Governments
AF	acre-feet
AFY	acre-feet per year
AWE	Alliance for Water Efficiency
AWWA	American Water Works Association
BMP	Best Management Practice
CASGEM	California Statewide Groundwater Elevation Monitoring
CCR	California Code of Regulations
Census	United States Census
CEQA	California Environmental Quality Act
cfs	cubic feet per second
CII	commercial, industrial, and institutional
CIMIS	California Irrigation Management Information System
CUWCC	California Urban Water Conservation Council
CWC	California Water Code
DDW	Division of Drinking Water
Delta	Sacramento-San Joaquin Delta
DIY	Do-It-Yourself
DMM	demand management measures
DOF	California Department of Finance
DRA	Drought Risk Assessment
DU	Dwelling Unit
DWR	Department of Water Resources
EIR	Environmental Impact Report
EKI	EKI Environment & Water, Inc.
EPA	United States Environmental Protection Agency
ETo	reference evapotranspiration
ft	feet
FY	fiscal year
GMP	Groundwater Management Plan
GPCD	gallons per capita per day
GPD	gallons per day
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
kWh	kilowatt-hour
LAFCo	Local Agency Formation Commission
LGVSD	Las Gallinas Valley Sanitary District
LHMP	Local Hazard Mitigation Plan
Methodologies	*Methodologies for Calculating Baseline and Compliance Urban Per Capita Water, California Department of Water Resources Division of Statewide Integrated Water Management Water Use and Efficiency Branch*

MFR	multi-family residential
MGD	million gallons per day
MMWD	Marin Municipal Water District
MOU	Memorandum of Understanding
NBWRA	North Bay Water Reuse Authority
NMFS	National Marine Fisheries Service
NMWD	North Marin Water District
NMWRA	North Bay Water Reuse Authority
NSD	Novato Sanitary District
PG&E	Pacific Gas & Energy
Plan	Urban Water Management Plan
RHNA	Regional Housing Needs Allocation
RUWMP	Regional Urban Water Management Plan
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SCWA	Sonoma County Water Agency
SFR	single family residential
SGMA	Sustainable Groundwater Management Act
SMSWP	Sonoma-Marin Saving Water Partnership
Sonoma Water	Sonoma County Water Agency
STP	Stafford Treatment Plant
SWRCB	State Water Resources Control Board
TAC	Technical Advisory Committee
Target	water use target
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USGS	United States Geological Survey
UWMP	Urban Water Management Plan
UWMP Act	Urban Water Management Planning Act
UWMP Guidebook 2020	*Urban Water Management Plan Guidebook 2020*
VOMWD	Valley of the Moon Water District
WAC	Water Advisory Committee
WRP	Water Recycling Plant
WSCP	Water Shortage Contingency Plan
WUE	water use efficiency
WWTP	Wastewater Treatment Plant

1. INTRODUCTION

This chapter discusses the importance and uses of this Urban Water Management Plan (UWMP or Plan), the relationship of this Plan to the California Water Code (CWC), the relationship of this Plan to other local and regional planning efforts, and how this Plan is organized and developed in general accordance with the Urban Water Management Plan Guidebook 2020 (UWMP Guidebook 2020).[1]

1.1 Background and Purpose

This UWMP addresses the North Marin Water District (NMWD or District) Novato Water System. As discussed in Section 2.1, the District also operates the West Marin Water System, which is a separate public water system with a separate source of supply and no physical interconnection of facilities between the Novato and West Marin Water System. The West Marin Water System has only 770 connections, serving approximately 1,800 people and approximately 228 AFY, and is therefore not subject to the UWMP Act. Thus, this Plan includes information on the Novato Water System only, and where the terms "District" and NMWD are used, they are referring to the Novato Water System portion of the District unless otherwise noted.

The District receives the majority (approximately two-thirds) of its water from Sonoma County Water Agency (SCWA or Sonoma Water), which provides surface water from the Russian River and to a lesser extent groundwater from the Santa Rosa Plain Subbasin of the Santa Rosa Valley Basin (California Department of Water Resources [DWR] Basin No. 1-55.01). The remainder of the District's water supply is from its local Stafford Lake water supply and recycled water developed in cooperation with Novato and Las Gallinas Valley Sanitary Districts.

This UWMP is a foundational document and source of information about the District's historical and projected water demands, water supplies, supply reliability and potential vulnerabilities, water shortage contingency planning, and demand management programs.

The District's previous UWMP was completed in 2016, referred to herein as the "2015 UMWP." This Plan is an update to the 2015 UWMP and carries forward information from that plan that remains current and is relevant to this Plan and provides additional information as required by amendments to the Urban Water Management Planning Act (UWMP Act) (CWC §10610 – 10657). Although this Plan is an update to the 2015 UWMP, it was developed to be a self-contained, stand-alone document.

1.2 Urban Water Management Planning and the California Water Code

The UWMP Act requires urban water suppliers to prepare an UWMP every five years and to submit this plan to DWR, the California State Library, and any city or county within which the supplier provides water. All urban water suppliers, either publicly or privately owned, providing water for municipal purposes

[1] The UWMP Guidebook 2020 is available at: https://water.ca.gov/Programs/Water-Use-And-Efficiency/Urban-Water-Use-Efficiency/Urban-Water-Management-Plans.

either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet annually are required to prepare an UWMP (CWC §10617).

The UWMP Act was enacted in 1983. Over the years it has been amended in response to water resource challenges and planning imperatives confronting California. A significant amendment was made in 2009 as a result of the governor's call for a statewide 20% reduction in urban water use by 2020, referred to as "20x2020," the Water Conservation Act of 2009, and "Senate Bill (SB) X7-7." This amendment required urban retail water suppliers to establish water use targets for 2015 and 2020 that would result in statewide water savings of 20% by 2020. Beginning in 2016, urban retail water suppliers were required to comply with the water conservation requirements in SB X7-7 in order to be eligible for state water grants or loans. Chapter 5 of this Plan contains the data and calculations used to determine compliance with these requirements.

A subsequent substantial revision to the UWMP Act was made in 2018 through a pair of bills (i.e., Assembly Bill [AB] 1668 and Senate Bill 606), referred to as "Making Water Conservation a California Way of Life" or the "2018 Water Conservation Legislation." These changes include significant revisions and additions to the required content for an UWMP and its associated Water Shortage Contingency Plan (WSCP). As applicable, the City's 2020 UWMP reflects the following significant revisions to the UWMP Act that have been made since 2015.

- ***Five Consecutive Dry-Year Water Reliability Assessment***. The Legislature modified the dry-year water reliability planning from a "multiyear" time period to a "drought lasting five consecutive water years."
- ***Drought Risk Assessment***. The Drought Risk Assessment (DRA) requires a supplier to assess water supply reliability over a five-year period from 2021 to 2025 that examines water supplies, water uses, and the resulting water supply reliability under a reasonable prediction for five consecutive dry years.
- ***Energy Intensity Analysis***. UWMPs are now required to include water system energy usage information that can be readily obtained.
- ***Seismic Risk***. The Water Code now requires suppliers to specifically address seismic risk to various water system facilities and to have a mitigation plan, and for this to be described in their WSCPs.
- ***Water Shortage Contingency Plan***. In 2018, the UWMP Act was modified to require a WSCP with specific elements, including developing procedures to perform an annual water supply and demand assessment.
- ***Groundwater Supplies Coordination***. The Water Code now requires that the 2020 UWMPs for suppliers that utilize groundwater as a supply source are consistent with Groundwater Sustainability Plans, in areas where those plans have been completed by the Groundwater Sustainability Agencies.
- ***Lay Description***. The Legislature included a new statutory requirement for suppliers to include a lay description of the fundamental determinations of the UWMP, especially regarding water service reliability, challenges ahead, and strategies for managing reliability risks.

The UWMP Act contains numerous other requirements that an UWMP must satisfy. **Appendix A** to this Plan lists each of these requirements and where in the Plan they are addressed.

1.3 Relationship to Other Planning Efforts

This Plan provides information specific to water management and planning by the District. However, water management does not happen in isolation; there are other planning processes that integrate with the UWMP to accomplish urban planning. Some of these relevant planning documents include relevant city and county General Plans, Water Master Plans, integrated resource plans, and others.

This Plan is informed by and helps to inform these other planning efforts. In particular, this Plan utilizes information contained in local and regional water resource plans to the extent data from these plans are applicable and available.

1.4 Plan Organization

The organization of this Plan follows the same sequence as outlined in the UWMP Guidebook 2020.

Chapter 1 - Introduction

Chapter 2 - Plan Preparation

Chapter 3 - Service Area and System Description

Chapter 4 - System Water Demands

Chapter 5 - Baseline Water Use and SB X7-7 Water Conservation Targets

Chapter 6 - Water Supply Characterization

Chapter 7 - Water Supply Reliability

Chapter 8 - Water Shortage Contingency Plan

Chapter 9 - Demand Management Measures

Chapter 10 - Plan Adoption and Submittal

Chapter 11 - References

In addition to these eleven chapters, this Plan includes a number of appendices providing supporting documentation and supplemental information. Pursuant to CWC §10644(a)(2), this Plan utilizes the standardized forms, tables, and displays developed by DWR for the reporting of water use and supply information required by the UWMP Act. This Plan also includes additional tables, figures, and maps to augment the set developed by DWR, as appropriate. The table headers indicate if the table is part of DWR's standardized set of submittal tables.

1.5 Demonstration of Consistency with the Delta Plan for Participants in Covered Actions

Although not required by the UWMP Act, in the UWMP Guidebook 2020, DWR recommends that all suppliers that are participating in, or may participate in, receiving water from a proposed project that is

considered a "covered action" under the Delta Plan—such as a (1) multiyear water transfer; (2) conveyance facility; or (3) new diversion that involves transferring water through, exporting water from, or using water in the Sacramento-San Joaquin Delta (Delta)—provide information in their UWMP to demonstrate consistency with the Delta Plan policy WR P1, Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code of Regulations, Title 23, Section 5003).

The District obtains its water supplies from the SCWA Russian River Project, local surface water from Stafford Lake, and recycled water, and therefore the District does not receive water or plan to receive water from a "covered action" under the Delta Plan. As such, demonstration of consistency with the Delta Plan is not applicable.

1.6 Lay Description

☑ ***CWC § 10630.5***

Each plan shall include a simple lay description of how much water the agency has on a reliable basis, how much it needs for the foreseeable future, what the agency's strategy is for meeting its water needs, the challenges facing the agency, and any other information necessary to provide a general understanding of the agency's plan.

This Urban Water Management Plan (UWMP or Plan) is prepared for North Marin Water District (also referred to as NMWD or District), which serves drinking water to a population of approximately 61,658 in and around the City of Novato, California. In addition to the Novato Water System, the District also operates the West Marin Water System, which is a separate public water system with a separate source of supply and no physical interconnection of facilities between the Novato and West Marin Water System. Only information regarding the Novato Water System is included herein, and where the terms "District" and "NMWD" are used, they are referring to the Novato Water System portion of the District unless otherwise noted. This UWMP serves as a foundational planning document and includes descriptions of historical and projected water demands and water supplies and reliability over a 20-year planning horizon. This document also describes the actions the District is taking to promote water conservation, both by the District and by its customers (referred to as "demand management measures") and includes a plan to address potential water supply shortages such as drought or other impacts to supply availability (the "Water Shortage Contingency Plan"). This UWMP is updated every five years in accordance with state requirements under the Urban Water Management Planning Act (UWMP Act) and amendments (Division 6 Part 2.6 of the California Water Code [CWC] §10610 – 10656). Past plans developed for the District are available on the California Department of Water Resources (DWR) Water Use Efficiency Data Portal website: https://wuedata.water.ca.gov/. This Plan includes 11 chapters, which are summarized below.

Chapter 1 - Introduction

This chapter presents the background and purpose of the UWMP, identifies the Plan organization, and provides this lay description overview of the document.

Chapter 2 - Plan Preparation

This chapter discusses key structural aspects related to the preparation of the UWMP and describes the coordination and outreach conducted as part of the preparation of the Plan, including coordination with

local agencies (i.e., members of the Sonoma-Marin Saving Water Partnership [SMSWP], Sonoma and Marin Counties) and the public.

Chapter 3 - Service Area and System Description

This chapter provides a description of the District's water system and service area, including information related to the climate, population, and demographics. The District serves a population of approximately 61,658 and has a moderate climate characterized by hot dry summers and cool wet winters. The majority of precipitation falls during late autumn, winter, and spring, averaging 26 inches of rainfall annually. Land use within the District is primarily residential, but also includes agricultural, industrial, commercial, and recreational land uses.

Chapter 4 - System Water Demands

This chapter provides a description and quantifies the District's current and projected demands through the year 2045. The District provides drinking water (also referred to as "potable water"), raw water, and recycled water to customers. Raw and recycled water are used within the District primarily for irrigation purposes. Water demands refer not only to the water used by customers, but also includes the water used as part of the system maintenance and operation, as well as unavoidable losses inherent in the operation of a water distribution system. Potable and raw water demand within the District was 7,942 acre-feet per year (AFY) on average between 2016 and 2020. Taking into account historical water use, expected population increase and other growth, climatic variability, and other assumptions, potable and raw water demand within the District is projected to increase to 10,502 AFY by 2045, an increase of 23% compared to the 2016-2020 average.

Recycled water demand was 540 acre-feet per year (AFY) on average between 2016 and 2020 and is projected to increase to 650 AFY by 2045, an increase of 20% compared to the 2016-2020 average. The District's recycled water system and demands are discussed in Chapter 6.

Chapter 5 - Baseline Water Use and SB X7-7 Water Conservation Targets

In this chapter, the District demonstrates compliance with its per capita water use target for the year 2020. The Water Conservation Act of 2009 (Senate Bill [SB] X7-7) was enacted in November 2009 and requires the state of California to achieve a 20% reduction in urban per capita water use by 31 December 2020. In order to achieve this, each urban retail water supplier was required to establish water use targets for 2015 and 2020 using methodologies established by DWR. The District is in compliance with its 2020 water use target of 139 gallons per capita per day (GPCD), having reduced its water use in 2020 to 119 GPCD. The District is also a member of a "Regional Alliance" for purposes of SB X7-7 compliance. The Regional Alliance's 2020 water use was 113 GPCD, which is in compliance with and below its 2020 target of 129 GPCD.

Chapter 6 - Water Supply Characterization

This chapter presents an analysis of the District's water supplies, as well as an estimate of water-related energy consumption. The intent of this chapter is to present a comprehensive overview of the District's water supplies, estimate the volume of available supplies over the UWMP planning horizon, and assess the sufficiency of the District's supplies to meet projected demands under "normal" hydrologic conditions.

Water supply for the District comes primarily from purchased water from Sonoma County Water Agency (SCWA or Sonoma Water) Russian River Project. The Russian River, Lake Mendocino, and Lake Sonoma are primary sources for the Russian River Project. The SCWA supply also includes a relatively small amount of groundwater from groundwater supply wells located in the Santa Rosa Plain Subbasin of the Santa Rosa Valley Basin [DWR Basin 1-55.01] (SCWA, 2016). This water supply is supplemented by local surface water from Stafford Lake and recycled water from Novato Sanitary District (NSD) and Las Gallinas Valley Sanitary District (LGVSD). Based on comparison of demands and available supplies, the District's water supply is expected to be sufficient to support the District's projected water demand through 2045 during normal hydrologic years.

Calculation and reporting of water system energy intensity is a new requirement for the 2020 UWMPs. Energy intensity is defined as the net energy used for water treatment, conveyance, and distribution for all water entering the District's distribution system and does not include the energy used to convey or treat wastewater. The energy intensity for NMWD is estimated to be 341 kilowatt hours per acre-foot of water (kWh/AF). In order to reduce the overall net energy consumption by the system, solar energy is also produced at the Stafford Treatment Plant (STP). If the solar energy generated were discounted from total energy consumption, the net energy intensity for NMWD would be 258 kWh/AF.

Chapter 7 - Water Supply Reliability

This chapter assesses the reliability of NMWD's water supplies, with a specific focus on potential constraints such as water supply availability, water quality, and climate change. The intent of this chapter is to identify any potential constraints that could affect the reliability of the District's supply (such as drought conditions) to support the District's planning efforts. Water service reliability is assessed during normal, single dry-year, and multiple dry-year hydrologic conditions. Based on this analysis, the District expects the available supplies to be sufficient to meet projected demands in all hydrologic conditions, including a five-year drought period, and considering the impacts of climate change.

Further, potential water quality issues are not expected to affect the quality of water served to the District's customers, as water quality is routinely monitored, and the District is able to make all appropriate adjustments to its treatment and distribution system to ensure only high-quality drinking water is served.

Chapter 8 - Water Shortage Contingency Plan

This chapter describes the Water Shortage Contingency Plan (WSCP) for NMWD. The WSCP serves as a standalone document to be engaged in the case of a water shortage event, such as a drought or supply interruption, and defines specific policies and actions that will be implemented at various shortage level scenarios. For example, implementing customer water budgets and surcharges, or restricting landscape irrigation to specific days and/or times. Consistent with DWR requirements, the WSCP includes six levels to address shortage conditions ranging from up to 10% to greater than 50% shortage.

Chapter 9 - Demand Management Measures

This chapter includes descriptions of past and planned conservation programs that NMWD and the Sonoma-Marin Saving Water Partnership (SMSWP) operate within each demand management measure (DMM) category outlined in the UWMP Act, specifically: (1) water waste prevention ordinances, (2) metering, (3) conservation pricing, (4) public education and outreach, (5) distribution system water loss

management, (6) water conservation program coordination and staffing support, and (7) "other" DMMs. NMWD has developed a suite of conservation programs and policies which address each DMM category. Through the implementation of DMMs, both independently and through the Sonoma-Marin Saving Water Partnership (SMSWP), it is estimated that between the years 2016 and 2020, NMWD saved 644 AF, or 129 AFY on average, through implementation of active conservation programs.

Chapter 10 - Plan Adoption and Submittal

This chapter provides information on a public hearing, the adoption process for the UWMP and WSCP, the adopted UWMP and WSCP submittal process, UWMP and WSCP implementation, and the process for amending the adopted UWMP and WSCP. Prior to adopting the Plan, NMWD held a formal public hearing to present information on its UWMP and WSCP on 15 June 2021 at 6:00 pm. The UWMP and WSCP were submitted to DWR within 30 days of adoption and by the 1 July 2021 deadline.

Chapter 11 - References

This chapter contains key references and sources used throughout the Plan.

2. PLAN PREPARATION

This section provides information on the process for developing North Marin Water District's (NMWD's or District's) 2020 Urban Water Management Plan (UWMP or Plan), including an overview of coordination with other agencies and a description of public outreach.

Text from the UWMP Act has been included in grey text boxes with italicized font at beginning of relevant sections of this UWMP. The information presented in the respective UWMP sections and the associated text, figures, and tables are collectively intended to fulfill the requirements of that sub-section of the UWMP Act. To the extent practicable, supporting documentation has also been provided in **Appendix A** through **Appendix J**. Other sources for the information contained herein are provided in the references section of this document.

Per CWC §10644(a)(2), selected information for the 2020 UWMP updates must be presented in standardized tables for electronic submittal to DWR. The tables presented in this UWMP have been re-numbered, but the content has been preserved and the original DWR table numbers are included in parentheses in the table titles.

2.1 Compliance with the UWMP Act, Including Changes Since 2015

☑ ***CWC § 10620 (b)***

Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.

The District's 2020 UWMP has been prepared in accordance with the Urban Water Management Planning Act (UWMP Act). The UWMP Act is defined by the California Water Code (CWC) §10610 - §10657. The UWMP Act requires every urban water supplier that provides water for municipal purposes to more than 3,000 connections or supplies more than 3,000 acre-feet (AF) of water annually adopt and submit a plan every five years to the California Department of Water Resources (DWR).

Table 2-1 (DWR Table 2-1) provides information on the District's public water system that served 20,463 connections and 8,194 acre-feet per year (AFY) within the Novato service area and is therefore subject to the requirements of the UWMP Act. The District also operates the West Marin Water System, which is a separate public water system with a separate source of supply and no physical interconnection of facilities between the Novato and West Marin Water System. The West Marin Water System has only 770 connections, serving approximately 1,800 people and approximately 228 AFY, and is therefore not subject to the UWMP Act. Thus, this Plan includes information on the Novato Water System only.

Table 2-1 Public Water Systems (DWR Table 2-1)

Public Water System Number	Public Water System Name	Number of Municipal Connections 2020	Volume of Water Supplied 2020
02-18-09P2110003	Novato Water System	20,463	8,194
	TOTAL	20,463	8,194
NOTES: (a) The District also operates the West Marin Water System, which is a separate public water system with a separate source of supply and no physical interconnection of facilities between the Novato and West Marin Water System. The West Marin Water System has only 770 connections, serving approximately 1,800 people and approximately 228 AFY, and is therefore not subject to the UWMP Act.			

As with the 2010 and 2015 UWMPs, the District's 2020 UWMP has been prepared as an individual rather than a regional plan, as shown in **Table 2-2** (DWR Table 2-2). However, the 2020 UWMP was developed in close coordination with its wholesaler, Sonoma County Water Agency (SCWA or Sonoma Water), and other agencies that receive water from the SCWA (referred to herein as Water Contractors). Furthermore, a regional Alliance was formed in 2011 among these agencies including the cities of Santa Rosa, Rohnert Park, Sonoma, Cotati, Petaluma, Town of Windsor, Marin Municipal Water District, Valley of the Moon Water District, and North Marin Water District to comply with Senate Bill (SB) X7-7, the Water Conservation Act of 2009. This regional Alliance, referred to in **Table 2-2** as the "North Marin Sonoma Alliance" but more typically referred to as the Sonoma-Marin Saving Water Partnership (SMSWP), is used within the 2020 UWMP for reporting on regional 2020 water use targets (see Chapter 5). All other elements of the CWC requirements are addressed in the District's Individual Plan.

Table 2-2 Plan Identification (DWR Table 2-2)

Select Only One	Type of Plan		Name of RUWMP or Regional Alliance *if applicable*
X	Individual UWMP		
		Water Supplier is also a member of a RUWMP	
	X	Water Supplier is also a member of a Regional Alliance	North Marin-Sonoma Alliance
	Regional Urban Water Management Plan (RUWMP)		
NOTES:			

2.2 Coordination and Outreach

Coordination with other water suppliers, cities, counties, and other community organizations in the region is an important part of preparing a UWMP and Water Shortage Contingency Plan (WSCP). This section identifies the agencies and organizations the District sought to coordinate with during preparation of this Plan.

2.2.1 Wholesale Coordination

☑ ***CWC § 10631 (h)***

An urban water supplier that relies upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (f). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (f).

Urban retail water suppliers relying on one or more wholesalers for water supply are required to provide these wholesalers with information regarding projected water supply and demand. The District meets regularly with other water purveyors to discuss water supply and demand planning. In particular, the District meets at least monthly with its water wholesaler, the SCWA, and with other Water Contractors who purchase water from the SCWA. These monthly meetings occur through the District's participation in the SCWA Technical Advisory Committee (TAC). The primary mission of the TAC is to provide input and guidance to the SCWA regarding technical issues that may have an impact on the Water Contractors (i.e., UMWP coordination, capital projects, operational changes, etc.). Additionally, the District participates in quarterly meetings of the Water Advisory Committee (WAC). The WAC's objectives are to advise the SCWA's Board of Directors on policy and fiscal matters affecting the Water Contractors. The District's participation in the TAC and WAC has been instrumental in coordinating water supply and demand analyses for the preparation of this Plan.

The District's water supply primarily comes from water purchased from the SCWA. The District, along with eight other Water Contractors, has a water supply agreement with the SCWA for the purchase of Russian River water commonly referred to as the Restructured Water Supply Agreement. As indicated in **Table 2-3**, the District coordinated the development of its demand projections with members of the Sonoma-Marin Saving Water Partnership (SMSWP). Demand projections through 2045 were provided through the Partnership to SCWA.

Table 2-3 Water Supplier Information Exchange (DWR Table 2-4)

The retail Supplier has informed the following wholesale supplier(s) of projected water use in accordance with Water Code Section 10631.
Wholesale Water Supplier Name
Sonoma County Water Agency
NOTES:

As discussed in Chapter 4, the District's projected water demands were developed as part of a planning effort in 2020 that was implemented through the Sonoma-Marin Saving Water Partnership (SMSWP) (i.e., the *2020 Urban Water Management Plan Water Demand Analysis and Water Conservation Measures Update* included as **Appendix B**). The SCWA was provided with the District's water use projections through this process. The District will continue to coordinate with the SCWA to determine the timing of capital improvement projects that may need to be implemented in order to meet the District's projected future water demands.

