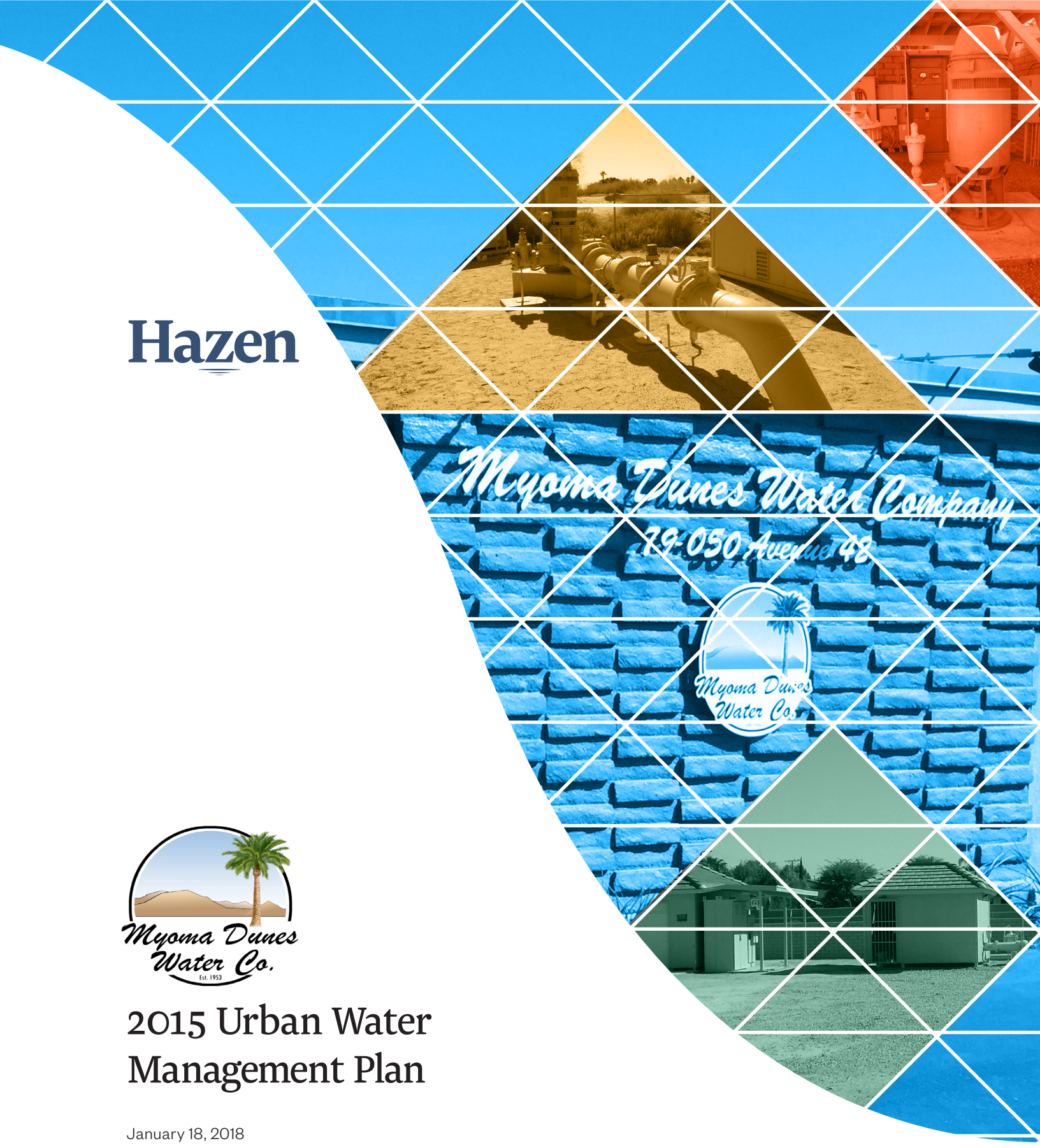

Hazen

Myoma Dunes Water Co.
Est. 1953

2015 Urban Water Management Plan

January 18, 2018

Myoma Dunes Mutual Water Company

2015 Urban Water Management Plan

January 18, 2018

Prepared for:
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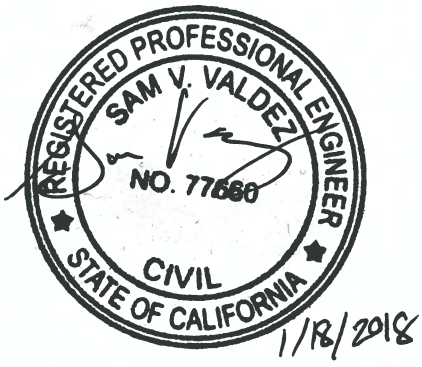

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List of Abbreviations/Acronyms

Abbreviation/Acronym	Definition
AFY	Acre-foot per year
ACS	American Community Survey
AWWA	American Water Works Association
AOB	Area of Benefit
BDCC	Bermuda Dunes Country Club
CIMIS	California Irrigation Management Information System
CWC	California Water Code