Additionally, as described in more detail in Chapter 7, the District has relied upon the water supply reliability projections provided by SCWA for the purposes of analyzing the reliability of its Russian River water supplies during normal and dry years through 2045.

2.2.2 Agency Coordination

☑ ***CWC § 10620 (d) (3)***

Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.

As part of the development of this Plan, the District coordinated closely with the other eight SCWA Water Contractors. Among other methods, this coordination occurred through regular meetings of the TAC and WAC (see Section 2.2.1). These agencies also coordinate as part of the SMSWP. The District also coordinated preparation of the Plan with the Novato Sanitary District, the Las Gallinas Valley Sanitary District, the Marin County Local Agency Formation Commission (LAFCo), the County of Marin, and the County of Sonoma. On 19 November 2020, a letter was sent to each of these entities advising that the District was reviewing and updating the UWMP. The agencies, cities, and counties that were notified by the District during the development of this Plan are listed in **Table 2-4**. A sample copy of the notices is provided in **Appendix C**.

Table 2-4 Notification to Cities, Counties, and Other Agencies (DWR Table 10-1)

City Name	60 Day Notice	Notice of Public Hearing
City of Cotati	X	X
City of Novato	X	X
City of Petaluma	X	X
City of Rohnert Park	X	X
City of Santa Rosa	X	X
City of Sonoma	X	X
Town of Windsor	X	X
County Name	**60 Day Notice**	**Notice of Public Hearing**
Marin County	X	X
Sonoma County	X	X
Other Agency Name	**60 Day Notice**	**Notice of Public Hearing**
Las Gallinas Valley Sanitary District	X	X
Marin County Local Agency Formation Commission	X	X
Marin Municipal Water District	X	X
Novato Sanitary District	X	X
Sonoma County Water Agency	X	X
Valley of the Moon Water District	X	X
NOTES:		

2.2.3 Public Participation

☑ *CWC § 10642*

Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of both the plan and the water shortage contingency plan. Prior to adopting either, the urban water supplier shall make both the plan and the water shortage contingency plan available for public inspection and shall hold a public hearing or hearings thereon. Prior to any of these hearings, notice of the time and place of the hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of a hearing to any city or county within which the supplier provides water supplies. Notices by a local public agency pursuant to this section shall be provided pursuant to Chapter 17.5 (commencing with Section 7290) of Division 7 of Title 1 of the Government Code. A privately owned water supplier shall provide an equivalent notice within its service area. After the hearing or hearings, the plan or water shortage contingency plan shall be adopted as prepared or as modified after the hearing or hearings.

Water suppliers are required by the UWMP Act to encourage active involvement of the community within the service area prior to and during the preparation of its UWMP and WSCP. The UWMP Act also requires water suppliers to make a draft of the UWMP and WSCP available for public review and to hold a public hearing regarding the findings of the UWMP and WSCP prior to their adoption. In addition to sending notices of the District's intent to prepare its UWMP and WSCP to the various agencies listed in 2.2.2, the District also included a public notice in the local newspaper (i.e., the Marin Independent Journal) notifying the public that draft UWMP and WSCP were available for review and that the District was seeking public input and comments, including during the public hearing. Public participation in the development of the District's 2020 UWMP and WSCP are summarized in **Appendix D**.

The Public Review Draft 2020 UWMP and WSCP were made available for public review at the District's office and on the District's website (https://www.nmwd.com).

2.3 UWMP Structure, Standard Units, and Basis for Reporting

As summarized in **Table 2-5**, the District is a water retailer and unless otherwise indicated, the data included in the following sections is presented in units of AF or AFY; annual values represent fiscal years (FY) spanning from 1 July to 30 June of the following year. As such, "2020" represents FY 2019-20, and so forth.

Further, consistent with the Guidebook, the terms "water use", "water consumption", and "water demand" are used interchangeably in this UWMP.

Table 2-5 Supplier Identification (DWR Table 2-3)

Type of Supplier	
	Supplier is a wholesaler
X	Supplier is a retailer
Fiscal or Calendar Year	
	UWMP Tables are in calendar years
X	UWMP Tables are in fiscal years
If using fiscal years provide month and date that the fiscal year begins (mm/dd)	
07/01	
Units of measure used in UWMP	
Unit	AF
NOTES:	

3. SERVICE AREA AND SYSTEM DESCRIPTION

☑ ***CWC § 10631 (a)*** *A plan shall be adopted in accordance with this chapter that shall do all of the following:*

Describe the service area of the supplier, including current and projected population, climate, and other social, economic, and demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available. The description shall include the current and projected land uses within the existing or anticipated service area affecting the supplier's water management planning. Urban water suppliers shall coordinate with local or regional land use authorities to determine the most appropriate land use information, including, where appropriate, land use information obtained from local or regional land use authorities, as developed pursuant to Article 5 (commencing with Section 65300) of Chapter 3 of Division 1 of Title 7 of the Government Code.

The North Marin Water District (NMWD or District) service area is shown on **Figure 3-1** and **Figure 3-2**. The majority of the District is located in the Marin County and provides service to customers in the City of Novato and surrounding unincorporated areas (NMWD, 2019).[2]

3.1 Population and Employment Trends Within the Service Area

Employment in the District's service area includes a variety of industries, with the majority working in education, health services, professional/scientific occupations, management, finance, and retail (City of Novato, 2014). Regionally, employment in the agricultural industry is related to vineyards, livestock, orchards, silage crops, and timber. The primary industrial activities in the region include biochemical production and other high technology, limited wine production, other agricultural product processing, and miscellaneous manufacturing. Recreation and tourism are small but growing industries in the region (SCWA, 2016).

3.1.1 Future Population Growth

Table 3-1 and its associated chart list the current and projected population for the District's service area, including population served outside the City of Novato boundary[3], through the year 2045. The 2020 population was calculated using a per dwelling unit multiplier method for use in the Senate Bill (SB) X7-7 analysis. Further detail regarding 2020 population calculations can be found in Chapter 5. Population projections were developed separately based on population projections by the Association of Bay Area Governments (ABAG) Plan Bay Area Projections 2040 (ABAG, 2018), including the Regional Housing Needs

[2] As noted in Section 2.1, the District also operates a separate public water system (the West Marin Water System), which has a separate supply source, is not interconnected to the Novato System, and is not subject to UWMP Act requirements.

[3] Population estimates do not include estimates for the West Marin Water System.

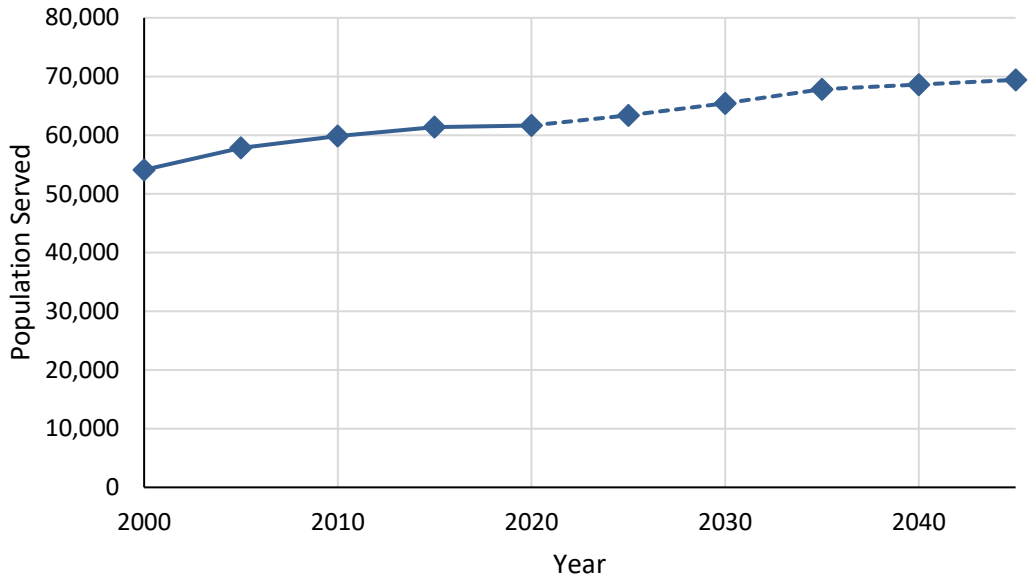
Allocation (RHNA) per ABAG (2020), as described further in the *2020 Water Demand Analysis and Water Conservation Measure Update* (Water Demand Report; EKI, 2020; **Appendix B**).

Table 3-1 Population - Current and Projected (DWR Table 3-1)

Population Served	2020	2025	2030	2035	2040	2045
	61,658	63,389	65,440	67,838	68,631	69,432

NOTES:
(a) Current population data is further documented in **Table 4-9**.
(b) Projected population growth was calculated by applying City of Novato ABAG (2018) growth rates to the 2020 population estimate, which includes an estimated population for area served outside the City of Novato boundary and adjusting for the new housing units per the Required Housing Needs Allocation (RHNA).

Chart 3-1 Current and Projected Population



3.1.2 Future Employment Growth

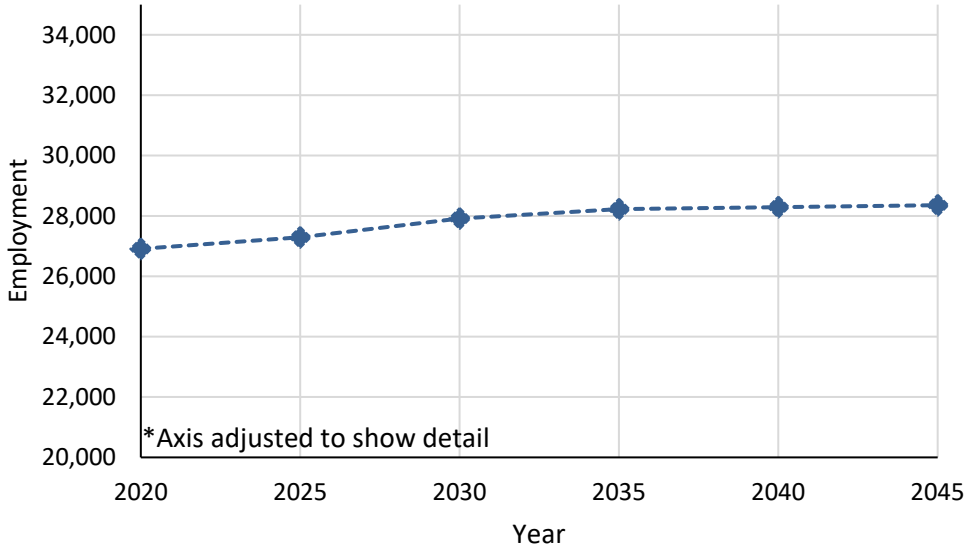
Table 3-2 and its associated chart the current and projected employment for the City of Novato through the year 2045. Current and projected employment was developed as described in the Water Demand Report (EKI, 2020; **Appendix B)**.

Table 3-2 Employment - Current and Projected

Service Area Employment	2020	2025	2030	2035	2040	2045
	26,910	27,290	27,915	28,225	28,290	28,355

NOTES:
(a) Current and projected employment growth per ABAG (2018). Projections reflect the City of Novato and not the entirety of the District service area.

Chart 3-2 Current and Projected Employment



3.2 Land Uses within Service Area

Land use within the District is primarily residential, but also includes agricultural, industrial, commercial, and recreational land uses. Current land use maps within the District can be found in the Land Use Element of the City of Novato General Plan 2035 (City of Novato, 2020)[4] and the Marin Countywide Plan (Marin County, 2014)[5]. Future land uses are expected to be remain generally consistent with current land uses. Per the Regional Housing Needs Allocation (ABAG, 2020), substantial new residential units are expected

[4] The City of Novato General Plan 2035 is available at the City's website: https://www.novato.org/home/showpublisheddocument?id=30461.

[5] The Marin Countywide Plan is available at the county's website: https://www.marincounty.org/-/media/files/departments/cd/planning/currentplanning/publications/county-wide-plan/cwp_2015_update_r.pdf?la=en.

to be constructed within the City of Novato, which has been accounted for in the population projections discussed above.

3.3 Service Area Social, Economic, and Demographic Factors

Demographics for the City of Novato, which accounts for a majority of the service area population, are summarized in **Table 3-3**. The same data are also provided for the state of California as a whole. Data were obtained from the U.S. Census Bureau QuickFacts website (U.S. Census, 2021). Relative to the rest of California, the City of Novato's population is slightly older and somewhat less racially diverse. Educational attainment and median household income in City of Novato are higher than for the state as a whole, while population below the poverty level is comparatively lower.

Table 3-3 Demographic and Housing Characteristics

Demographics (a)	City of Novato	California
Age and Sex		
Persons under 5 years	4.4%	6.0%
Persons under 18 years	18.7%	22.5%
Persons 65 years and older	20.6%	14.8%
Female persons	51.4%	50.3%
Race and Hispanic Origin		
White alone	72%	71.9%
Black or African American alone	3.7%	6.5%
American Indian and Alaska Native alone	0.2%	1.6%
Asian alone	7.7%	15.5%
Native Hawaiian and Other Pacific Islander alone	0.10%	0.5%
Two or More Races	5.3%	4.0%
Hispanic or Latino	19%	39.4%
White alone, not Hispanic or Latino	64%	36.5%
Families & Living Arrangements		
Persons per household	2.46	2.95
Living in same house 1 year ago, percent of persons age 1 year+	88%	87.1%
Language other than English spoken at home, age 5 years+	27.1%	44.2%
Education		
High school graduate or higher, persons age 25 years+	93%	83.3%
Bachelor's degree or higher, persons age 25 years+	46%	33.9%
Income & Poverty		
Median Household Income (2019 dollars)	$101,342	$75,235
Per capita income in past 12 months (2019 dollars)	$54,682	$36,955
Persons in poverty	6.9%	11.8%

NOTES:
(a) Demographic data per the U.S. Census Bureau QuickFacts website (U.S. Census, 2021).

3.4 Climate

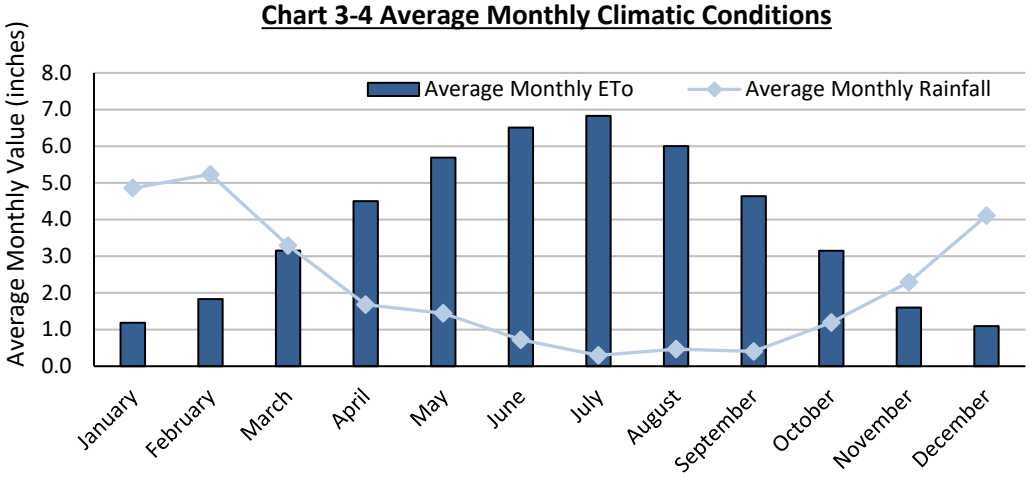
The District's climate is tempered by its proximity to the Pacific Ocean. Similar to much of the California coastal area, the year is divided into wet and dry seasons. Approximately 93% of the annual precipitation normally falls during the wet season, October to May, with a large percentage of the rainfall typically occurring during three or four major winter storms. Winters are cool, and below-freezing temperatures seldom occur. Summers are warm and the frost-free season is fairly long. Annual precipitation averages 26 inches. **Table 3-4** and its associated chart summarizes average monthly evapotranspiration rates (ETo), rainfall, and temperatures from July 1986 to October 2020.

Table 3-4 Average Monthly Climate Characteristics

Month	Average Temperature		Standard Average ETo (inches)	Average Rainfall (inches)
	Min (°F)	Max (°F)		
January	36.7	56.4	1.2	4.9
February	38.9	60.8	1.8	5.2
March	40.7	64.9	3.2	3.3
April	42.6	69.3	4.5	1.7
May	45.4	72.9	5.7	1.4
June	48.7	78.6	6.5	0.7
July	50.9	81.3	6.8	0.3
August	51.1	81.2	6.0	0.5
September	49.0	81.1	4.6	0.4
October	45.0	75.3	3.1	1.2
November	40.0	64.5	1.6	2.3
December	36.2	56.3	1.1	4.1
Annual	**43.8**	**70.2**	**46.2**	**26.0**

NOTES:
(a) Data represents the monthly average from July 1986 to January 2002 recorded from Novato California Irrigation Management Information System (CIMIS) station 63 and from June 2003 to October 2020 recorded from Black Point CIMIS station 187.

Chart 3-4 Average Monthly Climatic Conditions



3.5 Climate Change Considerations

☑ ***CWC § 10630***

It is the intention of the Legislature, in enacting this part, to permit levels of water management planning… while accounting for impacts of climate change.

Impacts associated with climate change are discussed in the *2018 Marin County Multi-Jurisdictional Local Hazard Mitigation Plan* (County LHMP*)*, which is incorporated into this UWMP by reference (Marin County, 2018). The MCM LHMP assesses Marin County's vulnerabilities to various hazards and presents mitigation strategies that are planned over the next five years. As of 2021, Marin County is currently in the process updating its LHMP, using a multijurisdictional planning approach overseen by a steering committee made up of various stakeholders. Risks described in the current County LHMP include flooding, storms, wildfires, and coastal erosion that are anticipated to occur due to climate change.

A further discussion of climate change impacts specific to the SCWA water system is provided in the *Sonoma County Water Agency Local Hazard Mitigation Plan,* dated 16 October 2018, which is also incorporated into this UWMP by reference (SCWA LHMP; SCWA, 2018). The SCWA LHMP specifically assesses SCWA's natural hazard risks and vulnerabilities facing the SCWA infrastructure and provides a plan of action to address these vulnerabilities. As described in the SCWA LHMP, the most significant climate change-related vulnerabilities for SCWA are associated with floods, wildfires, landslides, and drought.

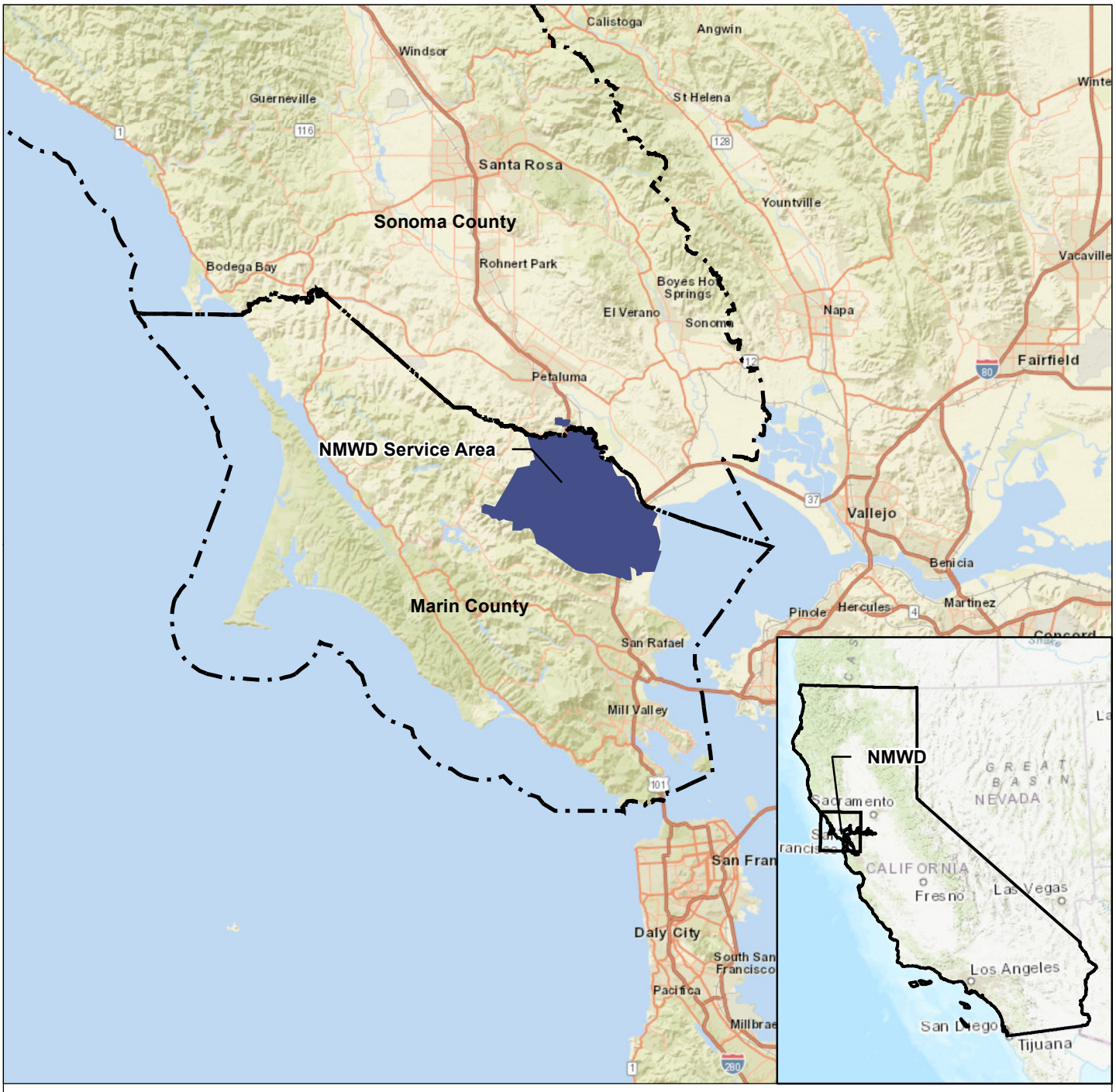
Climate change impacts on the District's water demands are discussed in Section 4.4, while climate change impacts on the District's water supply are discussed in Section 6.10.1.

3.6 Water Distribution System

The District receives the majority of its water supply from the Sonoma County Water Agency's (SCWA's or Sonoma Water's) Russian River Project. The Santa Rosa Aqueduct and the Russian River-Cotati Intertie carry primarily Russian River water from the SCWA diversion facilities located in the Wohler and Mirabel areas to the District via the Petaluma and North Marin Aqueducts. In addition, the SCWA operates three groundwater wells in the Santa Rosa Plain Subbasin (DWR No. DWR Basin 1-55.01) that supplement the water supply from the Russian River. Additional details regarding sources of SCWA supply are included in Chapter 6.

The District maintains a local source of supply, Stafford Lake, in addition to the water purchased from the SCWA. The District operates its Stafford Lake source seasonally to reduce peak demand on the SCWA's Aqueduct system. A map of the District's Novato water system is presented in Figure 3-3 from the 2018 Novato Water System Master Plan Update, provided in **Appendix E**. The District's water supply from Stafford Lake is treated at the Stafford Treatment Plant (STP). Water from Stafford Lake is drawn through an intake tower and, depending on the water surface elevation, is either gravity-fed or pumped to the STP. The STP, which was constructed in 1951, was upgraded in 1973 and completely rehabilitated in 2006. The rehabilitated STP uses chlorine dioxide as a pre-oxidant followed by Actifloc™ ballasted sand clarification with conventional filtration, chlorination and pH adjustment (sodium hydroxide addition) and has a design capacity of 6 million gallons per day (MGD).

The District owns and operates the 30, 36, and 42-inch diameter North Marin Aqueduct, which transports water from the SCWA's Petaluma Aqueduct near Kastania Tank in south Petaluma to Novato. The District has four separate pressure zones, using 31 storage tanks with a total capacity of approximately 37 million gallons, 26 booster pump stations, and seven hydropneumatic systems that have combined tanks and pump stations. More detailed information regarding the District's water storage and transportation system is available in the District's 2018 Water Master Plan (NMWD, 2019). The District's four pressure zones each have gravity storage in one or more storage tanks. Approximately 48% of the total system demand is in Zone 1 and 43% in Zone 2. Zone 1, at the lowest elevation, is supplied by water delivered from the SCWA via the Petaluma Aqueduct and the North Marin Aqueduct, as well as water pumped from STP. Water to supply the other zones is pumped from Zone 1. Transmission mains vary in size from 16 to 24 inches in diameter. Most of the District's distribution pipelines range from 6 to 12 inches in diameter, principally constructed of asbestos cement or polyvinyl chloride, and are up to 65 years old.



Legend

- County Boundary
- North Marin Water District

N

0 10 20

Miles

Abbreviations

NMWD = North Marin Water District

Notes

1. All locations are approximate.

Sources

1. Service area boundary provided by North Marin Water District.
2. Basemap provided by ESRI.

Regional Vicinity

North Marin Water District
June 2021
C00096.00

Figure 3-1

eki environment & water

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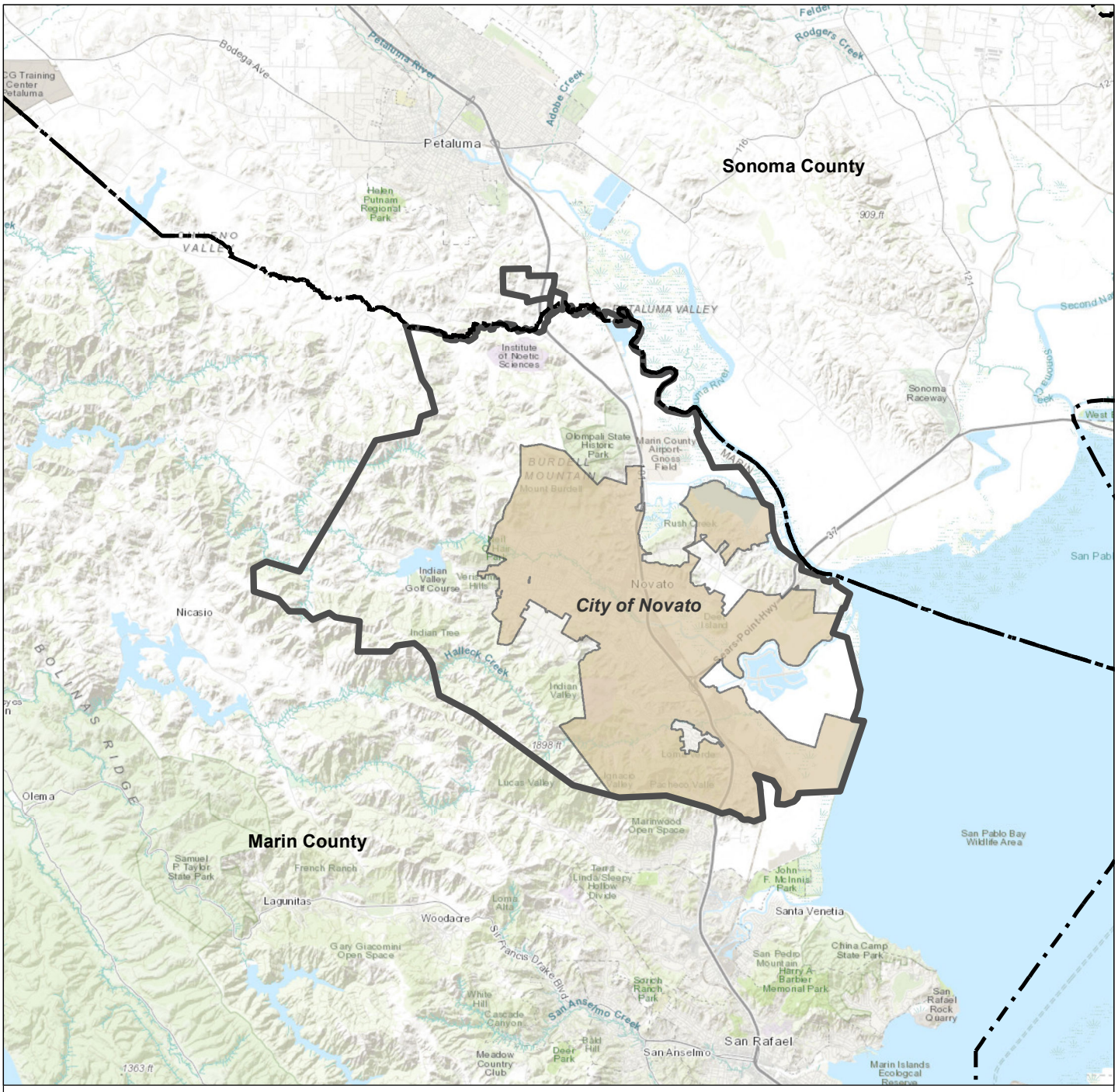

Legend

- County Boundary
- North Marin Water District Service Area
- City of Novato

N

0 3 6

Miles

District Service Area

Notes

1. All locations are approximate.

Sources

1. Service area boundary provided by North Marin Water District.
2. Basemap provided by ESRI.

eki environment & water

North Marin Water District
June 2021
C00096.00

Figure 3-2

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4. SYSTEM WATER DEMANDS

☑ ***CWC § 10631 (d) (1)*** *A plan shall be adopted in accordance with this chapter that shall do all of the following:*

For an urban retail water supplier, quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, based upon information developed pursuant to subdivision (a), identifying the uses among water use sectors, including, but not necessarily limited to, all of the following:

(A) Single-family residential.

(B) Multifamily.

(C) Commercial.

(D) Industrial.

(E) Institutional and governmental.

(F) Landscape.

(G) Sales to other agencies.

(H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof.

(I) Agricultural.

(J) Distribution system water loss.

(2) *The water use projections shall be in the same five-year increments described in subdivision (a).*

This section describes and quantifies past and current water use and future water use projections through the year 2045. For purposes of this Urban Water Management Plan (UWMP or Plan), "potable water demand" is defined as the volume of water produced by North Marin Water District (NMWD or District) to serve the Novato Water System, including purchased Sonoma County Water Agency (SCWA or Sonoma Water) water and local Stafford Lake water treated by the District. The District also serves raw and recycled water to customers, referred to herein as "non-potable water demand".

Among other factors, water demand is dependent on climate, population, industry, and the types of development present in a community. Sections 4.1 and 4.2 describe the District's historical and projected water uses for residential, commercial, institutional, and landscape irrigation purposes (water use sectors A, B, C, E, and F, per §10631(e)(1)), as well as raw and recycled water uses. Distribution system water loss (water use sector J) is discussed in Section 4.1.3. As described in Section 4.3, this discussion does not include demands for water use sectors D, G, H, and I as they are not applicable or present within the District's service area. Section 4.4 describes anticipated climate change impacts to demand, and Section 4.5 discusses future urban water use objective requirements. Note that water demand projections are presented based on the current best available information and are subject to review and revision every 5 years as part of the update process.

4.1 Current and Historic Total Water Demand

The following sections of the Urban Water Management Plan (UWMP or Plan) present the District's current and historical water demands, as well as the projected future demand in five-year increments from 2025 through 2045.

4.1.1 Current and Historical Potable Water Demand

Current and historical potable water demand by water use sector from 2016 through 2020 is shown in **Table 4-1**, along with its associated charts.[6] Water demand within the District is primarily measured using water meters that are installed at each customer account. Records of water use are maintained by the District and are based on billing data. Water use within the District is tracked for the following sectors:

- Single Family Residential (SFR);
- Multi-Family Residential (MFR);
- Commercial;
- Institutional/Governmental;
- Landscape; and
- Other.

Water use within the District's service area is predominantly associated with residential use, with 56% of the water use between 2016 and 2020 from SFR accounts and 14% from MFR accounts. Commercial accounts comprised 10% of total water use, landscape accounts comprised 9.0%, and institutional/governmental comprised 2.9%. As shown in **Table 4-2** and its associated charts, the total and per capita water use increased from 2011 through 2013, then declined from 2014 through 2017. These trends were likely influenced by the historic drought conditions, mandatory state-wide restrictions in urban water use imposed by the State Water Resources Control Board (SWRCB), and local drought response. Total and per capita water use has remained lower than pre-drought conditions, with an increase in 2018, indicating a degree of rebound following the drought.

[6] Historical demand is reported herein on a fiscal year basis, and in the *2020 Urban Water Management Plan Water Demand Analysis and Water Conservation Measures Update* (EKI, 2020; **Appendix B**) on a calendar year basis.

Table 4-1 Demands for Potable and Non-Potable Water - Actual (DWR Table 4-1)

Use Type	Additional Description *(as needed)*	Level of Treatment When Delivered	Volume				
			2016	2017	2018	2019	2020
Single Family		Drinking Water	3,899	4,176	4,870	4,495	4,863
Multi-Family	Apartments, condos, and mobile homes	Drinking Water	1,073	1,087	1,124	1,116	1,160
Commercial		Drinking Water	781	799	885	843	816
Institutional/Governmental		Drinking Water	176	170	211	371	210
Landscape		Drinking Water	609	689	845	699	719
Other Potable	Pools, fire services	Drinking Water	144	72	87	86	90
Losses	(c)	Drinking Water	680	193	124	295	--
Other Potable	Other non-revenue water (d)	Drinking Water	36	21	21	20	74
Other Non-Potable	Raw water	Raw Water	153	186	193	186	202
Other Potable	Potable water make-up to recycled water system	Drinking Water	16	1.6	49	6.8	60
		TOTAL	7,568	7,395	8,408	8,117	8,194

NOTES:
(a) Volumes are in units of AF.
(b) Water demand is based upon metered water consumption.
(c) "Losses" for 2016 through 2019 are the "water losses" estimated using the AWWA Free Water Audit Software and includes both real and apparent losses, reported on a calendar-year basis.
(d) "Other non-revenue water" includes authorized but unbilled, unmetered consumption that do not fall under the category of “losses”, such as fire flow, system flushing, hydrant leaks, etc. Other non-revenue water for 2016 through 2019 is calculated as the difference between “water losses” and “non-revenue water” as reported in the AWWA Water Loss Worksheets and is reported on a calendar-year basis. For 2020 where the AWWA Water Loss Worksheet was unavailable, non-revenue water is calculated as the difference between FY 2020 production and consumption.

Chart 4-1A Annual Water Demand by Sector: 2016-2020

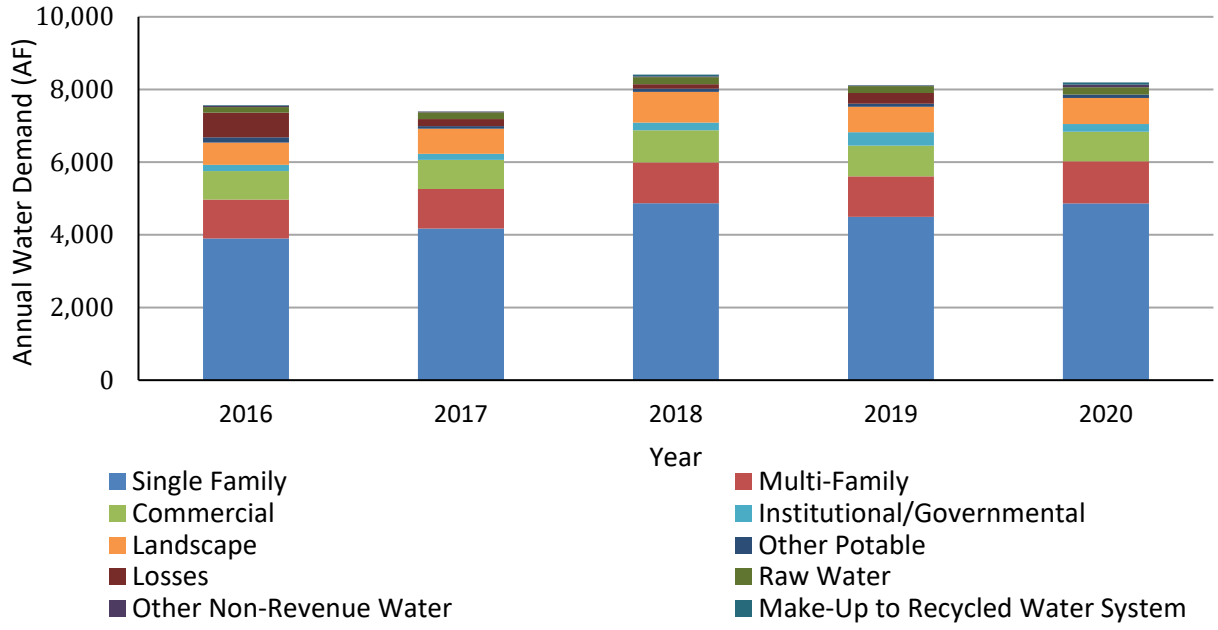


Chart 4-1B Percentage of Total Water Demand by Sector: 2016-2020

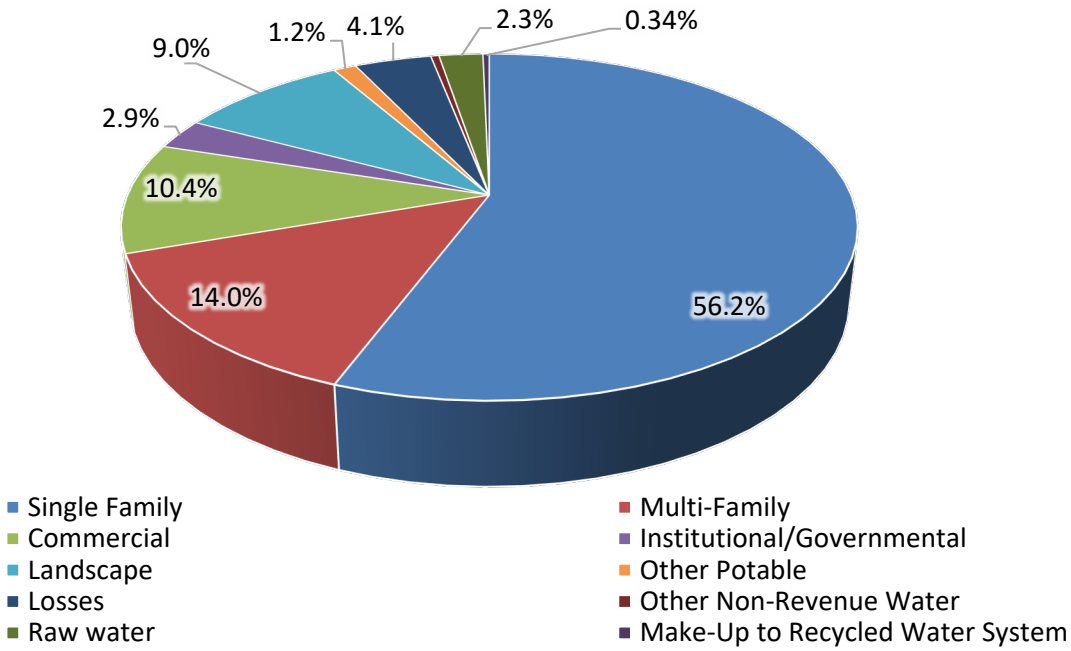
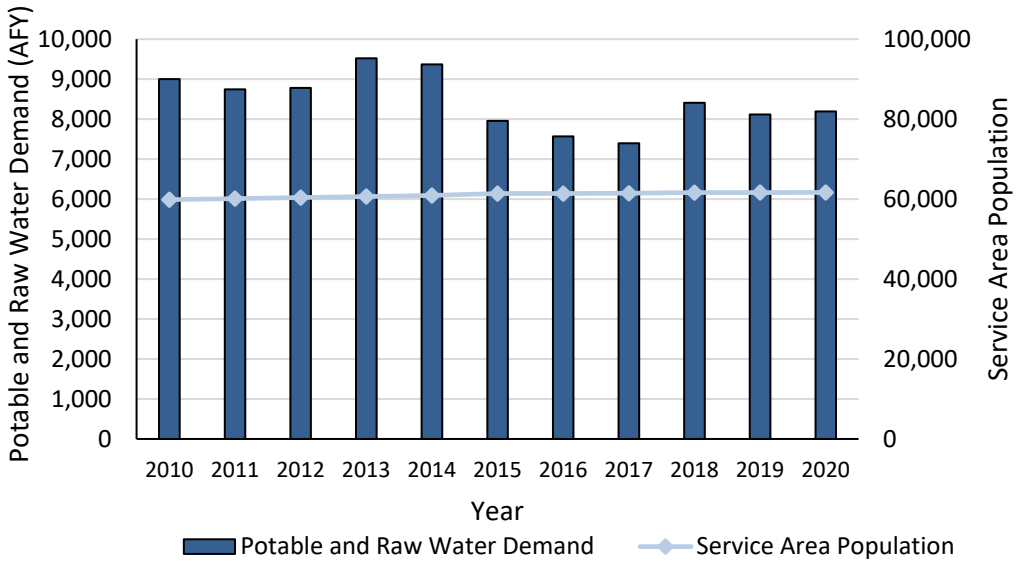


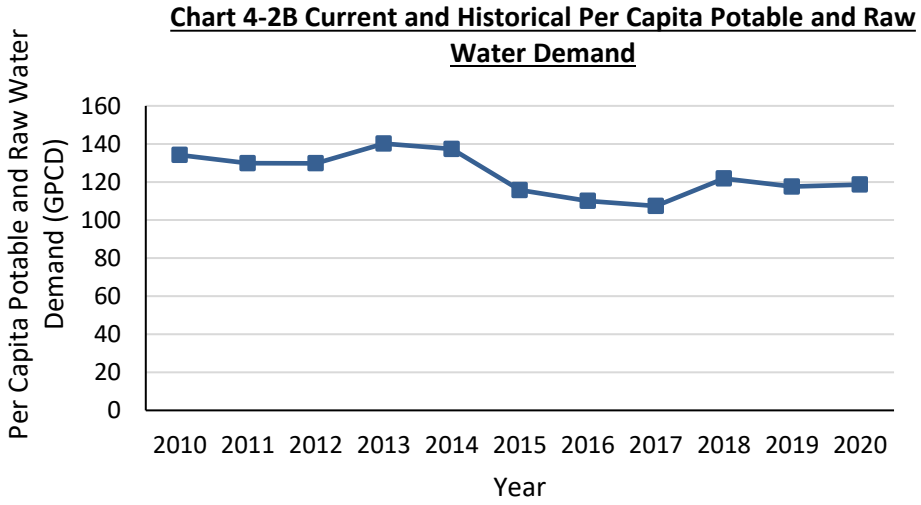
Table 4-2 Historical and Current Potable Water Demand and Population

Year	Potable and Raw Water Demand (AFY)	Service Area Population	Per Capita Potable and Raw Water Demand (GPCD)
2010	8,999	59,861	134
2011	8,744	60,119	130
2012	8,779	60,377	130
2013	9,521	60,635	140
2014	9,369	60,893	137
2015	7,958	61,381	116
2016	7,568	61,386	110
2017	7,395	61,470	107
2018	8,408	61,616	122
2019	8,117	61,637	118
2020	8,194	61,658	119

NOTES:
(a) Detailed historical and current water demand data from 2016 through 2020 are documented in **Table 4-1**.
(b) Service area population for 2010 through 2020 per **Appendix B**.

Chart 4-2A Current and Historical Water Demand and Population





4.1.2 Current and Historical Non-Potable Water Demand

As described below, there are two sources of non-potable demand within the District: (1) raw water and (2) recycled water demands.

Raw water demand within the District represented a small fraction (i.e., approximately 2.3%) of total average water demand from 2016 through 2020 (**Table 4-1**). The District provides raw (untreated) water for landscape irrigation to two customers (Marin County – Stafford Lake Park and Indian Valley Golf Course). As shown in Section 4.2.2, raw water demand is projected to remain constant throughout the planning period.

Annual recycled water demand represented approximately 7% of total average water demand from 2016 through 2020. Recycled water demands are primarily associated with outdoor irrigation and therefore occur primarily between the months of April and October. As such, the actual maximum day supply of recycled water can represent up to 16% of the District's total demand during summer months. For additional projected demand information related to recycled water, refer to Section 4.2 and to Section 6.3.

4.1.3 Potable Water Make-Up to the Recycled Water System

The recycled water system is supplemented with potable water to meet demands, as necessary. This potable make-up represented up to 60 AFY (less than 1%) of total potable water demand from 2016 through 2020. The District receives recycled water from two recycled water systems: the Novato Sanitary District (NSD) and the Las Gallinas Valley Sanitary District (LGVSD). In 2020, the LGVSD recycled water system was shut down to allow for treatment plant upgrades and 100% of recycled water demand was met by potable water. Following the completion of treatment plant upgrades in April 2021, the District anticipates that all demand by the recycled water system will be met by recycled water. The recycled water system is discussed in further detail in Section 6.3.

4.1.4 Distribution System Water Loss

☑ ***CWC § 10631 (3)***

(A) The distribution system water loss shall be quantified for each of the five years preceding the plan update, in accordance with rules adopted pursuant to Section 10608.34.

(B) The distribution system water loss quantification shall be reported in accordance with a worksheet approved or developed by the department through a public process. The water loss quantification worksheet shall be based on the water system balance methodology developed by the American Water Works Association.

(C) In the plan due July 1, 2021, and in each update thereafter, data shall be included to show whether the urban retail water supplier met the distribution loss standards enacted by the board pursuant to Section 10608.34.

Distribution system water losses for the previous five years are summarized in **Table 4-3**. Water loss is the sum of apparent and real losses. Apparent losses include metering inaccuracies, systematic data handling errors, and unauthorized consumption. Real losses represent water loss attributable to the distribution system and include physical water losses from the pressurized system and storage tanks up to the point of customer consumption. Since 2016, urban retail water suppliers have been required under CWC §10608.34 and California Code of Regulations (CCR) § 638.1 et seq to quantify distribution system water losses using the American Water Works Association (AWWA) Free Water Audit Software (referred to as the "AWWA Water Loss Worksheet"). The real and apparent losses calculated in the most recent AWWA Water Loss Worksheet are provided in **Table 4-3,** and are available through DWR's Water Use Efficiency Data Portal.[7] Since the 2020 AWWA Water Loss Worksheet was not available during production of this document, losses for 2020 are estimated as the difference between water production and consumption. **Table 4-1** reports these real and apparent losses as "Losses", as well as "Other Non-Revenue Water" which includes other unbilled water uses such as system flushing, leak repair flushing, hydrant leaks, and street sweeping and is calculated as the difference between "water losses" and "non-revenue water" as reported in the AWWA Water Loss Worksheets.

CWC §10631 (3)(c) requires that this UWMP demonstrate whether the distribution loss standards enacted by the SWRCB pursuant to §10608.34 have been met. However, the SWRCB has yet to establish these standards, and thus consistency with these standards cannot be demonstrated herein.

[7] DWR's Water Use Efficiency Data Portal is located at: https://wuedata.water.ca.gov/awwa_plans.

Table 4-3 Last Five Years of Water Loss Audit Reporting (DWR Table 4-4)

Reporting Period Start Date	Volume of Water Loss
07/2014	238
01/2016	680
01/2017	193
01/2018	124
01/2019	295
NOTES: (a) Volumes are in units of AF. (b) Water loss was estimated using the AWWA Free Water Audit Software and includes both real and apparent losses. Water loss is reported on a fiscal-year basis for 2014/15 and on a calendar-year basis for 2016 through 2019.	

4.2 Projected Total Water Demand

The District's water demand projections were prepared as part of the *2020 Urban Water Management Plan Water Demand Analysis and Water Conservation Measures Update* (Water Demand Report; EKI, 2020), which is provided in **Appendix B** and documents in detail the methods and assumptions used to project future water demand.

Projected total water demand is summarized in the following subsections.

4.2.1 Projected Potable Water Demand

As described in more detail below and in the Water Demand Report (**Appendix B**), projected water demands for the District were estimated by:

- Applying an estimated growth rate to the number of accounts within each water use sector based on projected population and employment growth rates,
- Identifying known planned developments within the District, including new housing per the Association of Bay Area Governments' (ABAG) Regional Housing Needs Allocation (ABAG, 2020) to verify that account growth projections consider all currently anticipated growth,
- Evaluating and selecting water demand factors for each water use sector based on review of recent average per account water use representing three scenarios (i.e., pre-drought conditions, post-drought conditions, and a partial drought rebound scenario),
- Estimating future passive savings using the Alliance for Water Efficiency (AWE) Water Conservation Tracking Tool (AWE model), and
- Calculating estimated future water demand that incorporates the anticipated account growth, water demand factors, and estimated future passive water savings.

This methodology is consistent with CWC §10631(d)(4)(A), which requires that "water use projections, where available, 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." The assumptions used as the bases for demand projections were developed in close coordination with the District and reflect a land-use based approach consistent with community planning within the District.

Projected customer water demands for years 2025 through 2045 are presented in **Table 4-4** along with its associated chart. These demands are broken down by sector, including water loss, raw water, and potable make-up to the recycled water system. Recycled water demands are not included in **Table 4-4** and are discussed in Section 6.3. As affirmed in **Table 4-5**, both future water savings (Section 4.2.4) and lower income residential demands (Section 4.2.3) are included in the projections of future water use.

Table 4-4 Use for Potable and Non-Potable Water - Projected (DWR Table 4-2)

Use Type	Additional Description *(as needed)*	Projected Water Use				
		2025	2030	2035	2040	2045
Single Family		5,928	6,072	6,271	6,308	6,355
Multi-Family	Apartments, condos, mobile homes	1,278	1,263	1,264	1,243	1,230
Commercial		932	930	919	906	896
Institutional/ Governmental		297	299	299	297	295
Landscape		1,001	1,024	1,035	1,038	1,040
Other Potable	Pools, fire services	129	133	136	138	139
Losses	(b)	301	311	322	325	329
Other Non-Potable	Raw Water (c)	218	218	218	218	218
TOTAL		10,084	10,249	10,463	10,472	10,502

NOTES:
(a) Volumes are in units of AF.
(b) Projected water demands were estimated using methodology described in **Appendix B** and incorporate passive conservation savings, as described in Section 4.2.4.
(c) Losses represent all non-revenue water, which includes both real and apparent losses, including unauthorized consumption.
(d) Raw water projections are based on past raw water usage.

Chart 4-4 Current and Projected Water Demand by Sector

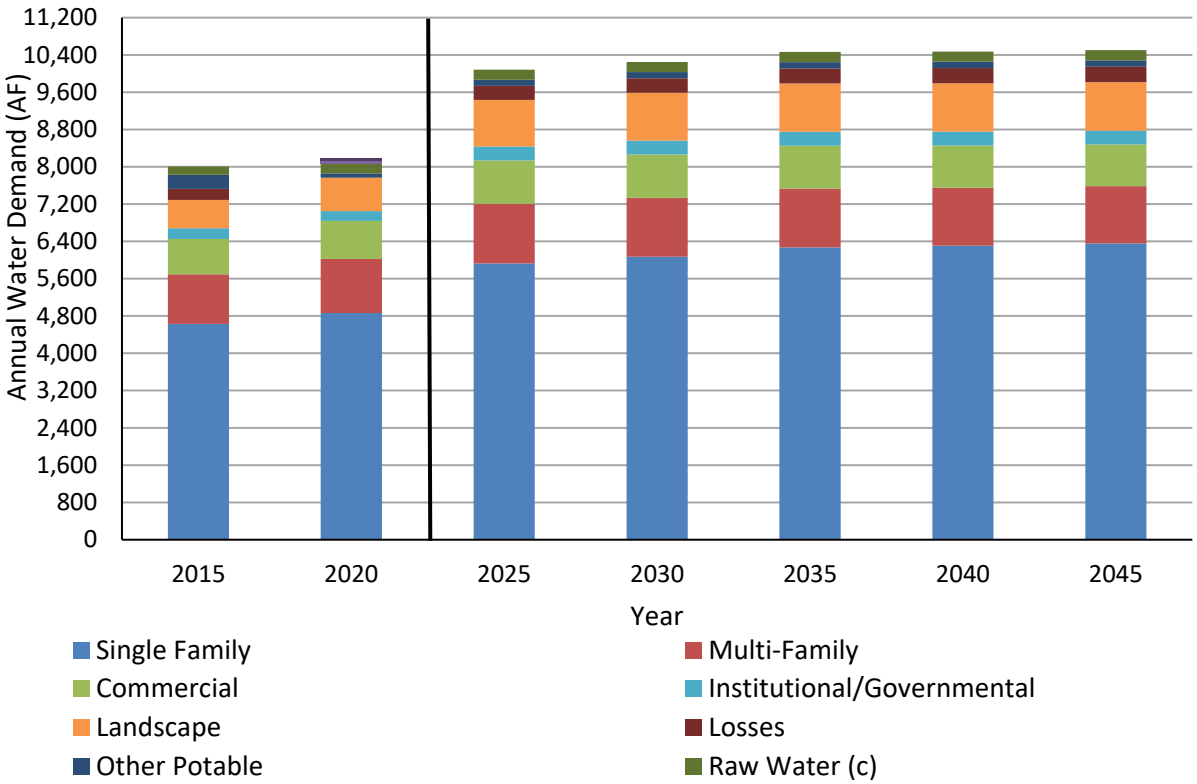


Table 4-5 Inclusion in Water Use Projections (DWR Table 4-5)

Are Future Water Savings Included in Projections?	Yes
If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, or otherwise are utilized in demand projections are found.	Refer to Section 4.4 and Table 4-6 of **Appendix B**.
Are Lower Income Residential Demands Included In Projections?	Yes
NOTES:	

4.2.2 Projected Non-Potable Water Demand

As indicated in **Table 4-4** and discussed in Section 4.1.2, raw water demand is currently served to two customers and is not expected to change over the current planning period.

The recycled water system is separate from the potable water system and has a more limited footprint within the District. Expansion of recycled water use is generally dependent on (1) location and proximity to the recycled water distribution system, (2) the presence of substantial enough opportunities for use of non-potable water (i.e., irrigation and some small commercial uses such as automatic, drive through car

washes) to warrant connection to the recycled water distribution system, and (3) the capacity of the recycled water treatment facility and distribution system to meet the available demand. Due to these factors, while some recycled water use may be expected to increase relative to population or employment growth within the District, system infrastructure is a more significant driver in projecting future recycled water use. Projected recycled water demand is not included in **Table 4-4** and is shown in Section 4.2.5 and further described in **Appendix B**.

4.2.3 Water Use for Lower Income Households

☑ ***CWC § 10631.1***

(a) The water use projections required by Section 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households, as defined in Section 50079.5 of the Health and Safety Code, as identified in the housing element of any city, county, or city and county in the service area of the supplier.

(b) It is the intent of the Legislature that the identification of projected water use for single-family and multifamily residential housing for lower income households will assist a supplier in complying with the requirements under Section 65589.7 of the Government Code to grant a priority for the provision of service to housing units affordable to lower income households.

California Senate Bill No. 1087 (SB 1087), Chapter 727, was passed in 2005 and amended by Government Code Section 65589.7 and Water Code Section 10631.1. SB 1087 requires local governments to provide a copy of their adopted housing element to water and sewer providers. In addition, it requires water providers to grant priority for service allocations to proposed developments that include housing units for lower income families and workers. Subsequent revisions to the UWMP Act require water providers to develop water demand projections for lower income single and multi-family households.

NMWD does not discriminate in terms of supplying water to any development. NMWD is required to serve any development that occurs within its service area, regardless of the income level of the future residents. It is ultimately the City's or County's responsibility to approve or not approve developments within the service area.

As indicated in **Table 4-5**, the water use projections presented in Section 4.2.1 and **Table 4-4** include projected water use by lower income households. A lower income household is defined under California Health and Safety Code §50079.5(a) to be 80% of median income, adjusted for family size. Based on Census data for the Novato service area, the 80% of median income figure is approximately $81,100.[8] The ABAG 2023-2031 Regional Housing Needs Allocation (RHNA) Proposed Methodology for the San Francisco Bay Area (ABAG, 2020) was used to estimate the proportion of new lower income households anticipated within the District. Based on ABAG (2020) data for the City of Novato, new lower income households are estimated to comprise approximately 44% of the total new households. **Table 4-6** shows the projected

[8] US Census Bureau American Fact Finder for City of Novato using 2015-2019 American Community Survey 5-Year Estimates (in 2019 dollars). Median income estimate is $101,342.

water demands for lower income households based on 44% of the total single-family and multi-family residential projected water uses included in **Table 4-4.**

Table 4-6 Projected Water Use for Lower Income Households

Lower-Income Water Demand Sector	Projected Water Use (AFY)				
	2025	2030	2035	2040	2045
Single Family Residential	2581	2644	2730	2746	2767
Multi-Family Residential	557	550	550	541	535
Total	3,138	3,194	3,281	3,288	3,303
NOTES: (a) Volumes are in units of AF.					

4.2.4 Water Savings from Codes, Standards, Ordinances, or Transportation and Land Use Plans

☑ ***CWC § 10631 (d) (4)***

(A) Water use projections, where available, 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.

(B) To the extent that an urban water supplier reports the information described in subparagraph (A), an urban water supplier shall do both of the following:

(i) Provide citations of the various codes, standards, ordinances, or transportation and land use plans utilized in making the projections.

(ii) Indicate the extent that the water use projections consider savings from codes, standards, ordinances, or transportation and land use plans. Water use projections that do not account for these water savings shall be noted of that fact.

"Passive conservation" refers to water savings resulting from actions and activities that do not depend on direct financial assistance (e.g., rebate) programs from the District. These savings result primarily from (1) the natural replacement of existing plumbing fixtures with water-efficient models required under current plumbing code standards, and (2) the installation of water-efficient fixtures and equipment in new buildings and retrofits as required under CALGreen Building Code Standards and the District's strict enforcement of new development water use efficiency requirements in District Regulation 15 sections e. and f.[9] The water use projections discussed in Section 4.2.1 and summarized in **Table 4-4** include water savings associated with these codes and standards. Specifically, as shown in **Table 4-7** and its associated chart, passive water savings for the District were calculated to be 749 AFY by 2045 using the Alliance for

[9] The District Regulation 15 is available at the District's website: https://nmwd.com/wp-content/uploads/2020/04/Reg-15-1.pdf.

Water Efficiency (AWE) Water Conservation Tracking Tool (referred to as the AWE model; AWE, 2016). The AWE model is an industry standard tool that incorporates historical population, residential building stock, number of accounts, and projected population and account growth to estimate future passive savings. More information regarding the passive savings estimated using the AWE model can be found in **Appendix B**.

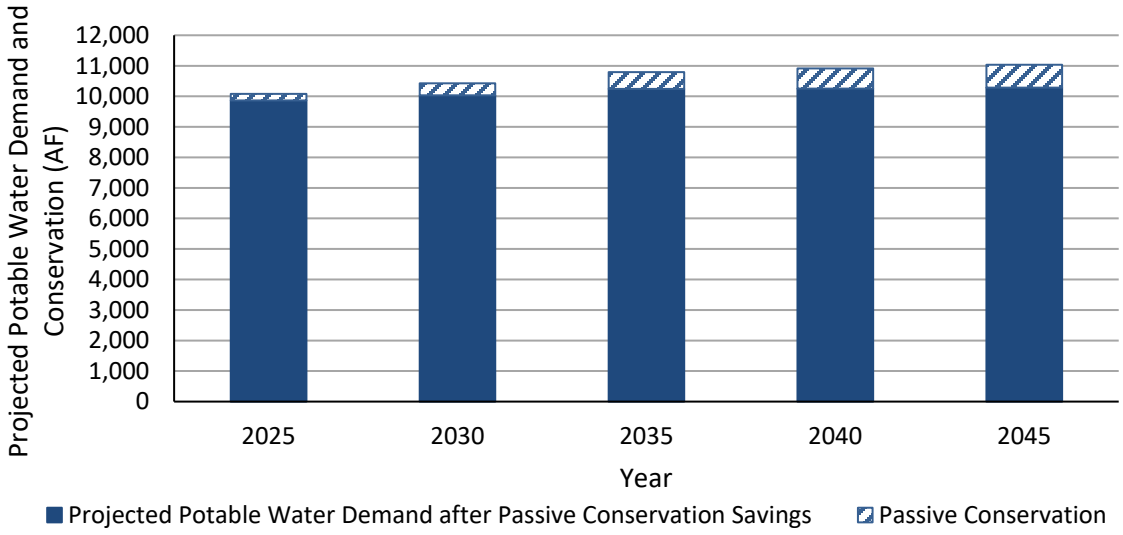
While projections account for passive savings, the District has taken a more conservative approach to demand projections by not accounting for savings associated with future active conservation measures. However, savings associated with all past active conservation efforts are embedded into the demand projections. This approach is conservative, as it projects the highest level of probable demand. Active conservation thus increases resiliency for District customers by further increasing efficient utilization of available supplies.

Table 4-7 Projected Total Water Demand and Projected Passive and Active Water Conservation

Water Conservation Type	Projected Total Water Demand				
	2025	2030	2035	2040	2045
Projected Water Demand	10,082	10,427	10,795	10,913	11,033
Projected Water Conservation	216	396	550	659	749
Passive Conservation	9,866	10,031	10,245	10,254	10,284

NOTES:
(a) Volumes are in units of AF.
(b) The District also implements a number of active conservation programs, as discussed in Chapter 9 and **Appendix B**.

Chart 4-7 Projected Potable Water Demand and Conservation



4.2.5 Projected Total Water Demand

The District's total projected water demands are summarized in **Table 4-8**.

Table 4-8 Total Water Use (Potable and Non-Potable) (DWR Table 4-3)

	2020	2025	2030	2035	2040	2045
Potable Water, Raw, Other Non-potable *From DWR Tables 4-1 and 4-2*	8,194	10,084	10,249	10,463	10,472	10,502
Recycled Water Demand *From DWR Table 6-4*	658	595	508	622	636	650
TOTAL WATER USE	8,852	10,679	10,757	11,085	11,108	11,152
NOTES: (a) Volumes are in units of AF.						

4.3 Water Use Sectors Not Included in the Demand Projections

Several water use sectors listed in CWC §10631(e)(1) are not included in the water demand projections described in Sections 4.2.1 and 4.2.2 because they are not applicable to the District. The following sectors were not included in the demand projections in this Plan:

- Industrial (CWC §10631(e)(1)(D)) – The District does not currently, nor does it plan to, provide water for industrial uses. The District does provide water for some biopharmaceutical industrial purposes, but this use is included in the commercial sector and not tracked separately.
- Sales to Other Agencies (CWC §10631(e)(1)(G)) – The District does not currently, nor does it plan to, sell water to other agencies.
- Saline Water Intrusion Barriers, Groundwater Recharge, or Conjunctive Use (CWC §10631(e)(1)(H)) – The District does not currently use, nor does it plan to use, water for saline water intrusion barriers, groundwater recharge, or conjunctive use.
- Agricultural (CWC §10631(e)(1)(I)) – The District does not currently, nor does it plan to, provide water for agricultural uses.

4.4 Climate Change Impacts to Demand

☑ ***CWC § 10635(b)***

(4) Considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.

The methodology used to develop demand projections herein considers the impacts of climate change on projected demands. California experienced a historic drought between 2011-2017. In 2014, Governor Brown issued Executive Order B-26-14 declaring a Drought State of Emergency and requested all

Californians to voluntarily reduce water use by 20%. In 2015, the State Water Resources Control Board implemented emergency conservation regulations that, among other things, required water agencies to reduce their water use and prohibited certain types of water uses. As a result, the District experienced an overall decrease in demands during the historic drought, most significantly during 2015. As explained further in **Appendix B**, the demand factors evaluated herein consider both the 2011-2013 period, in which customers increased their water use (in part due to the drought conditions, prior to the imposed restrictions), as well as the observed rebound in demand following the drought (2017-2019). Thus, the periods used to develop the demand projections reflect conditions representative of the hotter, drier weather expected as a result of climate change.

4.5 Urban Water Use Objectives (Future Requirements)

☑ ***CWC § 10609.20***

(a) Each urban retail water supplier shall calculate its urban water use objective no later than January 1, 2024, and by January 1 every year thereafter.

(b) The calculation shall be based on the urban retail water supplier's water use conditions for the previous calendar or fiscal year….

☑ ***CWC § 10609.22***

(a) An urban retail water supplier shall calculate its actual urban water use no later than January 1, 2024, and by January 1 every year thereafter.

(b) The calculation shall be based on the urban retail water supplier's water use for the previous calendar or fiscal year….

☑ ***CWC § 10609.24***

(a) An urban retail water supplier shall submit a report to the department no later than January 1, 2024, and by January 1 every year thereafter. The report shall include all of the following:

(1) The urban water use objective calculated pursuant to Section 10609.20 along with relevant supporting data.

(2) The actual urban water use calculated pursuant to Section 10609.22 along with relevant supporting data.

(3) Documentation of the implementation of the performance measures for CII water use.

(4) A description of the progress made towards meeting the urban water use objective.

(5) The validated water loss audit report conducted pursuant to Section 10608.34.

(b) The department shall post the reports and information on its internet website.

(c) The board may issue an information order or conservation order to, or impose civil liability on, an entity or individual for failure to submit a report required by this section.

Beginning in 2023, urban water retailers will be required to report on "annual water use objectives" by 1 November of each year and to achieve these objectives by 1 January 2027. The annual water use objectives will be calculated based on standards for indoor residential water use, outdoor residential water use, and distribution system water loss. Additionally, it is anticipated that performance-based standards for the commercial, industrial, and institutional sectors, separate from the annual water use

objectives, will also be developed by Department of Water Resources (DWR) and be implemented in the future. However, the specific standards that will be used to determine a retailer's annual urban water use objectives are currently under development by DWR, and thus the annual urban water use objectives for the District cannot be calculated or estimated. Once the urban water use objectives are released, the District will evaluate its historical and current water use compared to the new objectives, and will evaluate the need to adjust its conservation and water loss management measures to meet the new objectives.

One of the components for calculating the future water use objectives is provided for in CWC §10609.4.(a), which states "(1) Until January 1, 2025, the standard for indoor residential water use shall be 55 gallons per capita daily. (2) Beginning January 1, 2025, and until January 1, 2030, the standard for indoor residential water use shall be the greater of 52.5 gallons per capita daily or a standard recommended pursuant to subdivision (b). (3) Beginning January 1, 2030, the standard for indoor residential water use shall be the greater of 50 gallons per capita daily or a standard recommended pursuant to subdivision (b)."[10] **Table 4-9** shows an estimate of future per capita residential water use, broken out by estimated indoor and outdoor water use, per the analysis provided in **Appendix B**. Based on these estimates, per capita indoor residential potable water use is expected to be above the indoor use standards presented in the legislation. Although indoor residential water use is expected to be above the indoor residential water use standard, it should be noted that because standards have not yet been developed for the outdoor water use or water loss components of the future water use objectives, it cannot be known whether projected demands for the District will be in compliance with the pending requirements.

[10] While the legislation appears to be clear on the method to calculate the indoor residential water use component, the SWRCB has begun the California Environmental Quality Act (CEQA) process for the new water use objective requirements and has expressed concern that using the 55 gallons per capita per day (GPCD) number in the legislation will constitute "backsliding" (compared to the reduction required by SB X7-7) and thus may need to be lowered.

Table 4-9 Current and Projected Residential Per Capita Water Use

Year	Residential Potable Water Demand	Service Area Population	Per Capita Residential Potable Water Use (GPCD)	Approximate Per Capita Indoor Residential Potable Water Use (GPCD)	Approximate Per Capita Outdoor Residential Potable Water Use (GPCD)
2020	6,024	61,658	87	52	35
2025	7,206	63,389	101	61	41
2030	7,335	65,440	100	60	40
2035	7,535	67,838	99	60	40
2040	7,551	68,631	98	59	39
2045	7,585	69,432	98	59	39

NOTES:
(a) Unless otherwise noted, volumes are in units of AF.
(b) The approximate proportion of indoor and outdoor water use is based on the average estimated residential indoor and outdoor water use from 2017 through 2019 (60% indoor and 40% outdoor) as documented in **Appendix B.**

5. BASELINE WATER USE AND SB X7-7 WATER CONSERVATION TARGETS

☑ ***CWC § 10608.24 (b)***

Each urban retail water supplier shall meet its urban water use target by December 31, 2020.

☑ ***CWC § 10608.28***

(a) An urban retail water supplier may meet its urban water use target within its retail service area, or through mutual agreement, by any of the following:

(1) Through an urban wholesale water supplier.

(2) Through a regional agency authorized to plan and implement water conservation, including, but not limited to, an agency established under the Bay Area Water Supply and Conservation Agency Act (Division 31 (commencing with Section 81300)).

(3) Through a regional water management group as defined in Section 10537.

(4) By an integrated regional water management funding area.

(5) By hydrologic region.

(6) Through other appropriate geographic scales for which computation methods have been developed by the department.

(b) A regional water management group, with the written consent of its member agencies, may undertake any or all planning, reporting, and implementation functions under this chapter for the member agencies that consent to those activities. Any data or reports shall provide information both for the regional water management group and separately for each consenting urban retail water supplier and urban wholesale water supplier.

With the adoption of the Water Conservation Act of 2009, also known as Senate Bill (SB) X7-7, the state was required to reduce urban water use by 20% by the year 2020. Each urban retail water supplier was required to develop a baseline daily per capita water use ("baseline water use") in their 2010 Urban Water Management Plan (UWMP or Plan) and establish per capita water use targets for 2015 and 2020 in order to help the state achieve the 20% reduction. Under SB X7-7 urban retail water suppliers may either comply with their 2020 targets on an individual basis or as part of a regional Alliance. As identified in **Table 2-2**, although North Marin Water District (NMWD or District) is part of the North Marin-Sonoma Alliance (referred to as "Alliance" herein).

In support of implementing the requirements of SB X7-7, the California Department of Water Resources (DWR) produced a set of methodologies for developing baseline and compliance water use and targets, which are included in Methodologies for Calculating Baseline and Compliance Urban Per Capita Water, California Department of Water Resources Division of Statewide Integrated Water Management Water Use and Efficiency Branch, (Methodologies; DWR, 2016). The District has not made any changes to the information pertaining to the baseline water use or interim 2015 target compliance reported in the District's 2015 UWMP.

In this chapter, the District demonstrates compliance with its 2020 per capita water use target. As part of the compliance reporting for SB X7-7, water suppliers are required to complete and submit a set of standardized verification tables in their 2020 UWMPs. The information in these tables is discussed and

summarized in the following subsections, and the complete set of SB X7-7 standardized tables is included in **Appendix F**.

5.1 Service Area Population

☑ ***CWC § 10608.20 (e)***

An urban retail water supplier shall include in its urban water management plan due in 2010 pursuant to Part 2.6 (commencing with Section 10610) the baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.

☑ ***CWC § 10608.20 (g)***

An urban retail water supplier may update its 2020 urban water use target in its 2015 urban water management plan required pursuant to Part 2.6 (commencing with Section 10610).

☑ ***Methodology 2 Service Area Population****.*

DWR will examine discrepancy between the actual population estimate and DOF's projections for 2010; if significant discrepancies are discovered, DWR may require some or all suppliers to update their baseline population estimates. (DWR, 2016)

As stated previously herein, the District's service territory includes not only the city of Novato but also the adjacent surrounding unincorporated area and includes a limited number of customers served outside of the NMWD service territory in south Sonoma County[11]. In previous UWMPs, the District developed baseline population estimates using Census Block Group data to develop service area populations. As reported in the 2015 UWMP, it was determined that a more simplified yet equally precise methodology could be applied using the District's Dwelling Unit (DU) database. The same methodology used in the 2015 UWMP was used to calculate 2020 population, using a 2020 estimate for the number of dwelling units. The District's 5- and 10-year baseline populations, as reported in the 2015 UWMP are presented in **Table 5-1** below.

[11] The District also operates the West Marin Water System, which is a separate public water system with a separate source of supply and no physical interconnection of facilities between the Novato and West Marin Water System. Only information regarding the Novato Water System is included herein.

Table 5-1 SB X7-7 Service Area Population

Year		Population
10 to 15 Year Baseline Population		
Year 1	1995	52,762
Year 2	1996	51,809
Year 3	1997	51,950
Year 4	1998	52,073
Year 5	1999	53,119
Year 6	2000	54,099
Year 7	2001	54,712
Year 8	2002	56,196
Year 9	2003	56,358
Year 10	2004	57,527
5 Year Baseline Population		
Year 1	2003	56,358
Year 2	2004	57,527
Year 3	2005	59,146
Year 4	2006	60,357
Year 5	2007	60,474
2020 Compliance Year Population		
2020		61,658
NOTES:		

5.2 Baseline Water Use

5.2.1 Individual Baseline Water Use

The baseline water use is the water supplier's average gross daily water use per capita measured in gallons. This baseline includes all water entering the delivery system, including water losses.[12] Water suppliers were required to define a 10- or 15-year base (or baseline) period for water use that was then used to develop their future target per capita water use in their 2010 and 2015 UWMPs.[13] Water suppliers were also required to calculate their water use over a five-year baseline period and use that value to determine a minimum required reduction in water use by 2020.

[12] A water supplier may deduct from its gross water use water conveyed to other urban water suppliers, water placed into long-term storage, recycled water delivered within the supplier's service area, water delivered for agricultural use, water conveyed to other urban water suppliers, and water used for industrial processes.

[13] Utilizing a 15-year baseline period is only allowed for water suppliers that meet at least 10% of their 2008 measured retail water demand through recycled water; the District does not meet this criterion and thus selected a 10-year baseline.

5.2.2 Regional Baseline Water Use

For the development of the District's baseline water use, a 10-year average was used from 1995 to 2004. The 10-year baseline water use calculated and reported in the District's 2015 UWMP was 173 gallons per capita per day (GPCD). No deductions were made to the District's gross water use. The District was also required to determine its five-year base daily per capita water use in its prior UWMPs, which was determined to be 162 GPCD.

Table 5-2 below shows the weighted baseline as calculated for the Alliance in 2015. Taking the population-weighted average of all of its members, the Alliance's baseline was calculated to be 156 GPCD.

Table 5-2 RA1 – Weighted Baseline

SB X7-7 RA1 - Weighted Baseline				
Participating Member Agency Name	**10-15 year Baseline GPCD***	**Average Population During 10-15 Year Baseline Period**	**(Baseline GPCD) X (Population)**	**Regional Alliance Weighted Average 10-15 Year Baseline GPCD**
City of Cotati	159	6,559	1,043,146	
Marin Municipal Water District	149	178,670	26,690,318	
North Marin Water District	173	54,061	9,370,435	
City of Petaluma	180	52,622	9,491,997	
City of Rohnert Park	161	40,811	6,582,847	
City of Santa Rosa	145	143,109	20,806,963	
City of Sonoma	225	9,679	2,173,212	
Valley of the Moon Water District	146	20,969	3,058,648	
Town of Windsor	156	24,572	3,834,809	
Regional Alliance Total	1,495	531,051	83,052,375	**156**

**All participating agencies must submit individual SB X7-7 Tables, as applicable, showing the individual agency's calculations. These tables are: SB X7-7 Tables 0 through 6 , Table 7, any required supporting tables (as stated in SB X7-7 Table 7), and SB X7-7 Table 9, as applicable. These individual agency tables will be submitted with the individual or Regional Urban Water Management Plan.*

NOTES

5.3 Water Use Targets

☑ ***CWC § 10608.20 (b)***

An urban retail water supplier shall adopt one of the following methods for determining its urban water use target pursuant to subdivision (a):

(1) Eighty percent of the urban retail water supplier's baseline per capita daily water use.

(2) The per capita daily water use that is estimated using the sum of the following performance standards:

(A) For indoor residential water use, 55 gallons per capita daily water use as a provisional standard. Upon completion of the department's 2017 report to the Legislature pursuant to Section 10608.42, this standard may be adjusted by the Legislature by statute.

(B) For landscape irrigated through dedicated or residential meters or connections, water efficiency equivalent to the standards of the Model Water Efficient Landscape Ordinance set forth in Chapter 2.7 (commencing with Section 490) of Division 2 of Title 23 of the California Code of Regulations, as in effect the later of the year of the landscape's installation or 1992. An urban retail water supplier using the approach specified in this subparagraph shall use satellite imagery, site visits, or other best available technology to develop an accurate estimate of landscaped areas.

(C) For commercial, industrial, and institutional uses, a 10-percent reduction in water use from the baseline commercial, industrial, and institutional water use by 2020.

(3) Ninety-five percent of the applicable state hydrologic region target, as set forth in the state's draft 20x2020 Water Conservation Plan (dated April 30, 2009). If the service area of an urban water supplier includes more than one hydrologic region, the supplier shall apportion its service area to each region based on population or area.

(4) A method that shall be identified and developed by the department, through a public process, and reported to the Legislature no later than December 31, 2010. The method developed by the department shall identify per capita targets that cumulatively result in a statewide 20-percent reduction in urban daily per capita water use by December 31, 2020. In developing urban daily per capita water use targets, the department shall do all of the following:

(A) Consider climatic differences within the state.

(B) Consider population density differences within the state.

(C) Provide flexibility to communities and regions in meeting the targets.

(D) Consider different levels of per capita water use according to plant water needs in different regions.

(E) Consider different levels of commercial, industrial, and institutional water use in different regions of the state.

(F) Avoid placing an undue hardship on communities that have implemented conservation measures or taken actions to keep per capita water use low.

☑ ***CWC § 10608.22***

Notwithstanding the method adopted by an urban retail water supplier pursuant to Section 10608.20, an urban retail water supplier's per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use as defined in paragraph (3) of subdivision (b) of Section 10608.12. This section does not apply to an urban retail water supplier with a base daily per capita water use at or below 100 gallons per capita per day.

5.3.1 Individual Water Use Targets

Table 5-3 shows the District's 5- and 10-year baseline periods, its baseline GPCD for these periods, and its confirmed 2020 target, which were previously developed and reported in its 2015 UWMP. This individual target is used for the development of the Alliance's regional water use target, as shown in Section 5.3.2.

Table 5-3 Baselines and Targets Summary (DWR Table 5-1)

Baseline Period	Start Year	End Year	Average Baseline GPCD	Confirmed 2020 Target GPCD
10-15 year	1995	2004	173	139
5 Year	2003	2007	162	
NOTES:				

5.3.2 Regional Water Use Targets

Instead of, or in addition to, individual water use targets, urban water retail suppliers may plan, comply, and report on SB X7-7 requirements on a regional basis as part of a "Regional Alliance." As described in Section 2.2.2, the District is one of eight Water Contractors to the Sonoma County Water Agency (SCWA or Sonoma Water) for purchase of Russian River water supply. As such, the Water Contractors formed a regional in 2011 Alliance under the provisions of SB X7-7 because they are recipients of water from a common wholesale water supplier.

The membership of the Alliance is consistent with that of a previously established water conservation regional partnership of eight Water Contractors, known as the Sonoma Marin Saving Water Partnership (SMSWP). As identified in **Table 2-2**, this regional group, which collaborates on regional water conservation efforts, formed a Regional Alliance for the purposes of meeting regional water use targets. The members of the North-Marin Sonoma Alliance include: the District, City of Sonoma, City of Santa Rosa, Town of Windsor, City of Rohnert Park, City of Cotati, City of Petaluma, Marin Municipal Water District, and Valley of the Moon Water District[14].

The DWR established three options for calculating a regional Alliance water use target. The District, along with the other Water Contractors in the regional Alliance , selected Option 1, which preserves maximum flexibility at the supplier level. Under Option 1, each member of the regional Alliance calculates their individual targets and then weighs the individual targets by each member's population. The weighted targets are then averaged to determine the regional Alliance Target. Detailed calculations conducted by the Regional Alliance are included in **Appendix F**. The Alliance's 2020 Target, as reported to DWR by the Alliance in 2015, are provided in **Table 5-4** below.

[14] The letter approving the District's membership in the regional Alliance is available at the following link: http://www.savingwaterpartnership.org/wp-content/uploads/20x2020-regional-alliance-agreement.doc.pdf.

Table 5-4 DWR Regional Alliance Weighted 2020 Target

SB X7-7 RA1 - Weighted 2020 Target				
Participating Member Agency Name	**2020 Target GPCD***	**2015 Population**	**(Target) X (Population)**	**Regional Alliance Weighted Average 2020 Target**
City of Cotati	130	7,288	947,440	
Marin Municipal Water District	124	189,000	23,436,000	
North Marin Water District	139	61,381	8,531,959	
City of Petaluma	141	61,798	8,713,518	
City of Rohnert Park	119	41,675	4,959,325	
City of Santa Rosa	126	173,071	21,806,946	
City of Sonoma	180	11,147	2,006,460	
Valley of the Moon Water District	124	23,478	2,911,272	
Town of Windsor	130	27,486	3,573,180	
Regional Alliance Total	1,213	596,324	76,886,100	**129**
**All participating agencies must submit individual SB X7-7 Tables, as applicable, showing the individual agency's calculations. These tables are: SB X7-7 Tables 0 through 6, Table 7, any required supporting tables (as stated in SB X7-7 Table 7), and SB X7-7 Table 9, as applicable. These individual agency tables will be submitted with the individual or Regional Urban Water Management Plan.*				
NOTES:				

5.4 2020 Target Compliance

☑ ***CWC § 10608.24 (b)***

Each urban retail water supplier shall meet its urban water use target by December 31, 2020.

☑ ***CWC § 10608.24 (d)***

(1) When determining compliance daily per capita water use, an urban retail water supplier may consider the following factors:

(A) Differences in evapotranspiration and rainfall in the baseline period compared to the compliance reporting period.

(B) Substantial changes to commercial or industrial water use resulting from increased business output and economic development that have occurred during the reporting period.

(C) Substantial changes to institutional water use resulting from fire suppression services or other extraordinary events, or from new or expanded operations, that have occurred during the reporting period.

(2) If the urban retail water supplier elects to adjust its estimate of compliance daily per capita water use due to one or more of the factors described in paragraph (1), it shall provide the basis for, and data supporting, the adjustment in the report required by Section 10608.40.

☑ ***CWC § 10608.40***

Urban water retail suppliers shall report to the department on their progress in meeting their urban water use targets as part of their urban water management plans submitted pursuant to Section 10631. The data shall be reported using a standardized form developed pursuant to Section 10608.52.

Table 5-5 demonstrates the District's compliance with its individual 2020 GPCD target. As summarized in **Table 3-1** and **Table 4-2,** the District's 2020 population was 61,658 and its 2020 water use was 8,194 acre-feet (AF), which results in a daily gross per capita water use estimate of 119 GPCD. The District's 2020 actual GPCD is less than the target of 139 GPCD and the District is therefore in compliance with SB X7-7 requirements.

Table 5-5 SB X7-7 2020 Compliance – NMWD (DWR Table 5-2)

2020 GPCD			2020 Confirmed Target GPCD	Did Supplier Achieve Targeted Reduction for 2020?
Actual 2020 GPCD	2020 TOTAL Adjustments	Adjusted 2020 GPCD *(Adjusted if applicable)*		
119	0	119	139	Yes
NOTES:				

The Alliance's 2020 water use was 76,804 AF and the 2020 population was 604,607, which results in a gross daily per capita water use estimate of 113 GPCD. The Alliance is not seeking adjustments to its 2020 target and, as summarized in **Table 5-6**, is in full compliance with its 2020 target GPCD.

Table 5-6 DWR Regional Alliance Compliance Submittal

2020 GPCD			2020 Confirmed Target GPCD	Did Supplier Achieve Targeted Reduction for 2020?
Actual 2020 GPCD	2020 TOTAL Adjustments	Adjusted 2020 GPCD *(Adjusted if applicable)*		
113	0	113	129	Yes
NOTES:				

6. WATER SUPPLY CHARACTERIZATION

☑ ***CWC § 10631 (b)*** *A plan shall be adopted in accordance with this chapter that shall do all of the following:*

Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a).

☑ ***CWC § 10631 (b) (2)***

When multiple sources of water supply are identified, a description of the management of each supply in correlation with the other identified supplies.

This section describes existing and future sources of water available to North Marin Water District (NMWD or District). It includes a description of each water source, source limitations, water quality, and future opportunities for additional supply development. The District's water supplies presently come from a combination of imported water from Sonoma County Water Agency (SCWA or Sonoma Water), local surface water supplies, and recycled water. Each water supply is described further in the following sections.

6.1 Purchased Water

☑ ***CWC § 10631 (h)*** *A plan shall be adopted in accordance with this chapter and shall do all of the following:*

An urban water supplier that relies upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (f). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (f).

6.1.1 Sonoma County Water Agency Surface Water Supply

The District receives its primary water supply from SCWA's transmission system, which provides treated water purchased from SCWA's Russian River Project. The Russian River flows are augmented by Pacific Gas and Electric's (PG&E's) Potter Valley Project, which diverts a portion of the Eel River flows to the East Fork of the Russian River. Water is diverted and extracted from the stretch of the Russian River located just upstream of Wohler Bridge via six radial wells known as "Ranney collectors." The diverted river water percolates through sand and gravel and only needs the addition of chlorine to meet drinking water quality standards. Although the water extracted via Ranney collectors does percolate through the ground, due to the connection to the surface water source, this diversion is considered and is permitted as a surface water supply under existing surface water rights to the Russian River and Dry Creek water, described further in Section 6.1.2 (SCWA, 2016). As discussed further under Section 6.2, the SCWA supply also includes a relatively small amount of groundwater from groundwater supply wells located in the central Santa Rosa Plain subbasin (SCWA, 2016).

The District, along with other SCWA contractors, signed the Restructured Agreement for Water Supply (Agreement) in 2006. The Agreement provides for the financing, construction, and operation of diversion facilities, transmission lines, storage tanks, booster pumps, conventional wells, and appurtenant facilities. As described in Section 3.1 of this Agreement, SCWA:

> *…shall deliver to each Water Contractor* [i.e., each signatory to the Agreement] *at the points of delivery hereinafter set forth such quantities of water as the Water Contractor shall from time to time require at such rates of flow as are necessary to meet its peak day's demand, subject to the following:*
>
> *(a) SCWA shall not be obligated to deliver water in excess of the following:*

Water Contractor/ Aqueduct	*Average Daily Rate of Flow During Any Month*	*Annual Amount During Fiscal Year (Excluding Surplus Water)*
North Marin From Petaluma Aqueduct	*19.9 million gallons per day*	*14,100 acre-feet*

6.1.2 Sonoma County Water Agency Surface Water Rights

According to SCWA's 2015 UWMP (SCWA, 2016), four water rights permits (Permits 12947A, 12949, 12950, and 16596) issued by the State Water Resources Control Board (SWRCB) authorize SCWA to store up to 122,500 acre feet per year (AFY) of water in Lake Mendocino and up to 245,000 AFY of water in Lake Sonoma, and to divert or redivert up to 180 cubic feet per second (cfs) of water from the Russian River with a limit of 75,000 AFY. The permits also establish minimum instream flow requirements for fish and wildlife protection and recreation. These minimum instream flow requirements vary based on the hydrologic classifications of normal, dry, and critical water supply conditions as defined by SCWA's water rights permits and SWRCB Decision 1610, adopted in 1986 (SCWA, 2016). SCWA meets the various instream flow requirements by making releases from Coyote Valley Dam and Warm Springs Dam (SCWA, 2016). The Russian River Biological Opinion requires modification of minimum instream flow requirements on the Russian River and Dry Creek to maintain the Incidental Take Statement provided by the Biological Opinion (SCWA, 2016). SCWA's evaluation of future Russian River supply availability is based upon the assumption that that proposed changes to the minimum instream flow requirements under Decision 1610 set forth in the Biological Opinion are implemented, and that SCWA will obtain water rights approvals necessary to increase its total Russian River diversions above 75,000 AFY by 2035 (SCWA, 2016). The SCWA 2015 UWMP anticipates that SCWA would request at that time an additional 1,000 AFY to increase the overall supply from the Russian River to 76,000 AFY.

6.1.3 Sonoma County Water Agency Groundwater Supply

SCWA pumps a portion of its supply from the Santa Rosa Plain Subbasin of the Santa Rosa Valley Basin (DWR Basin # 1-55.01). Groundwater is used primarily as a drought period supply, or when Russian River supplies are otherwise constrained (SCWA, 2016). In 2015, groundwater made up less than 2% of SCWA's supplies; through 2045, groundwater is projected to make up 3% of SCWA's supplies in normal year

conditions (SCWA, 2016). It cannot be discerned what specific amount of SCWA supply provided to the District consists of groundwater; however, it is assumed to be proportionate to the overall percentage of groundwater used within SCWA's system. SCWA's groundwater supply is discussed further in Section 6.2.

6.2 Groundwater

☑ ***CWC § 10631***

(b) (4) If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information:

(A) The current version of any groundwater sustainability plan or alternative adopted pursuant to Part 2.74 (commencing with Section 10720), any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management for basins underlying the urban water supplier's service area.

(B) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For basins that a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. For a basin that has not been adjudicated, information as to whether the department has identified the basin as a high- or medium-priority basin in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to coordinate with groundwater sustainability agencies or groundwater management agencies listed in subdivision (c) of Section 10723 to maintain or achieve sustainable groundwater conditions in accordance with a groundwater sustainability plan or alternative adopted pursuant to Part 2.74 (commencing with Section 10720).

(C) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

The District does not pump groundwater and does not plan to use groundwater as a supply source in the future (see **Table 6-1**). For background purposes, information regarding the groundwater basin underlying the District's service area is provided below.

The groundwater basin underlying the District's service area is the Novato Valley Basin (California Department of Water Resources [DWR] Basin No. 2-30), which is categorized by the California Statewide Groundwater Elevation Monitoring (CASGEM) program as a very low priority basin (DWR, 2019). The basin occupies a structural depression in the eastern Coast Range west of San Pablo Bay. The basin drains to San Pablo Bay and the areas close to the bay are tidally influenced. The water-bearing deposits underlying the District are primarily the alluvial deposits of Pleistocene and Holocene age. These alluvium deposits overlie the non-water-bearing Franciscan Formation. The alluvium is composed of silt, clay, and sand with some lenses of gravel. Groundwater wells screened in sand and gravels yield approximately 50 gallons per minute (gpm). The groundwater quality within the District's service area boundary is considered poor due to high salinity, and potential well yields are low. Therefore, groundwater from the service area is not currently or planned to be used as a water supply source by the District.

Table 6-1 Groundwater Volume Pumped (DWR Table 6-1)

X	Supplier does not pump groundwater. The supplier will not complete the table below.					
	All or part of the groundwater described below is desalinated.					
Groundwater Type	Location or Basin Name	2016	2017	2018	2019	2020
	TOTAL					
NOTES: (a) Volumes are in units of AF.						

Although the District does not pump groundwater directly, as noted in Section 6.1.3, a small portion of the SCWA water supply (i.e., less than 2%) is comprised of groundwater from the Santa Rosa Plain Subbasin of the Santa Rosa Valley Basin (DWR Basin 1-55.01). Given this, characteristics and groundwater management of the Santa Rosa Plain Subbasin are provided below.

6.2.1 Basin Description and Status

The Santa Rosa Subbasin is not adjudicated, and in its recent evaluation of California groundwater basins, DWR determined that the Basin is not in a condition of critical overdraft (DWR, 2019). The Santa Rosa Plain subbasin is currently categorized by the DWR program as a medium priority basin (DWR, 2019).

Under DWR's prioritization process, basins are ranked on eight components, and if a basin is assigned more than 14 total points, but less than 21 total points, it is defined as "medium priority." The main factors driving the Santa Rosa Plain subbasin's designation include population density (3 out of 5 possible ranking points), population growth (3 out of 5 possible points), public supply well density (5 out of 5 possible points), total production well density (5 out of 5 possible points), groundwater reliance (5 out of 5 possible points), and groundwater reliance (3 out of 5 possible points) (DWR, 2019).

Geologically, the Santa Rosa Plain subbasin has one main water-bearing unit, the Merced Formation, and several units with lower water-bearing capacities, including the Glen Ellen Formation and the Alluvium. The shallow Alluvium consists of poorly sorted coarse sand and gravel and moderately-sorted fine sand, silt, and clay. The alluvial deposits are not perennially saturated, have low permeability, and are generally unconfined or slightly confined (DWR, 2006). The Glen Ellen Formation underlies the Alluvium and consists of partially cemented beds of poorly sorted gravel, sand, and silt, and clay that vary widely in thickness and extent, with thicknesses varying from 3,000 feet to less than 1,500 feet on the west side of the valley (DWR, 2006). Underlying the Glen Ellen Formation is the Merced Formation, which is a marine deposit of fine sand and sandstone with thin interbeds of clay and silty-clay and some lenses of gravel and localized fossils. The Merced Formation is Pliocene in age and its thickness is estimated to range from 300 feet to greater than 1,500 feet. Aquifer continuity and water quality in the Merced Formation are generally very good, with well yields from 100 to 1,500 gpm (DWR, 2006).

As mentioned above, DWR has designated the Santa Rosa Plain subbasin as a medium priority basin and thus subject to the requirements of the Sustainable Groundwater Management Act (SGMA), including the

requirement to be covered by one or more Groundwater Sustainability Agencies (GSAs) and to prepare and submit to DWR one or more Groundwater Sustainability Plans (GSPs) by 31 January 2022. Actions related to management of the Santa Rosa Plain subbasin both currently and under SGMA are described in the next section.

6.2.2 Non-SGMA Groundwater Management

The Santa Rosa Plain subbasin is currently managed under the Santa Rosa Plain Watershed Groundwater Management Plan (GMP), developed by the Santa Rosa Plain Basin Advisory Panel (Santa Rosa Plain Basin Advisory Panel, 2014). The stated goal of the GMP is "to proactively coordinate public and private groundwater management efforts and leverage funding opportunities to maintain a sustainable, locally-managed, high-quality groundwater resource for current and future users, while sustaining natural groundwater and surface water functions." The GMP outlines eighteen Basin Management Objectives and groups these into seven key management components, including: (1) stakeholder involvement and public awareness, (2) monitoring and modeling program, (3) groundwater protection, (4) increasing water conservation and efficiency, (5) increasing groundwater discharge, (6) increasing water reuse, and (7) integrated groundwater management. The GMP is the groundwater management program for this area, until the SGMA GSP for the Santa Rosa Plain subbasin is adopted.

6.2.3 SGMA Groundwater Management

In 2014, the California State Legislature enacted the SGMA, with subsequent amendments in 2015. The SGMA requires the formation of GSAs and the development and implementation of GSPs for groundwater basins that are designated by DWR as medium or high priority. Because the Santa Rosa Plain subbasin is designated by DWR as a medium basin (DWR, 2019), the Santa Rosa Plain subbasin is subject to the requirements of SGMA, which include the formation of a one or more GSAs and the development and implementation of one or more GSPs.

The Santa Rosa Plain GSA was formed in June 2017 through a Joint Powers Agreement entered into by the SCWA, City of Cotati, City of Rohnert Park, City of Santa Rosa, City of Sebastopol, Town of Windsor, County of Sonoma, Gold Ridge Resource Conservation District, Sonoma Resource Conservation District, Branger Mutual Water Company, California American Water, Willowside Mutual Water Company, and Penngrove Water Company, and covers the entire subbasin. The Santa Rosa Plain GSA is governed by a nine-member Board of Directors, which includes a position held by SCWA. The Board of Directors is advised by an Advisory Committee that includes eighteen members appointed by the Board of Directors, representing various stakeholders. The GSP for the Santa Rosa Plain subbasin is currently under preparation and is anticipated to be complete and submitted to DWR by the statutory deadline of 31 January 2022. As of December 2020, initial drafts of sections describing the plan area and portions of the basin setting have been prepared and are available for public review on the Santa Rosa Plain GSA website: https://santarosaplaingroundwater.org/.

6.2.4 Coordination with Groundwater Sustainability Agencies

Because the District does not directly pump groundwater, it does not coordinate with any GSAs. However, as noted above, the SCWA is a member of Santa Rosa Plain GSA and NMWD has coordinated with SCWA on its demand projections through 2045.

6.2.5 Historical Pumping and Supply Sufficiency

As indicated in **Table 6-1**, the District does not pump any groundwater. SCWA's 2020 UWMP provides historical pumping and supply sufficiency information related to their use of groundwater and has factored this into the supply reliability information provided to the District and other Water Contractors.

6.3 Surface Water

The District supplements the water supply received from the SCWA with a local surface water supply from Stafford Lake. Stafford Lake, which captures runoff from an area of 8.3 square miles, is located four miles west of downtown Novato. Runoff contributing flow to the lake is provided from land near the upper reaches of Novato Creek. The capacity of Lake Stafford is 4,450 acre-feet (AF).

The District holds two water rights on Novato Creek with the SWRCB: (1) License 9831 issued in 1970, and (2) Water Right Permit 18800 issued in 1983. License 9831 allows the District to directly divert up to 2.9 cfs and to divert 4,000 AF to storage in Stafford Lake between October 1 and April 30. The total amount of direct diversion and diversion to storage authorized during a water year (between October 1 and September 30 of the subsequent year) under License 9831 is 4,490 AF.

Water Right Permit 18800 allows the District to directly divert up to 9.75 cfs from Novato Creek between October 1 and April 30 and to divert up to 4,400 AF to storage between November 1 and April 1. Although Water Right Permit 18800 limits the total storage between both Water Right Permit 18800 and License 9831 to 4,400 AF, it allows for a maximum of 8,454 AF to be diverted from the Novato Creek during any water year.

6.4 Stormwater

There are no plans to divert stormwater for beneficial uses in the District. Although stormwater detection has been studied by the County Flood Control District for flood reduction purposes, no viable storage locations were identified within the Novato watershed as part of that study.

6.5 Wastewater and Recycled Water

☑ ***CWC § 10633***

The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.

This section provides information on the amount of generated wastewater and existing disposal of wastewater to determine the potential for recycled water use by the District. The amount of recycled water currently used, potentially available, and future potential uses for recycled water for the District are also described.

6.5.1 Recycled Water Coordination

The District worked in coordination with the Novato Sanitary District (NSD) to update the Recycled Water Master Plan and evaluate the economic feasibility of implementing a recycled water system to serve landscape irrigation users in the Novato area. In 2007, the Deer Island Water Recycling Plant (Deer Island WRP) was completed and delivery of recycled water to Stonetree Golf Course began. In 2009, the recycled water system was extended to Novato Fire Protection District Station 62.

Since 2005, the District has been working as a member of the North Bay Water Reuse Authority (NBWRA) to expand use of recycled water on a regional basis in the North San Pablo Bay region. As a result, the District worked with NSD to expand the treatment and delivery of recycled water from the Davidson Street Recycled Water Facility (also known as the Davidson Street Treatment Plant or Novato Treatment Plant) to the north and central portions of its service area in 2012 and 2018. In 2013 the District coordinated with the Las Gallinas Valley Sanitary District (LGVSD) to expand the treatment and delivery of recycled water in the southern area of Novato, principally the Hamilton Field area.

6.5.2 Wastewater Collection, Treatment, and Disposal

☑ ***CWC § 10633 (a)***

A description of the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.

☑ ***CWC § 10633 (b)***

A description of the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.

Within the District's service area, wastewater is collected and treated by NSD. A small number of residential dwellings within the District's service area utilize on-site septic treatment systems and are not connected to NSD's sewer collection system. **Table 6-2** identifies the volume collected within the District's service area by NSD.

Table 6-2 Wastewater Collected Within Area in 2020 (DWR Table 6-2)

	There is no wastewater collection system. The supplier will not complete the table below.
	Percentage of 2020 service area covered by wastewater collection system *(optional)*
	Percentage of 2020 service area population covered by wastewater collection system *(optional)*

Wastewater Collection			Recipient of Collected Wastewater			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated?	Volume of Wastewater Collected from UWMP Service Area 2020	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area?	Is WWTP Operation Contracted to a Third Party? *(optional)*
Novato Sanitary District	Metered	4,750	Novato Sanitary District	Davidson St.	Yes	Yes
Novato Sanitary District	Metered	20	Novato Sanitary District	Deer Island Water Recycling Plant	Yes	Yes
Total Wastewater Collected from Service Area in 2020:		4,769				

NOTES:
(a) Volumes are in units of AF.

Table 6-3 identifies the volume of treated wastewater either recycled or disposed of within the District's service area. NSD owns the Davidson Street Recycled Water Facility, which serves all Novato and provides advanced wastewater treatment at both the secondary and tertiary treatment level. Operation of the facility is contracted to a private third party, Veolia Water. During winter months, secondary treated water flows to San Pablo Bay via an outfall pipe. The San Francisco Bay Regional Water Quality Control Board (RWQCB) regulates discharges to the San Pablo Bay from the Novato Treatment Plant. During the summer months, secondary treated water is recycled and used to irrigate pastures and the Deer Island wildlife pond adjacent to Highway 37. Disinfected tertiary treated water from NSD's Novato Treatment Plant provides recycled water at standards meeting Title 22 requirements for the District's North and Central Service Areas. The District also owns and operates the Deer Island Water Recycling Plant (Deer Island WRP), which discharges to the Stonetree Golf Course and also serves as standby facility should operational problems develop at the NSD Novato Treatment Plant. The Deer Island WRP has very low production volumes compared to the Davidson Street Recycled Water Facility, as shown in **Table 6-3**.

LGVSD owns and operates the LGVSD Treatment Plant and has a service area just south of the District's Novato service area. Although LGVSD's wastewater is generated from outside of the District's service area, LGVSD supplies the District with disinfected tertiary recycled water in conformance with Title 22 requirements to serve the District's South Service Area in the quantities shown in **Table 6-3**.

Table 6-3 Wastewater Treatment and Discharge Within Service Area in 2020 (DWR Table 6-3)

	No wastewater is treated or disposed of within the UWMP service area. The supplier will not complete the table below.										
Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Wastewater Discharge ID Number *(optional)*	Method of Disposal	Does This Plant Treat Wastewater Generated Outside the Service Area?	Treatment Level	2020 volumes				
							Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area	Instream Flow Permit Requirement
NSD, Davidson St	San Pablo Bay			Bay or estuary outfall	No	Secondary, Disinfected - 23	3,225	3,225	0	0	0
NSD	Reclamation Storage Ponds	Pasture irrigation		Other	No	Secondary, Disinfected - 23	909	0	909	0	0
NSD	Property Fenceline	Recycled water flow to NMWD		Other	No	Tertiary	555	0	555	0	0
NSD, Deer Island Water Recycling Plant	Stone Tree Golf Course	Golf course irrigation		Other	No	Tertiary	20	0	20	0	0
NSD	Bel Marin Keys Unit V Phase 1 Wetlands Project			Other	No	Secondary, Disinfected - 23	61	0	61	0	0
LGVSD	Property Fenceline	Recycled water flow to NMWD (a)		Other	Yes	Tertiary	144	0	144	0	0

	No wastewater is treated or disposed of within the UWMP service area. The supplier will not complete the table below.										
Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Wastewater Discharge ID Number *(optional)*	Method of Disposal	Does This Plant Treat Wastewater Generated Outside the Service Area?	Treatment Level	2020 volumes				
							Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area	Instream Flow Permit Requirement
						Total	4,913	3,225	1,688	0	0

NOTES:
(a) The actual wastewater treated by this plant were assumed to equal to the sum of the discharged and recycled water.
(b) Volumes are in units of AF.

6.5.3 Recycled Water System and Potential, Current, and Projected Uses of Recycled Water

☑ ***CWC § 10633 (c)***

A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.

☑ ***CWC § 10633 (d)***

A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.

☑ ***CWC § 10633 (e)***

The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years.

The 2006 *Recycled Water Implementation Plan* (Nute Engineering, 2006) was prepared to provide guidance and phasing for the recycled water system. Based on the 2006 Implementation Plan recommendations, the District entered into agreements with both NSD and LGVSD. Under the terms of both agreements, the NSD and LGVSD are the producers and NMWD is the distributer of recycled water. The Recycled Water Implementation Plan divided the Novato Service Area into North, Central, and South service areas.

In accordance with the recommendations in the Recycled Water Implementation Plan, the following recycled water uses have been developed in the three service areas:

- North Service Area: Recycled water is conveyed from the Deer Island WRP to the Stonetree Golf Course and the Novato Fire Department. In addition, an interconnection between the Deer Island WRP and the Davidson Street Recycled Water Facility was constructed to improve the reliability of recycled water supplies.
- South Service Area: Recycled water is conveyed from the LGVSD Recycled Water Facility to landscape irrigation customers located in the South Service Area.
- Central Service Area: Recycled water is conveyed from the Davidson Street Treatment Plant to private and public landscape irrigation customers, including homeowner associations, Marin Country Club, and Vintage Oaks Shopping Center.

Table 6-4 below provides the existing and anticipated future recycled water uses within the District. All of the currently anticipated recycled water use is for landscape and golf course irrigation, although the District is evaluating expanding recycled water use for commercial applications. Due to infrastructure upgrades at the Las Gallinas Valley Water Recycling Facility (Las Gallinas Valley WRF), all demands that would normally have been met by Las Gallinas Valley WRF were instead met by potable water in 2020. The volume of potable water makeup used to supplement the recycled water system from 2016 through 2020 is provided in Section 4.1, and the 60 AF of potable water makeup used in 2020 is included within the recycled water volumes shown in **Table 6-4**. Potable water is not anticipated to be needed to supplement the recycled water system going forward, following plant upgrades. Startup testing for the

upgrades at the Las Gallinas WRF began in early March 2021, and the plant expected to be fully operational by April 2021.

Table 6-4 Recycled Water Direct Beneficial Uses Within Service Area (DWR Table 6-4)

	Recycled water is not used and is not planned for use within the service area of the supplier. The supplier will not complete the table below.
Name of Supplier Producing (Treating) the Recycled Water:	Novato Sanitary District and Las Gallinas Valley Sanitary District
Name of Supplier Operating the Recycled Water Distribution System:	North Marin Water District
Supplemental Water Added in 2020 (volume)	60 AFY
Source of 2020 Supplemental Water	North Marin Water District Potable Water Supply

Beneficial Use Type	**Potential** Beneficial Uses of Recycled Water (Describe)	Amount of **Potential** Uses of Recycled Water (Quantity)	General Description of 2020 Uses	Level of Treatment	2020	2025	2030	2035	2040	2045
Landscape irrigation (excludes golf courses)	Irrigation		NMWD North and South Service Areas (now), Central Service Area (future)	Tertiary	332	366	374	383	391	400
Golf course irrigation	Irrigation		StoneTree Golf Course (now), MCC (future)	Tertiary	326	229	234	239	245	250
				Total:	658	595	608	622	636	650
				2020 Internal Reuse						

NOTES:
(a) Volumes are in units of AF.
(b) Proportion of use for the North and South service area is estimated at 50.5% of total use, while use for StoneTree Golf Course is estimated at 49.5%.

6.5.4 Comparison of Previously Projected Use and Actual Use

☑ *CWC § 10633 (e)*

A description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.

Table 6-5 compares the District's 2015 UWMP projection for 2020 recycled water demand to actual 2020 recycled water use.

The District's 2015 UWMP projected recycled water demand to be 650 AF in 2020. Actual water use by the recycled water system in 2020 was 658 AF[15], which is very similar to the projected demand from 2015.

Table 6-5 2015 UWMP Recycled Water Use Projection Compared to 2020 Actual (DWR Table 6-5)

	Recycled water was not used in 2015 nor projected for use in 2020. The supplier will not complete the table below.	
Beneficial Use Type	2015 Projection for 2020	2020 Actual Use
Landscape irrigation (excludes golf courses)	400	332
Golf course irrigation	250	326
Total	650	658

NOTES:
(a) Volumes are in units of AF.
(b) During 2020, the Las Gallinas WRF was offline due to infrastructure upgrades and all demands that would normally be met by the recycled water system were met by potable water. This table reflects the use of water by the recycled water system and not specifically the use of recycled water.

[15] During 2020, the Las Gallinas WRF was offline due to infrastructure upgrades and all recycled water demands that would normally have been met by the Las Gallinas WRF were instead met by potable water. Potable water is not anticipated to be needed to supplement the recycled water system going forward, following plant upgrades that were completed in April 2021. The use of supplemental potable water is included in the reported 2020 actual recycled water use.

6.5.5 Actions to Encourage and Optimize Future Recycled Water Use

☑ ***CWC § 10633 (e-g)***

(e) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.

(f) A description of actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.

(g) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

As described in **Table 6-6**, the District encourages the future expanded use of recycled water through District Regulation No. 18. District Regulation 18 includes a mandatory use requirement for recycled water service when connection to the recycled water system is deemed to be feasible. District Regulation No. 18 applies to both existing customers and new development within the District's recycled water service areas. Retrofit costs for existing customers are paid by the District to help encourage the development of recycled water users in a fair and equitable manner.

Table 6-6 Methods to Expand Future Recycled Water Use (DWR Table 6-6)

	Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.		
66	Provide page location of narrative in UWMP		
Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use
Conditional Service	New and existing customers are required to use recycled water where available.	Ongoing	Unknown
		Total	
NOTES: (a) Volumes are in units of AF.			

6.6 Desalinated Water

☑ ***CWC § 10631 (g)*** *A plan shall be adopted in accordance with this chapter and shall do all of the following:*

Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

Although the District has not investigated the feasibility of constructing a desalination plant, the neighboring Marin Municipal Water District (MMWD) previously performed a study exploring desalination as a potential supply option. If a full-scale desalination plant were constructed, it is possible that the District could supplement its water supply with desalinated water under a future agreement with MMWD. However, because MMWD currently does not intend to pursue desalination further, it is not included in this Plan as a future water supply source.

6.7 Water Exchanges and Transfers

☑ ***CWC § 10631 (c)*** *A plan shall be adopted in accordance with this chapter and shall do all of the following:*

Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.

Currently, when surplus transmission system capacity is available, MMWD receives Russian River water from SCWA through the District's North Marin Aqueduct under the MMWD Supplemental Water Supply Agreement with SCWA. A provision of the Intertie Agreement between the District and MMWD allows for delivery of MMWD's Russian River water through the District's aqueduct, referred to as "wheeling". Because MMWD has a direct agreement with SCWA, Russian River water delivered to MMWD does not affect the District's allocation.

Although the District does not currently transfer or exchange water with other entities, water transfers between SCWA's water contractors are authorized under the Restructured Agreement. Such transfers and exchanges between SCWA water contractors have been necessary in the past and may be necessary in the future to improve water supply reliability.

6.8 Future Water Projects

☑ ***CWC § 10631*** *A plan shall be adopted in accordance with this chapter and shall do all of the following:*

(b) (3) For any planned sources of water supply, a description of the measures that are being undertaken to acquire and develop those water supplies.

(f) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use, as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in normal and single-dry water years and for a period of drought lasting five consecutive water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.

This section provides a description of the District's anticipated future water supply projects. Future projects that may contribute to the District's water supply are summarized in **Table 6-7**. As listed below, SCWA expects to file an application with the SWRCB by around 2030 to increase its annual diversion and rediversion limit on the Russian River.

Table 6-7 Expected Future Water Supply Projects or Programs (DWR Table 6-7)

	No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below.					
	Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.					
68	Provide page location of narrative in the UWMP					
Name of Future Projects or Programs	Joint Project with other suppliers?		Description (if needed)	Planned Implementation Year	Planned for Use in Year Type	Expected Increase in Water Supply to Supplier
	Y/N	*If Yes, Supplier Name*				
Modification/ Acquisition of Additional Water Rights	Yes	Sonoma County Water Agency	Agency estimates that existing rights will be exceeded by 2035	2030	All Year Types	5,000
NOTES: (a) Volumes are in units of AF.						

6.9 Summary of Existing and Planned Sources of Water

☑ ***CWC § 10631 (b)*** *Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a).*

☑ ***CWC § 10631 (b) (4) (D)*** *A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.*

The District purchases potable water from SCWA to meet most of the water demands within the District's service area. In 2020, the District purchased approximately 5,900 AF of water from SCWA. The remainder of the District's water supply comes from local surface water and recycled water. The District's water supplies in 2020 are summarized in **Table 6-8**.

The District plans to continue to purchase wholesale water from SCWA, while monitoring its surface water supplies from Stafford Lake. Water supplies from the SCWA through 2045 are projected to be equivalent to the District's annual entitlement of 14,100 AFY, established in the Restructured Agreement and effective through 2037. Surface water projections from Stafford Lake are based on averages of historical flows, which typically range between 0 and 2,000 AFY. The District's total water supply projections are shown in **Table 6-9** in five-year increments through 2045.

Table 6-8 Water Supplies - Actual (DWR Table 6-8)

Water Supply	Additional Detail on Water Supply	Actual Volume 2020	Water Quality	Total Right or Safe Yield *(optional)*
Purchased or Imported Water	From SCWA	5,887	Drinking Water	
Surface water (not desalinated)	From STP	2,105	Drinking Water	
Surface water (not desalinated)	Sold to IV Golf Course & MC Parks	202	Other Non-Potable Water	
Recycled Water	North, Central, and South Service Areas	658	Recycled Water	
	Total	8,852		
NOTES: (a) Volumes are in units of AF.				

Table 6-9 Water Supplies - Projected (DWR Table 6-9)

Water Supply	Additional Detail on Water Supply	Projected Water Supply									
		2025		2030		2035		2040		2045	
		Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)
Purchased or Imported Water	Sonoma County Water Agency (b)	14,100		14,100		14,100		14,100		14,100	
Surface water (not desalinated)	Stafford Lake (c)	1,000		1,000		1,000		1,000		1,000	
Recycled Water		595		608		622		636		650	
Other	Raw Water	218		218		218		218		218	
Total		15,913		15,826		15,940		15,954		15,968	

NOTES:
(a) Volumes are in units of AF.
(b) SCWA supplies are equivalent to the District's annual entitlement as established in the Restructured Agreement.
(c) Surface supplies are based on an average of historical flows, which typically range from 0 to 2,000 AFY.

6.10 Special Conditions

6.10.1 Climate Change Effects

As discussed in SCWA's Draft 2020 Urban Water Management Plan (SCWA, 2021), SCWA has been evaluating the effects of climate change. As stated by SCWA:

> *Sonoma Water has investigated whether existing downscaled climate models can be used or modified to provide reliable estimates of the effects of increased concentrations of carbon dioxide and other greenhouse gases on temperatures and precipitation patterns within Sonoma Water's service area and within the watersheds from which Sonoma Water obtains its water supply during the 25-year planning horizon. As of this time, no detailed analysis exists of potential climate change impacts that takes into consideration the influence of marine layers, whose effects on the region are difficult to model. Given the uncertainties between various downscaled models, Sonoma Water evaluates ensembles of downscaled models for general water supply planning purposes. However, there is not one model that can be selected with any confidence to be analyzed for the required format of this Plan. For these reasons, this Plan assumes that the climatic patterns and associated hydrology experienced over the past 108 years of record (1910 – 2017) provide a reasonable basis for the 25-year planning horizon that would impact the water supply and water demand analysis set forth in the Plan.*
>
> *As discussed in Section 5.9, however, the United States Geological Survey (USGS) conducted a study for Sonoma Water on the potential effects of climate change on Sonoma Water's water supply, which has provided additional information on the potential impacts of climate change on Sonoma Water's service area. Furthermore, Sonoma Water has embarked on development of a Climate Adaptation Plan which studies the potential impacts of climate change in regards to both water supply reliability and Sonoma Water's transmission system facilities. This planning process analyzes the results of multiple climate models to determine a range of potential climate related impacts. A risk based analysis of the potential impacts to the watershed and Sonoma Water facilities will be used to identify courses of action that can be pursued to mitigate the effects of climate change. The work plan was developed in 2015 and a robust planning process began in 2016. Sonoma Water expects to bring the Climate Adaptation Plan to its Board for approval in summer 2021.*

6.10.2 Regulatory Conditions and Project Development

Emerging regulatory conditions may affect planned future projects and the characterization of future water supply availability and analysis. The District does not have any current plans to develop additional supply sources. If the District does move forward with any plans to develop supply projects, emerging

regulatory conditions will be considered, and the associated water supply reliability impacts will be assessed in future UWMP updates.

6.10.3 Other Locally Applicable Criteria

Other locally applicable criteria may affect characterization and availability of an identified water supply (e.g., changes in regional water transfer rules may alter the availability of a water supply that had historically been readily available). The District does not have any current plans to develop additional supply sources. If the District does move forward ahead with any plans to develop supply projects, locally applicable criteria will be considered, and the associated water supply reliability impacts will be assessed in future UWMP updates.

6.11 Energy Intensity

☑ ***CWC § 10631.2***

(a) In addition to the requirements of Section 10631, an urban water management plan shall include any of the following information that the urban water supplier can readily obtain:
(1) An estimate of the amount of energy used to extract or divert water supplies.
(2) An estimate of the amount of energy used to convey water supplies to the water treatment plants or distribution systems.
(3) An estimate of the amount of energy used to treat water supplies.
(4) An estimate of the amount of energy used to distribute water supplies through its distribution systems.
(5) An estimate of the amount of energy used for treated water supplies in comparison to the amount used for nontreated water supplies.
(6) An estimate of the amount of energy used to place water into or withdraw from storage.
(7) Any other energy-related information the urban water supplier deems appropriate.
(b) The department shall include in its guidance for the preparation of urban water management plans a methodology for the voluntary calculation or estimation of the energy intensity of urban water systems. The department may consider studies and calculations conducted by the Public Utilities Commission in developing the methodology.
(c) The Legislature finds and declares that energy use is only one factor in water supply planning and shall not be considered independently of other factors.

Within the service area, the District uses energy to treat and distribute water supplies through its distribution systems, including at the Stafford Treatment Plant and the distribution system pump stations, and other facilities.[16] The energy used by the distribution systems is metered and documented in monthly PG&E bills. During Fiscal Year (FY) 2020, the District used 2,790,972 kilowatt hours (kWh) of energy to operate the water supply system and deliver 8,194 AFY of potable and non-potable water to customers in the service area, for a total energy intensity of 341 kWh/AF (**Table 6-10**). SCWA also uses energy to treat and distribute water before delivery to the District. However, the energy is used outside of the District's service area, and the energy consumption information is not typically shared with the District.

[16] Other facilities include West Marin Facilities.

The District also generates renewable energy through the Stafford Treatment Plant, which has solar energy cells that produce energy for the District. In FY 2020, the total energy produced was 678,275 kWh.

Table 6-10 Recommended Energy Intensity - Total Utility Approach (DWR Table O-1B)

Urban Water Supplier: *North Marin Water District*

Water Delivery Product

Multiple Products (unable to use table O-1C)

Enter Start Date for Reporting Period	7/1/2019	Urban Water Supplier Operational Control		
End Date	6/29/2020			
Is upstream embedded in the values reported?		Sum of All Water Management Processes	Non-Consequential Hydropower	
Water Volume Units Used	AF	Total Utility	Hydropower	Net Utility
Volume of Water Entering Process (volume unit)		*8,194*	*0*	*8,194*
Energy Consumed (kWh)		*2,790,972*	*0*	*2,790,972*
Energy Intensity (kWh/volume)		*341*	*0.0*	*341*

Quantity of Self-Generated Renewable Energy

678,275 kWh

Data Quality

Metered Data

Data Quality Narrative:

Utility bills for the associated time period are used as the source for energy consumption data.

Narrative:

Total energy consumption represents the energy consumed during pumping, treatment, conveyance, and distribution. Renewable energy is generated from solar cells at the Stafford Treatment Plant.

7. WATER SUPPLY RELIABILITY

☑ ***CWC § 10620 (f)***

An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.

☑ ***CWC § 10630.5***

Each plan shall include a simple lay description of how much water the agency has on a reliable basis, how much it needs for the foreseeable future, what the agency's strategy is for meeting its water needs, the challenges facing the agency, and any other information necessary to provide a general understanding of the agency's plan.

This chapter describes the reliability of the North Marin Water District's (NMWD's or District's) water supplies. Assessment of water supply reliability is complex and dependent upon a number of factors, such as the number of water sources, regulatory and legal constraints, hydrological and environmental conditions, climate change, and expected growth, among others. Based on available historical information and projections of future water uses, regulatory and legal constraints, and hydrological and environmental conditions, including climate change, the District has made its best determination of future water supply reliability of for the District, as described below.

7.1 Constraints on Water Sources

Purchased water from Sonoma County Water Agency (SCWA or Sonoma Water) and local surface water are the primary supply sources for the District. Potential constraints on future purchased water availability have been identified, including water quality and climate change. These constraints, along with associated management strategies, are summarized in the following sections.

7.1.1 Supply Availability

Purchased Water

The water available to SCWA's customers is constrained by both physical and legal constraints. The capacity of SCWA's transmission system is a physical constraint that can limit the District's water supply from SCWA. The District receives the SCWA supply through the District's North Marin Aqueduct, which is a 30, 36, and 42-inch diameter steel transmission main that runs from SCWA's Petaluma Aqueduct near Kastania Tank in south Petaluma to a connection located at the northern end of the District's pipeline facilities in Novato.

Legal constraints include the Restructured Agreement for Water Supply (Agreement), SCWA Water Rights, and the Russian River Biological Opinion. These legal constraints are described below.

- The Agreement includes specific maximum amounts of water that SCWA is obligated to supply to its Water Contractors, including the District. The Agreement states that SCWA is not obligated to

provide the District with more than 14,100 acre feet per year (AFY) or more than 19.9 million gallons per day (MGD) as an average flow during any single month.

- Four State Water Resources Control Board (SWRCB) permits (SWRCB Permit Numbers 12947A, 12949, 12950, and 1596) currently authorize SCWA to store water in Lake Mendocino (122,500 AFY) on the East Fork Russian River and Lake Sonoma (245,000 AFY) on Dry Creek, and to divert and redivert 180 cubic feet per second (cfs) of water from the Russian River, up to 75,000 AFY. SCWA estimates the existing annual diversion and rediversion limit of 75,000 AFY will be exceeded by 2035 (NMWD, 2016). Consequently, SCWA will need to file an application to SWRCB by around 2030 to increase its annual diversion and rediversion limit (NMWD, 2016). The permits also establish minimum instream flow requirements for fish and wildlife protection as well as for recreational considerations. These minimum instream flow requirements vary according to the hydrologic cycle as defined by SWRCB Decision 1610. SCWA meets the Decision 1610 flow requirements by making releases from Coyote Valley Dam at Lake Mendocino and Warm Springs Dam at Lake Sonoma (NMWD, 2016).
- On 24 September 2008, the National Marine Fisheries Service (NMFS) issued a 15-year biological opinion for water supply, flood control operations, and channel maintenance conducted by the U.S. Army Corps of Engineers (USACE), SCWA, and Mendocino County Russian River Flood Control and Water Conservation Improvement District in the Russian River watershed. The Russian River Biological Opinion (Biological Opinion) concluded that the elevated river flows required by Decision 1610 were adversely affecting fish habitat and listed alternatives to reduce the effects. The alternatives included:
    - Reducing summertime flows in the Russian River and Dry Creek;
    - Enhancing six miles of habitat in Dry Creek;
    - Creating a freshwater lagoon in the estuary during summer months;
    - Monitoring both habitat and fish in the Dry Creek, the estuary, and the Russian River; and
    - Eliminating impediments to fish spawning or improving habitat in several streams.
- The Biological Opinion requires that summertime flows be permanently reduced to replicate river conditions in dry years. Since the biological opinion was released, SCWA has submitted a petition to the SWRCB requesting permanent changes to Decision 1610 minimum flow requirements in line with the Biological Opinion and is preparing an Environmental Impact Report (EIR) required by the California Environmental Quality Act (CEQA). Since 2010, SCWA has requested temporary changes to the Decision 1610 minimum flows annually based on the Biological Opinion recommendations.

In addition to these projects, SCWA is currently evaluating the feasibility of groundwater banking as a method of increasing water supply reliability. A Groundwater Banking Feasibility Study was completed in 2012. SCWA worked with the City of Sonoma to implement a pilot study using one of the City of Sonoma's municipal supply wells (SCWA, 2016).

Surface Water

The surface water available from Stafford Lake is constrained by the legal constraints of its two water rights with the State Water Resources Control Board (SWRCB), which include License 9831 and Water Right Permit 18800, which allow for a maximum of 8,454 AF to be diverted from Novato Creek during any water year. Constraints of the water rights include:

- License 9831 allows the District to directly divert up to 2.9 cfs and to divert 4,000 AF to storage in Stafford Lake between October 1 and April 30. The total amount of direct diversion and diversion to storage authorized during a water year (between October 1 and September 30 of the subsequent year) under License 9831 is 4,490 AF.
- Water Right Permit 18800 allows the District to directly divert up to 9.75 cfs from Novato Creek between October 1 and April 30 and to divert up to 4,400 AF to storage between November 1 and April 1. Although Water Right Permit 18800 limits the total storage between both Water Right Permit 18800 and License 9831 to 4,400 AF, it allows for a maximum of 8,454 AF to be diverted from the Novato Creek during any water year.

The primary physical constraint to the local surface water supply is the 6.0 million gallon per day (MGD) capacity of the Stafford Treatment Plant (STP). As noted in Section 7.2, Stafford Lake can be fed in dry year periods by pumping the SCWA supply through the San Marin Pump Station.

7.1.2 Water Quality Impacts on Reliability

☑ ***CWC § 10634***

The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.

Impaired water quality has the potential to affect water supply reliability. The District has and will continue to meet all state and federal water quality regulations. All drinking water standards are set by the U.S. Environmental Protection Agency (USEPA) under the authorization of the Federal Safe Drinking Water Act of 1974. In California, the State Water Resources Control Board (SWRCB), Division of Drinking Water (DDW) can either adopt the USEPA standards or set more stringent standards, which are then codified in Title 22 of the California Code of Regulations. There are two general types of drinking water standards:

- **Primary Maximum Contaminant Levels (MCLs)** are health protective standards and are established using a very conservative risk-based approach for each constituent that takes into potential health effects, detectability and treatability, and costs of treatment. Public water systems may not serve water that exceeds Primary MCLs for any constituent.
- **Secondary MCLs** are based on the aesthetic qualities of the water such as taste, odor, color, and certain mineral content, and are considered limits for constituents that may affect consumer acceptance of the water.

The District routinely monitors the water that is treated and served to customers to ensure that water delivered to customers meets these drinking water standards. The results of this testing are reported to the SWRCB DDW following each test and are summarized annually in Water Quality Reports (also known as "Consumer Confidence Reports"), which are provided to customers by mail and made available on the District's website at https://nmwd.com/your-water/water-quality/.

Given the District's proactive monitoring and management of water quality in its source water supplies, water quality is not expected to impact the reliability of the District's available supplies within the planning horizon (i.e., through 2045).

7.1.3 Climate Change Impacts to Supply

☑ ***CWC § 10635(b)***

(4) Considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.

Section 4.4 of this Urban Water Management Plan (UWMP or Plan) presents information on how the impacts of climate change are considered in projected demands in the District, and Section 6.10.1 provides a summary of potential climate change impacts on supplies.

As discussed in Section 6.10.1, SCWA is developing the Climate Adaptation Plan to study the impact of climate change on water supply reliability and SCWA's transmission system facilities. The District will review the Climate Adaptation Plan when it is released and incorporate it in the next UWMP.

7.2 Reliability by Type of Year

☑ ***CWC § 10631 (b)***

Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a), providing supporting and related information, including all of the following:

☑ ***CWC § 10631 (b)(1)***

A detailed discussion of anticipated supply availability under a normal water year, single dry year, and droughts lasting at least five years, as well as more frequent and severe periods of drought, as described in the drought risk assessment. For each source of water supply, consider any information pertinent to the reliability analysis conducted pursuant to Section 10635, including changes in supply due to climate change.

☑ ***CWC § 10635 (a)***

Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the long-term total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and a drought lasting five consecutive water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.

Per the UWMP Guidebook 2020, the water service reliability assessment includes three unique year types:

- A normal hydrologic year represents the water supplies available under normal conditions, this could be an averaged range of years or a single representative year,
- A single dry year represents the lowest available water supply, and
- A five-consecutive year drought represents the driest five-year period in the historical record.

Identification of these dry year periods consistent with the UWMP Guidebook 2020 methodology is provided below.

As shown in **Table 7-1**, quantification of the available supplies is not compatible with the standard DWR Table 7-1, and therefore the available supplies are summarized in **Table 7-2** through **Table 7-5** in Sections 7.2.1 through 7.2.4.

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

Year Type	Base Year	Available Supplies if Year Type Repeats		
		X	Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location: **Table 7-2, 7-3, 7-4, and 7-5**	
			Quantification of available supplies is provided in this table as either volume only, percent only, or both.	
		Volume Available		% of Average Supply
Average Year				100%
Single-Dry Year				
Consecutive Dry Years 1st Year				
Consecutive Dry Years 2nd Year				
Consecutive Dry Years 3rd Year				
Consecutive Dry Years 4th Year				
Consecutive Dry Years 5th Year				
NOTES: (a) Volumes are in units of AF.				

7.2.1 Purchased Water

The projected availability of purchased water supplies by year type are provided in **Table 7-2** below. It is assumed that the District will purchase its full available contract amount in normal years. Dry year projections reflect the reduced reliability estimates provided by SCWA.

Table 7-2 Projected Availability of SCWA Supply (Responds to DWR Table 7-1)

Year Type		2025	2030	2035	2040	2045
Normal Year		14,100	14,100	14,100	14,100	14,100
Single-Dry Year		14,100	11,858	11,745	11,618	11,477
Extended Drought	First year	14,100	14,100	14,100	14,100	14,100
	Second year	14,100	14,100	14,100	14,100	14,100
	Third year	14,100	14,100	14,100	14,100	14,100
	Fourth year	14,100	14,100	14,100	14,100	14,100
	Fifth year	14,100	14,100	14,100	14,100	14,100

NOTES:
(a) Volumes are in units of AF.
(b) Dry year supplies from SCWA were estimated based on the total supply shortfall in dry years.

7.2.2 Surface Water

The water supply from Stafford Lake is unaffected by dry conditions and is projected to be the same during single and multiple dry years as during normal years. Stafford Lake can be operated to avoid drought conditions in dry year periods by "backfeeding" the lake during winter months with SCWA supply. The backfeeding is accomplished by pumping the SCWA supply through the San Marin Pump Station via the transmission main from Stafford Treatment Plant (STP), bypassing the treatment plant and discharging into Stafford Lake. This backfeeding is enabled by the Interconnection Agreement and is performed periodically, most recently in 2018. The projected availability of local surface water supplies by type are provided in **Table 7-3** below.

Table 7-3 Projected Availability of Local Surface Water Supply (Responds to DWR Table 7-1)

Year Type		2025	2030	2035	2040	2045
Normal Year		1,000	1,000	1,000	1,000	1,000
Single-Dry Year		1,000	1,000	1,000	1,000	1,000
Extended Drought	First year	1,000	1,000	1,000	1,000	1,000
	Second year	1,000	1,000	1,000	1,000	1,000
	Third year	1,000	1,000	1,000	1,000	1,000
	Fourth year	1,000	1,000	1,000	1,000	1,000
	Fifth year	1,000	1,000	1,000	1,000	1,000

NOTES:
(a) Volumes are in units of AF.

7.2.3 Raw Water

Supply availability for raw water is not expected to be impacted in dry years, as reflected in **Table 7-4** below, and is consistent with the demand projections identified in **Table 4-4**.

Table 7-4 Projected Availability of Raw Water Supply (Responds to DWR Table 7-1)

Year Type		2025	2030	2035	2040	2045
Normal Year		218	218	218	218	218
Single-Dry Year		218	218	218	218	218
Extended Drought	First year	218	218	218	218	218
	Second year	218	218	218	218	218
	Third year	218	218	218	218	218
	Fourth year	218	218	218	218	218
	Fifth year	218	218	218	218	218
NOTES: (a) Volumes are in units of AF.						

7.2.4 Recycled Water

Supply availability for recycled water is not expected to be impacted in dry years, as reflected in **Table 7-5** below, and is consistent with the demand projections identified in **Table 6-4**.

Table 7-5 Projected Availability of Recycled Water Supply (Responds to DWR Table 7-1)

Year Type		2025	2030	2035	2040	2045
Normal Year		595	608	622	636	650
Single-Dry Year		595	608	622	636	650
Extended Drought	First year	595	608	622	636	650
	Second year	595	608	622	636	650
	Third year	595	608	622	636	650
	Fourth year	595	608	622	636	650
	Fifth year	595	608	622	636	650
NOTES: (a) Volumes are in units of AF.						

7.3 Supply and Demand Assessment

☑ *CWC § 10635 (a)*

Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the long-term total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and a drought lasting five consecutive water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.

Water supply and demand patterns change during normal, single dry, and multiple dry years. **Table 7-6** shows the projected supply and demand totals for a normal year. The supply and demand totals are consistent with those in **Table 6-9** and **Table 4-3**, respectively. **Table 7-7** shows the projected supply and demand totals for the single dry year, and **Table 7-8** shows the projected supply and demand totals for multiple dry year periods extending five years.

Table 7-6 Normal Year Supply and Demand Comparison (DWR Table 7-2)

	2025	2030	2035	2040	2045
Supply totals *From DWR Table 6-9*	15,913	15,926	15,940	15,954	15,968
Demand totals *From DWR Table 4-3*	10,679	10,857	11,085	11,108	11,152
Difference	5,234	5,069	4,855	4,846	4,816
NOTES: (a) Volumes are in units of AF.					

Table 7-7 Single Dry Year Supply and Demand Comparison (DWR Table 7-3)

	2025	2030	2035	2040	2045
Supply totals	15,913	13,684	13,585	13,472	13,345
Demand totals	10,679	10,857	11,085	11,108	11,152
Difference	5,234	2,827	2,500	2,364	2,194
NOTES: (a) Volumes are in units of AF.					

Table 7-8 Multiple Dry Years Supply and Demand Comparison (DWR Table 7-4)

		2025	2030	2035	2040	2045
First year	Supply totals	15,913	15,926	15,940	15,954	15,968
	Demand totals	10,679	10,857	11,085	11,108	11,152
	Difference	5,234	5,069	4,855	4,846	4,816
Second year	Supply totals	15,913	15,926	15,940	15,954	15,968
	Demand totals	10,679	10,857	11,085	11,108	11,152
	Difference	5,234	5,069	4,855	4,846	4,816
Third year	Supply totals	15,913	15,926	15,940	15,954	15,968
	Demand totals	10,679	10,857	11,085	11,108	11,152
	Difference	5,234	5,069	4,855	4,846	4,816
Fourth year	Supply totals	15,913	15,926	15,940	15,954	15,968
	Demand totals	10,679	10,857	11,085	11,108	11,152
	Difference	5,234	5,069	4,855	4,846	4,816
Fifth year	Supply totals	15,913	15,926	15,940	15,954	15,968
	Demand totals	10,679	10,857	11,085	11,108	11,152
	Difference	5,234	5,069	4,855	4,846	4,816

NOTES:
(a) Volumes are in units of AF.

7.4 Water Management Tools and Options

The District is a member of the North Bay Water Reuse Authority (NMWRA), which is a regional water recycling organization formed to put recycled water to its broadest and most beneficial use. NBWRA consists of ten local agencies covering 315 square-miles in the portions of Marin, Sonoma and Napa counties that surround the northern rim of the San Francisco Bay. As part of NBWRA, the District has made great strides to expand recycled water use.

The District is also a member of the Sonoma-Marin Saving Water Partnership (SMSWP), which is a regional partnership program that represents twelve utilities in Sonoma and Marin counties that have joined together to provide a regional approach to water use efficiency. Participating in the partnership, the District has continued to implement an extensive water conservation program which reduces the demand on imported supplies. As described in Chapter 9, the District manages per capita water use through the implementation of a series of DMMs.

7.5 Drought Risk Assessment

☑ *CWC § 10635(b)*

Every urban water supplier shall include, as part of its urban water management plan, a drought risk assessment for its water service to its customers as part of information considered in developing the demand management measures and water supply projects and programs to be included in the urban water management plan. The urban water supplier may conduct an interim update or updates to this drought risk assessment within the five-year cycle of its urban water management plan update. The drought risk assessment shall include each of the following:

(1) A description of the data, methodology, and basis for one or more supply shortage conditions that are necessary to conduct a drought risk assessment for a drought period that lasts five consecutive water years, starting from the year following when the assessment is conducted.

(2) A determination of the reliability of each source of supply under a variety of water shortage conditions. This may include a determination that a particular source of water supply is fully reliable under most, if not all, conditions.

(3) A comparison of the total water supply sources available to the water supplier with the total projected water use for the drought period.

(4) Considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.

7.5.1 Characteristic Five-Year Water Use

As a first step to the Drought Risk Assessment, water suppliers are advised to estimated unconstrained water demand for the next five years (2021-2025). Unconstrained water demand is the expected water use in the absence of drought water use restrictions. The forecast for the next five-years is shown in **Table 7-9** below.

Table 7-9 Characteristic Five-Year Water Use

	2021	2022	2023	2024	2025
Total Projected Use During Drought Period	9,318	9,641	9,975	10,321	10,679

7.5.2 Risk Assessment Projections

SCWA is expecting to be able to provide sufficient water supply from 2021 to 2025 to its water service contractor, including the District. Thus, as shown in **Table 7-10**, the District is expected to have sufficient water supply in the next five years.

Table 7-10 Five-Year Drought Risk Assessment Tables to Address Water Code 10635(b) (DWR Table 7-5)

2021	Total
Total Water Use	9,318
Total Supplies	15,913
Surplus/Shortfall w/o WSCP Action	6,595
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	-
WSCP - use reduction savings benefit	-
Revised Surplus/(shortfall)	-
Resulting % Use Reduction from WSCP action	0%

2022	Total
Total Water Use	9,641
Total Supplies	15,913
Surplus/Shortfall w/o WSCP Action	6,272
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	-
WSCP - use reduction savings benefit	-
Revised Surplus/(shortfall)	-
Resulting % Use Reduction from WSCP action	0%

2023	Total
Total Water Use	9,975
Total Supplies	15,913
Surplus/Shortfall w/o WSCP Action	5,938
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	-
WSCP - use reduction savings benefit	-
Revised Surplus/(shortfall)	-
Resulting % Use Reduction from WSCP action	0%

Table 7-10 Five-Year Drought Risk Assessment Tables to Address Water Code 10635(b) (DWR Table 7-5)

2024	Total
Total Water Use	10,321
Total Supplies	15,913
Surplus/Shortfall w/o WSCP Action	5,592
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	-
WSCP - use reduction savings benefit	-
Revised Surplus/(shortfall)	-
Resulting % Use Reduction from WSCP action	0%

2025	Total
Total Water Use	10,679
Total Supplies	15,913
Surplus/Shortfall w/o WSCP Action	5,234
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	-
WSCP - use reduction savings benefit	-
Revised Surplus/(shortfall)	-
Resulting % Use Reduction from WSCP action	0%
NOTES: (a) Volumes are in units of AF.	

8. WATER SHORTAGE CONTINGENCY PLAN

☑ ***CWC § 10640***

(a) Every urban water supplier required to prepare a plan pursuant to this part shall prepare its plan pursuant to Article 2 (commencing with Section 10630). The supplier shall likewise periodically review the plan as required by Section 10621, and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

(b) Every urban water supplier required to prepare a water shortage contingency plan shall prepare a water shortage contingency plan pursuant to Section 10632. The supplier shall likewise periodically review the water shortage contingency plan as required by paragraph (10) of subdivision (a) of Section 10632 and any amendments or changes required as a result of that review shall be adopted pursuant to this article

The Water Shortage Contingency Plan (WSCP) for North Marin Water District (NMWD or District) is included in this Urban Water Management Plan (UWMP) as **Appendix G**. The WSCP serves as a standalone document to be engaged in the case of a water shortage event, such as a drought or supply interruption, and defines specific policies and actions that will be implemented at various shortage level scenarios. The primary objective of the WSCP is to ensure that the District has in place the necessary resources and management responses needed to protect health and human safety, minimize economic disruption, and preserve environmental and community assets during water supply shortages and interruptions. Consistent with CWC §10632, the WSCP includes six levels to address shortage conditions ranging from up to 10% to greater than 50% shortage, identifies a suite of demand mitigation measures for the District to implement at each level, and identifies procedures for the District to annually assess whether or not a water shortage is likely to occur in the coming year, among other things.

A summary of the key elements of the WSCP including water shortage levels and demand-reduction actions is shown in **Table 8-1**, **Table 8-2**, and **Table 8-3**. Additional details are provided in **Appendix G**.

Table 8-1 Water Shortage Contingency Plan Levels (DWR Table 8-1)

Shortage Level	Percent Shortage Range	Shortage Response Actions
1	Up to 10 percent	• Determination based on specific Dry Conditions as determined by the District, SCWA, or SWRCB that the District must reduce water use by up to 10%. • Includes implementation of voluntary restrictions on end uses (see **Table 8-2**) as well as agency actions (see **Table 8-3**).
2	Up to 20 percent	• Determination based on specific Dry Conditions or a Temporary Impairment of water supply as determined by the District, SCWA, or SWRCB that the District must reduce water use by up to 20%.

Shortage Level	Percent Shortage Range	Shortage Response Actions
		• Includes implementation of mandatory restrictions on end uses (see **Table 8-2**) as well as agency actions (see **Table 8-3**).
3	Up to 30 percent	• Determination based on Dry Conditions or a Temporary Impairment of water supply as determined by the District, SCWA, or SWRCB that the District must reduce water use by up to 30%. • Includes implementation of mandatory restrictions on end uses (see **Table 8-2**) as well as agency actions (see **Table 8-3**).
4	Up to 40 percent	• Determination based on specific Critical Dry Conditions or a Temporary Impairment of water supply as determined by the District, SCWA, or SWRCB that the District must reduce water use by up to 40%. • Includes implementation of mandatory restrictions on end uses (see **Table 8-2**) as well as agency actions (see **Table 8-3**).
5	Up to 50 percent	• Determination based on specific Critical Dry Conditions or a Temporary Impairment of water supply as determined by the District, SCWA, or SWRCB that the District must reduce water use by up to 50%. • Includes implementation of mandatory restrictions on end uses (see **Table 8-2**) as well as agency actions (see **Table 8-3**).
6	>50 percent	• Determination based on specific Critical Dry Conditions or a Temporary Impairment of water supply as determined by the District, SCWA, or SWRCB that the District must reduce water use by more than 50%. • Includes implementation of mandatory restrictions on end uses (see **Table 8-2**) as well as agency actions (see **Table 8-3**).
NOTES: The appropriate Stage will be enacted by the Board of Directors to respond to the corresponding estimated water shortage that may result from the following: droughts, extreme weather events, natural disasters, extended power outages, reduced deliveries from the SCWA, regulatory droughts, and other water shortage conditions.		

Table 8-2 Demand Reduction Actions (DWR Table 8-2)

Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement?
1	Other	Up to 10%	1. Encourage the non-commercial washing of privately-owned motor vehicles, trailers and boats only from a bucket and except that a hose equipped with a shut-off nozzle may be used for a quick rinse. 2. Request restaurants, hotels, cafes, cafeterias, bars or other public places where food or drink are served/purchased to serve water only upon request. 3. Navy style showering will be promoted (e.g., turn on water to wet person or persons, turn off water, lather up, scrub, then turn on water for a quick rinse, then turn off shower with free push button showerhead control valves available to customers upon request). 4. Request hotel and motel operators to provide guests with the option of choosing not to have towels and linens laundered daily. 5. Enforce water-waste prohibitions as defined in District Regulation 15, Section B. 6. Prohibit washing of sidewalks, driveways, parking areas, tennis courts, patios or other exterior paved areas except by the Novato Fire Protection District or other public agency for the purpose of public safety.	No

Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement?
2	Other	Up to 20%	1. Continue with action and measures from Stage 1 except where superseded by more stringent requirements. 2. Prohibit use of potable water for dust control at construction sites or other locations. 3. Prohibit any use of potable water from a fire hydrant except for fighting fire, human consumption, essential construction needs or use in connection with animals. 4. Require repair of all leaks within 48 hours. 5. Restrict irrigation to three days per week, between the hours of 7pm and 9am. 6. Prohibit refilling completely drained swimming pools and/or initial filling of any swimming pools.	Yes

Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement?
3	Other	Up to 30%	1. Continue with action and measures from Stage 2 except where superseded by more stringent requirements. 2. Prohibit non-commercial washing of privately-owned motor vehicles, trailers and boats except from a bucket and except that a hose equipped with a shut-off nozzle may be used for a quick rinse. 3. Prohibit watering of any lawn, garden, landscaped area, tree, shrub or other plant except from a hand-held hose or container or drip irrigation system. Sprinklers can be used if customer maintains the volume or percent reduction pursuant to the NMWD Board of Directors determination compared to a prior year's use in same billing period. 4. Prohibit watering any portion of a golf course with potable water except the tees and greens, unless the customer maintains the specified water use reduction and mandated by the District. 5. Prohibit any non-residential use by a vehicle washing facility in excess of the volume percent or reduction pursuant to the NMWD Board of Directors determination. 6. Restrict landscape irrigation to two days per week between the hours of 7pm and 9am the following day. 7. Prohibit landscape irrigation during or within 48 hours of measurable precipitation. 8. Prohibit irrigating with potable water of lawn area on public street medians.	Yes

Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement?
4	Other	Up to 40%	1. Continue with action and measures from Stage 3 except where superseded by more stringent requirements. 2. Limit irrigation to one day per week between the hours of 7pm and 9am the following day. 3. Planting any new landscaping, except for designated drought resistant landscaping authorized by NMWD. 4. Golf courses may only use private well or recycled water for general irrigation. 5. No new annual plants, vegetables, flowers or vines may be planted until the Stage 4 mandatory period is over. An exception will be considered on a case by case basis for customers who are eliminating existing thirsty landscaping and replacing same with drought resisting landscaping prescribed by NMWD. 6. Prohibit use of single-pass cooling systems.	Yes

Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement?
5	Other	Up to 50%	1. Continue with action and measures from Stage 4 except where superseded by more stringent requirements. 2. Watering any residential lawn, or any commercial or industrial area lawn maintained for aesthetic purposes, at any time day or night during the period of March 1, through September 30. (These designated lawns will be allowed to dry up for the summer). Affected customers will be advised on tested methods for re-greening the lawns at minimum expense beginning on October 1, during a Stage 4 mandatory period if operating conditions permit. By following the prescribed instructions, the affected customers will likely avoid the cost of replacing lawns.) 3. All day and nighttime sprinkling will be discontinued. Any and all outside watering will be done only with a hand-held nozzle. An exception will be made to permit drip irrigation for established perennial plants and trees using manual or automatic time-controlled water application sufficient only for assured plant survival. 4. Limit deliveries of water to outside service area customers to that needed for human consumption, sanitation and public safety only or as stipulated in outside service agreements.	Yes
6	Other	Greater than 50%	1. Continue with action and measures from Stage 5 except where superseded by more stringent requirements. 2. All residential and CII customers shall reach a water reduction of fifty five percent (55%) from previous use.	Yes
NOTES:				

Table 8-3 Supply Augmentation and Other Actions (DWR Table 8-3)

Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier	How much is this going to reduce the shortage gap?	Additional Explanation or Reference *(optional)*
1	Other	Up to 10%	1. Distribute water bill inserts with information about water shortage and conservation. 2. Distribute special issue of WaterLine newsletter. 3. Encourage voluntary rationing. 4. Pursue vigorous enforcement of water wasting regulations and provisions of the District's Water Conservation Regulation 15. 5. Request customers to make conscious efforts to conserve water. 6. Request other governmental agencies to demonstrate leadership and implement restrictive water use programs. 7. Distribute water saving kits upon customer request, to assure availability to existing and new customers. 8. Encourage private sector use of alternate sources of water such as recycled water or private wells. 9. Encourage nighttime irrigation 10. Customers will be urged not to regularly flush their toilets for disposal of urine only.
2	Other	Up to 20%	1. Continue with actions and measures from Stage 1 except where superseded by more stringent requirements. 2. Promote District water conservation and rebate programs. 3. The District can back-feed Stafford Lake using SCWA water to offset local supply shortage in the lake.
3	Other	Up to 30%	1. Continue with action and measures from Stage 2 except where superseded by more stringent requirements.
4	Other	Up to 40%	1. Continue with action and measures from Stage 3 except where superseded by more stringent requirements.

Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier	How much is this going to reduce the shortage gap?	Additional Explanation or Reference *(optional)*
5	Other	Up to 50%	1. Continue with action and measures from Stage 4 except where superseded by more stringent requirements. 2. Increase enforcement and water waste patrols.
6	Other	Greater than 50%	1. Continue with action and measures from Stage 5 except where superseded by more stringent requirements.
NOTES:			

9. DEMAND MANAGEMENT MEASURES

☑ ***CWC § 10631 (e)***

Provide a description of the supplier's water demand management measures. This description shall include all of the following:

(1) (A) For an urban retail water supplier, as defined in Section 10608.12, a narrative description that addresses the nature and extent of each water demand management measure implemented over the past five years. The narrative shall describe the water demand management measures that the supplier plans to implement to achieve its water use targets pursuant to Section 10608.20.

(B) The narrative pursuant to this paragraph shall include descriptions of the following water demand management measures:

(i) Water waste prevention ordinances.

(ii) Metering.

(iii) Conservation pricing.

(iv) Public education and outreach.

(v) Programs to assess and manage distribution system real loss.

(vi) Water conservation program coordination and staffing support.

(vii) Other demand management measures that have a significant impact on water use as measured in gallons per capita per day, including innovative measures, if implemented.

This section provides an overview of the North Marin Water District's (NMWD's or District's) current and planned Demand Management Measures (DMMs), which include specific types and groupings of water conservation measures typically implemented by water suppliers. The District utilizes water conservation Best Management Practices (BMPs) as a method to reduce water demands, thereby reducing water supply needed. Implementation of DMMs over the past has helped the District achieve its 2015 Interim and 2020 Water Use Targets under SB X7-7 (Chapter 5).

9.1 Regional Water Conservation

The Sonoma County Water Agency (SCWA), along with the cities of Santa Rosa, Rohnert Park, Sonoma, Cotati, and Petaluma, the Town of Windsor, and NMWD, Marin Municipal Water District (MMWD) and Valley of the Moon Water District (VOMWD) (the Partners), formed the Sonoma-Marin Saving Water Partnership (SMSWP) in 2010. The SMSWP's Memorandum of Understanding was amended in May 2018, extending the term another ten years, and adding language to streamline the addition of members to the SMSWP. Two new Partners have subsequently joined, with California American Water-Larkfield joining in January 2019 and the City of Healdsburg joining in August 2019.

SCWA coordinates the work of the SMSWP in conjunction with the Water Advisory Committee (WAC), which provides input to SCWA and holds certain powers and responsibilities enumerated in the Restructured Agreement for Water Supply between SCWA and SMSWP. The SMSWP is committed to continued water conservation and is in compliance with the final 2020 gallons per capita targets established by Senate Bill X7-7. The contact info for the SMSWP Coordinator is:

Paul Piazza
Principal Programs Specialist
SCWA
paul.piazza@scwa.ca.gov
Office: 707-547-1968

9.1.1 Funding

SCWA's wholesaler water conservation programs are funded by the Partners annually through a WAC recommended budget that allocates a water conservation sub-charge for each acre-foot of water sold. The Partners have agreed to expend $15 million dollars on water conservation implementation from July 2018 through June 2028. They have also agreed to maintain membership in good standing with the California Water Efficiency Partnership (CalWEP) and implement or use best efforts to secure the implementation of any water conservation requirements added as terms or conditions of SCWA's appropriative water rights or other regulation or law.

SCWA pursues grant funding on behalf of the SMSWP to off-set some of the programmatic costs associated with water use efficiency (WUE) programs and to test new technology. In the last five years, the Agency was awarded over $1.46 million dollars for implementing WUE programs in our region.

9.1.2 Annual Report

The Partners are committed to remain as members in good standing of CalWEP and to implement water conservation measures that provide regional benefits and/or that may exceed the targets established from time to time by the Partners or the state. The Partners will implement or use best efforts to secure the implementation of any water conservation requirements and will publish an Annual Report to track progress. The Annual Report will track program implementation, highlight program milestones, and reinforce the importance of protecting and preserving water resources for future generations. The 2019/2020 Annual Report for the SMSWP is available at the SMSWP's website[17].

9.1.3 Water and Energy Education Program

The Water and Energy Education Program is a comprehensive approach to helping educators teach students the "value" of water as an important natural resource. Water and energy conservation and

[17] The link to the 2019/2020 Annual Report for the SMSWP is as follows: http://www.savingwaterpartnership.org/wp-content/uploads/SMSWP-Annual-Report-2020-FINAL.pdf.

stewardship of our local watersheds is promoted throughout the program. Students are encouraged to use water wisely and make environmentally sustainable choices to help secure a reliable source of freshwater now and in the future. The program includes classroom instructional presentations, field study opportunities at SCWA's Westside Education Facility, free curriculum materials aligned with the existing California State Frameworks and the California Science Standards, a lending library of videos, interactive models and printed materials, production of a newsletter for teachers and endorsement, participation and financial sponsorship of events, assemblies, and workshops. All of the education programs and materials are free to teachers in the service area, which covers over 200 schools throughout Sonoma and northern Marin counties. Due to the COVID-19 pandemic, the entire classroom curriculum was adapted in 2020 to provide both synchronous and asynchronous lessons for remote learning.

The total number of students receiving direct instruction in 2019/2020 was 8,030 (2,094 students in field study programs and 5,936 in classroom programs). Three hundred (300) adults participated in the field study program while serving as adult chaperones with participating classes. An additional 108 classes (2,388 students) signed up for programs that were canceled due to the COVID-19 pandemic.

9.1.4 Public Outreach Program

The SMSWP develops an annual regional outreach campaign that aligns with our current water supply conditions and promotes water use efficiency programs. Over the last few years, the campaigns have included the following:

- Saving Water Ensures Water for What You Love (2020),
- Together Making Water Conservation a California Way of Life (2019),
- There's Never Enough to Waste. (2017 & 2018),
- Thank You for Doing Your Part (2016), and
- Take it From the Tap (2016).

SCWA, in collaboration with the members of the SMSWP, produces collateral material that aligns with the specific campaign. SCWA coordinates an annual media buy that includes outreach in English and Spanish. Each member of the SMSWP can choose to supplement the campaign with their own media buys. The buys generally include the following:

- Radio (streaming and broadcast),
- Newsprint and online digital media placements in 14 various local publications,
- Sonoma County Fair presence,
- Social Media (Facebook, Twitter, Instagram, YouTube, NextDoor),
- Mall banners, and
- Movie theater trailers.

9.1.5 Regional Programs

SCWA on behalf of the SMSWP implements numerous regional programs. This includes offering staff support for interested Partners as a cost-effective way to offer local programs to customers of smaller agencies. Some of these programs are:

- High Efficiency Clothes Washer Water Rebate – a rebate for replacing a top-loading clothes washer with a qualifying front-loading clothes washer.
- Green Business Program – Certification for local businesses that are going green.
- Qualified Water Efficient Landscaper Training Program – A low-cost professional certification program that educates landscapers about irrigation system auditing, while providing customers with a trusted source for knowledgeable hired help that can save them water.
- Eco-Friendly Garden Tour – An annual self-guided garden tour in Sonoma County and North Marin that promotes sustainable landscaping practices. This tour transitioned to an online video format in 2020 to adapt to the COVID-19 pandemic.
- Garden Sense – A free garden consultation program open to all Sonoma County residents. Consultants provide site-specific advice on lawn removal, sprinkler conversion to drip irrigation, and low water use plant selection.
- DIY Energy and Water Savings Toolkit – The Do-It-Yourself (DIY) Home Energy and Water Saving Toolkits are stocked with energy and water saving supplies that can help measure how much energy or water is being consumed in the home and make easy upgrades to your home to help save money on the utility bills.
- Landscape Design Templates – These free, front yard designs are scalable to fit landscaped areas up to 2,500 square feet, ready-to-permit, and in compliance with local Water Efficient Landscape Ordinances.
- Water Smart Plant Label – A free water smart plant labeling program to local nurseries. The water smart plant label highlights low water use plants to nursery customers and promotes sustainable landscaping practices in Sonoma and Marin counties.
- Water-Energy Rebates for Restaurants and Food Service Facilities – a rebate program for replacing inefficient commercial kitchen equipment with new water and energy efficient models.

SCWA supports promoting new and innovative models to increase water use efficiency in our region. Some of the pilot projects we have collaborated with in the past include:

- PAYS Program (Windsor) – An on-bill financing program that allows water customers to fund their own water and energy improvements with a long-term payback on their water bill.
- SmartMarkets Pilot (VOMWD) – A water market that allows for 'eco-shares' to be earned for reducing demand and redeemed for various incentives.
- Water Smart Software (Cotati) – A community based social marketing platform that compares a customer's water use to their neighbors to encourage behavioral change.
- Barnacle Pilot Program (All) – An online platform that provides real-time water use data to the customer outside of the water utilities billing infrastructure.
- Unmetered Flow Reducer (NMWD) – An in-line device that is placed between the meter and the customer connection that allows small leaks to be 'batched' through the meter, thus reducing unaccounted for water from low flow leaks and allowing the customer to be notified that a leak in occurring.

SCWA participates in numerous regional and statewide initiatives to ensure the SMSWP is on the forefront of water use efficiency, legislation, and conservation planning, such as:

- California Water Efficiency Partnership (Programs Subcommittee, Research Subcommittee), successor organization of the former California Urban Water Conservation Council,
- California Irrigation Institute,
- Association of California Water Agencies (Water Management and Water Use Efficiency Subcommittees),
- Russian River Watershed Association, and
- California Landscape Contractors Association.

The SMSWP has received notable recognition for effective collaboration and program implementation. Below are the awards the SMSWP has received.

- EPA Water Sense Excellence Award 2020 and Sustained Excellence Award 2020,
- EPA Water Sense Excellence Award 2019 and Sustained Excellence Award 2019,
- EPA Water Sense Excellence Award 2018 and Sustained Excellence Award 2018,
- EPA Water Sense Excellence Award 2017 and Sustained Excellence Award 2017, and
- EPA Water Sense Partner of the Year 2016.

9.2 Agency Water Conservation

☑ ***CWC § 10631 (e)***

Provide a description of the supplier's water demand management measures. This description shall include all of the following:

(1) (A) For an urban retail water supplier, as defined in Section 10608.12, a narrative description that addresses the nature and extent of each water demand management measure implemented over the past five years.

In addition to the regional conservation effort partnering with the SMSWP, the District also implements DMMs at a local scale.

The District was previously a member of the California Urban Water Conservation Council (CUWCC). The CUWCC was created to assist in increasing water conservation statewide, under a Memorandum of Understanding (MOU). As signatory to the MOU, the District has pledged its good faith effort towards implementing BMPs identified in the CUWCC MOU Regarding Urban Water Conservation. The two primary purposes of the MOU were as follows:

- to expedite implementation of reasonable water conservation measures in urban areas; and
- to establish assumptions for use in calculating estimates of reliable future water conservation savings resulting from proven and reasonable conservation measures. Estimates of reliable savings are the water conservation savings that can be achieved with a high degree of confidence in a given service area.

The CUWCC has been dissolved since the 2015 UWMP, and thus BMP annual reports are no longer available. However, the District continues to implement DMMs in general accordance with the CUWCC

BMPs. A description of the nature and extent of each DMM implemented over the last five years is provided below. Additional information regarding DMM implementation is provided in **Appendix B**.

9.2.1 DMM 1 – Water Waste Prevention Ordinances

The District enforces a strict water waste prevention/ prohibition regulation as required in the District's Regulation 15 – Water Conservation – Novato Service Area dated January 2016 (**Appendix H**). This regulation explicitly states that the waste of water is to be prohibited, and it also lists all the prohibited water uses and exempt water uses. The excerpts are provided below:

"Customers shall not permit any water furnished by the District for the following nonessential uses:

- The washing of sidewalks, walkways, driveways, parking lots and other hard surfaced areas by direct hosing when runoff water directly flows to a gutter or storm drain, except as may be necessary to properly dispose of flammable or other dangerous liquids or substances, wash away spills that present a trip and fall hazard, or to prevent or eliminate materials dangerous to the public health and safety;
- The escape of water through breaks or leaks within the customers' plumbing or private distribution system for any substantial period of time within which such break or leak should reasonably have been discovered and corrected. It shall be presumed that a period of seventy-two (72) hours after the customer discovers such a break or leak or receives notice from the District, is a reasonable time within which to correct such break or leak, or, as a minimum, to stop the flow of water from such break or leak;
- Irrigation in a manner or to an extent which allows excessive run-off of water or unreasonable over-spray of the areas being watered. Every customer is deemed to have his/her water system under control at all times, to know the manner and extent of his/her water use and any run-off, and to employ available alternatives to apply irrigation water in a reasonably efficient manner;
- Washing cars, boats, trailers or other vehicles and machinery directly with a hose not equipped with a shutoff nozzle;
- Water for non-recycling decorative water fountains;
- Water for new non-recirculating conveyor car wash systems;
- Water for new non-recirculating industrial clothes wash systems; and
- Water for single pass coolant systems.

Exempt Water Uses. All water use associated with the operation and maintenance of fire suppression equipment or employed by the District for water quality flushing and sanitation purposes shall be exempt from the provisions of this section. Use of water supplied by a private well or from a recycled water, gray water or rainwater utilization system is also exempt."

9.2.2 DMM 2 – Metering

☑ ***CWC § 526 (a)***

Notwithstanding any other provision of law, an urban water supplier that, on or after January 1, 2004, receives water from the federal Central Valley Project under a water service contract or subcontract … shall do both of the following:

(1) On or before January 1, 2013, install water meters on all service connections to residential and nonagricultural commercial buildings constructed prior to January 1, 1992, located within its service area.

(2) On and after March 1, 2013, or according to the terms of the Central Valley Project water contract in operation, charge customers for water based on the actual volume of deliveries, as measured by a water meter.

☑ ***CWC § 527 (a)***

(a) An urban water supplier that is not subject to Section 526 shall do both of the following:

(1) Install water meters on all municipal and industrial service connections located within its service area on or before January 1, 2025.

All customer connections within the District are metered.

9.2.3 DMM 3 – Conservation Pricing

The District bills customers using a three-tier rate system for residential customers and a seasonal rate (rate increase in summer months) for non-residential customers. The volumetric tiers for residential customers are as follows:

- Tier 1 – up to 262 gallons per day (GPD);
- Tier 2 – 262 – 720 GPD; and
- Tier 3 – Greater than 720 GPD.

For non-residential customers, a summer water rate for is charged for July through September and a winter rate is charted for October through June.

The current water rates can be found on the District's website at: https://nmwd.com/account/rates/

9.2.4 DMM 4 – Public Education and Outreach

NMWD implements a full-scale public information program including newsletters, bill stuffers, newspaper advertisements, public outreach events, and other programs including social media. As discussed in Section 9.1, the District is a member of a regional water conservation partnership, the SMSWP, which conducts the bulk of public education efforts in the region. Information provided ranges from promotion of conservation programs to water supply/quality, and hardware distribution.

Through the regional SMSWP water conservation school education and outreach programs from the 2015-2016 to 2019-2020 school years, 3,634 students were reached by direct instruction, and 7,175 students

were reached through indirect instruction such as assemblies, video and poster contests, and other educational materials (EKI, 2020).

9.2.5 DMM 5 – Programs to Assess and Manage Distribution System Real Loss

The District has a proactive program to address and minimize distribution system water loss. As noted in Section 4.1.4, the District performs annual water loss audits consistent with CWC §10608.34 using the American Water Works Association (AWWA) Free Water Audit Software version 5.0, which is then validated by an AWWA California-Nevada Section-Certified California Water Audit validator prior to submission to Department of Water Resources (DWR). The District has been performing these audits periodically for years prior to the Senate Bill (SB) 555 State-mandate. The results of the last five years of water audit data are summarized in Section 4.1.4, and copies of the audit reports are available through DWR's Water Use Efficiency Data Portal[18].

9.2.6 DMM 6 – Water Conservation Program Coordination and Staffing Support

The District employs a full time Water Conservation Coordinator to implement the Water Conservation and Public Outreach Programs. Contact information for the District's Water Conservation Coordinator is listed below:

Name: Ryan Grisso

Phone: (415) 761-8933

Email: rgrisso@nmwd.com

9.2.7 DMM 7 – Other DMMs

The District's *2020 Urban Water Management Plan Water Demand Analysis and Water Conservation Measures Update* (**Appendix B**) provided descriptions of conservation program implementation efforts by the District, and detailed analysis of program participation trends for five representative programs. Conservation programs implemented by the District include high-efficiency washer rebates, turf replacement rebates, Water Smart survey programs, toilet rebates for residential and commercial customers, weather-based irrigation controller rebates for residential and commercial customers, pool cover and hot water recirculation rebates, and more. For additional information related to these DMMs, refer to **Appendix B**.

[18] DWR's Water Use Efficiency Data Portal: https://wuedata.water.ca.gov/awwa_plans.

9.3 Planned Implementation to Achieve Water Use Targets

☑ ***CWC § 10631 (e)***

Provide a description of the supplier's water demand management measures. This description shall include all of the following:

(1) (A) … The narrative shall describe the water demand management measures that the supplier plans to implement to achieve its water use targets pursuant to Section 10608.20.

Beginning in 2023, urban water retailers will be required to report on "annual water use objectives" by November 1 of each year and to achieve these objectives by 1 January 2027 (per CWC §10609). The annual water use objectives will be calculated based on standards for indoor residential water use, outdoor residential water use, and distribution system water loss. Additionally, it is anticipated that performance-based standards for the commercial, industrial, and institutional sectors, separate from the annual water use objectives, will also be developed by DWR and implemented in the future. However, the specific standards that will be used to determine a retailer's annual urban water use objectives are currently under development by DWR, and thus, the annual urban water use objectives for the District cannot be calculated or estimated. Therefore, the District intends to continue implementing DMMs both locally and through the SMSWP and will evaluate potential adjustments needed to these programs as the annual water use objective standard methodologies are developed in the coming years. The District's *2020 Urban Water Management Plan Water Demand Analysis and Water Conservation Measures Update*, provided in **Appendix B**, evaluates several options for future conservation program implementation.

10. PLAN ADOPTION AND SUBMITTAL

This chapter provides information on a public hearing, the adoption process for the Urban Water Management Plan (UWMP or Plan) and Water Shortage Contingency Plan (WSCP), the adopted UWMP and WSCP submittal process, plan implementation, and the process for amending the adopted UWMP or WSCP.

10.1 Notification of UWMP Preparation

☑ ***CWC § 10621 (b)***

Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days before the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.

North Marin Water District (NMWD or District) sent a letter to fifteen entities including Marin and Sonoma County and other local agencies informing them that the District was in the process of updating its UWMP and WSCP and soliciting their input in the update process. A listing of the entities contacted is provided in **Table 2-4**; the notices are included in **Appendix C** for reference. The letter was sent more than 60 days before the public hearing as required by code.

10.2 Notification of Public Hearing

☑ *CWC § 10642*

Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of both the plan and the water shortage contingency plan. Prior to adopting either, the urban water supplier shall make both the plan and the water shortage contingency plan available for public inspection and shall hold a public hearing or hearings thereon. Prior to any of these hearings, notice of the time and place of the hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of a hearing to any city or county within which the supplier provides water supplies. Notices by a local public agency pursuant to this section shall be provided pursuant to Chapter 17.5 (commencing with Section 7290) of Division 7 of Title 1 of the Government Code. A privately owned water supplier shall provide an equivalent notice within its service area. After the hearing or hearings, the plan or water shortage contingency plan shall be adopted as prepared or as modified after the hearing or hearings.

10.2.1 Notice to Cities and Counties

At least two weeks prior to the public hearing, the entities mentioned above in Section 10.1 were notified that the UWMP and WSCP public hearing would be occurring on 15 June 2021 at 6:00PM. The letter informed them of the locations the Public Review Draft 2020 UWMP and the updated WSCP would be available for review and welcoming their input and comments on the document. The Public Review Draft 2020 UWMP and the WSCP were available for public review on the District's website. **Table 2-4** lists the cities, counties, and other agencies that were notified. Copies of these letters are provided in **Appendix C**.

10.2.2 Notice to the Public

The District issued public notifications soliciting public input during the preparation of 2020 UWMP and the WSCP. On 1 June 2021 and 7 June 2021, the District published a notice in the *Marin Independent Journal* informing the public that the 2020 UWMP and WSCP would be available for public review on the District's website, consistent with requirements of California Government Code 6066. The notice also informed the public that the 2020 UWMP and WSCP public hearing would be held virtually on 15 June 2021. A copy of this notice is included in **Appendix D.**

10.3 Public Hearing and Adoption

☑ ***CWC § 10608.26***

(a) In complying with this part, an urban retail water supplier shall conduct at least one public hearing to accomplish all of the following:

(1) Allow community input regarding the urban retail water supplier's implementation plan for complying with this part.

(2) Consider the economic impacts of the urban retail water supplier's implementation plan for complying with this part.

(3) Adopt a method, pursuant to subdivision (b) of Section 10608.20, for determining its urban water use target.

Prior to adopting the Plan, the District held a formal public hearing to present information on the 2020 UWMP and WSCP on 15 June 2021 at 6:30 PM, in a virtual meeting.

As part of the public hearing, the District provided the audience with information on compliance with the Senate Bill (SB) X7-7, including its baseline daily per capita water use, water use targets, implementation plan, and 2020 compliance.

This UWMP was adopted by Resolution No. 21-09 by the District Board during its 15 June 2021 Board meeting. The WSCP included as **Appendix G** was adopted by the same resolution during the same meeting. A copy of the resolution is included in **Appendix I**.

10.4 Plan Submittal

☑ ***CWC § 10621***

(f) (1) Each urban water supplier shall update and submit its 2020 plan to the department by July 1, 2021.

☑ ***CWC § 10635 (c)***

The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.

☑ ***CWC § 10644***

(a) (1) An urban water supplier shall submit to the department, the California State Library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be submitted to the department, the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.

(2) The plan, or amendments to the plan, submitted to the department pursuant to paragraph (1) shall be submitted electronically and shall include any standardized forms, tables, or displays specified by the department.

(b) If an urban water supplier revises its water shortage contingency plan, the supplier shall submit to the department a copy of its water shortage contingency plan prepared pursuant to subdivision (a) of Section 10632 no later than 30 days after adoption, in accordance with protocols for submission and using electronic reporting tools developed by the department.

This UWMP and WSCP were submitted to DWR within 30 days of adoption and by the 1 July 2021 deadline. The submittal was done electronically through Water Use Efficiency Data Portal, an online submittal tool. The adopted Plan was also sent to the California State Library and Marin and Sonoma Counties.

10.5 Public Availability

☑ ***CWC § 10645***

(a) Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.

(b) Not later than 30 days after filing a copy of its water shortage contingency plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.

On or about 1 July 2021, electronic versions of the draft 2020 UWMP and WSCP were made available for review at the District's website (https://www.nmwd.com). Printed hard copies were made available by appointment.

10.6 Amending an Adopted UWMP or Water Shortage Contingency Plan

☑ ***CWC § 10644 (b)***

If an urban water supplier revises its water shortage contingency plan, the supplier shall submit to the department a copy of its water shortage contingency plan prepared pursuant to subdivision (a) of Section 10632 no later than 30 days after adoption, in accordance with protocols for submission and using electronic reporting tools developed by the department.

If the Plan is amended, each of the steps for notification, public hearing, adoption, and submittal will also be followed for the amended document.

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