CDP	Census-Designated Place
CRW	Colorado River Water
CWA	City of Coachella, Coachella Water Authority
CVRWMG	Coachella Valley Regional Water Management Group
CVSC	Coachella Valley Stormwater Channel
CVWD	Coachella Valley Water District
DMM	Demand Management Measures
DWR	Department of Water Resources
DWA	Desert Water Agency
DAC	Disadvantaged Communities
DDW	Division of Drinking Water
ERP	Emergency Response Plan
ETo	Evapotranspiration
GPCD	Gallons per Capita per Day
GRP	Groundwater Replenishment Program
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
IWA	Indio Water Authority
IRWM	Integrated Regional Water Management
IRWMP	Integrated Regional Water Management Plan
MHI	Median Household Income
MCL	Maximum Contaminant Limit
MG	Million Gallons
MSWD	Mission Springs Water District
MDMWC	Myoma Dunes Mutual Water Company
NRW	Non-Revenue Water
ppb	Parts per billion
PWS	Public Water Systems
RUWMP	Regional Urban Water Management Plan
RAC	Replenishment Assessment Charge
SWP	State Water Project
SWRCB, or Board	State Water Resources Control Board
SGMA	Sustainable Groundwater Management Act
TDS	Total Dissolved Solids
USGS	United States Geological Survey
UWMP	Urban Water Management Plan
VSD	Valley Sanitary District
SB X7-7, or Senate Bill X7-7	Water Conservation Act of 2009

WAS	Water Audit Software
WMPU	Water Management Plan Update
WRP	Water Reclamation Plant
WSCP	Water Shortage Contingency Plan
WUE	Water Use Efficiency

1. Introduction and Overview

1.1 Background and Purpose

The State of California recognizes that water is a limited resource, and that long-term water supply planning by urban water suppliers is essential for ensuring supply reliability, public health, supporting growth and the local economy, and improving water service. It is also recognized that water planning is best done at the local level by suppliers with the knowledge of the local water picture.

The Urban Water Management Plan (UWMP) is a tool used to assist urban water suppliers and inform the public in long-term resource planning efforts to implement effective water management strategies. Major components of the UWMP including identifying existing and future water demands; supply sources and availability during normal, dry, and multiple dry years; potential future water resource concerns including changes in water quality regulations; water shortage contingency planning; and efficient water use measures.

1.2 Urban Water Management Planning and the California Water Code

This UWMP has been prepared in compliance with the applicable sections of the California Water Code (CWC). A checklist of CWC compliance is provided in Appendix A of this UWMP. Details of applicable CWC Sections and changes can also be found in Appendix A and C of the California Department of Water Resources 2015 Urban Water Management Plans Guidebook for Urban Water Suppliers (Guidebook). Standardized UWMP and Water Conservation Act of 2009 (SB X7-7) tables can be found in Appendix B and C, respectively.

1.2.1 Urban Water Management Planning Act of 1983

The Urban Water Management Planning Act (CWC Division 6, Part 2.6) became effective January 1, 1984. The Act requires that every urban water supplier prepare and adopt an urban water management plan covering a 20-year planning horizon at least once every five years in years ending in five and zero, and submit the plan to the State of California Department of Water Resources (DWR). Per CWC Division 6, Part 2.6, Chapter 2, Section 10617, urban water suppliers are defined as those who serve more than 3,000 customers, or more than 3,000 acre-feet per year (AFY).

1.2.2 Applicable Changes to the Water Code since 2010 UWMPs

The applicable changes to the CWC since the 2010 UWMPs are described below, which can also be found in Appendix C of the Guidebook:

1. Demand Management Measures (CWC Section 10631 (f) (1) and (2) Assembly Bill 2067, 2014)
    - Requires water suppliers to provide narratives of their existing demand management measures (DMMs), DMMs implemented over the past five years, and planned DMMs to meet water use targets.

2. Submittal Date (CWC Section 10621 (d) Assembly Bill 2067, 2014)
    - The 2015 UWMP must be submitted to the DWR by July 1, 2016.
3. Electronic Submittal (CWC Section 10644 (a) (2) Senate Bill 1420, 2014)
    - The UWMP and any amendments are to be electronically submitted to DWR.
4. Standardized Forms (CWC Section 10644 (a) (2) Senate Bill 1420, 2014)
    - Standardized DWR forms, tables, or displays are to be included in the UWMP.
5. Water Loss (CWC Section 10631 (e) (1) (J) and (e) (3) (A), and (B) Senate Bill 1420, 2014)
    - Requires the UWMP to quantify and report on distribution system water loss.
6. Estimating Future Water Savings (CWC Section 10631 (e) (4) Senate Bill 1420, 2014)
    - Allows for water use projections to take into account water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use plans.
7. Voluntary Reporting of Energy Intensity (CWC Section 10631.2 (a) and (b) Senate Bill 1036, 2014)
    - A supplier may include certain energy-related information, such as estimates of energy to treat or distribute water.
8. Defining Water Features (CWC Section 10632 (b) Assembly Bill 2409, 2010)
    - Requires that defining water features (such as ponds, lakes, waterfalls, and fountains) be analyzed separately from swimming pools and spas.

1.2.3 Water Conservation Act of 2009 (SB X7-7)

The Water Conservation Act of 2009 (also known as Senate Bill X7-7, or SB X7-7) is one of four policy bills enacted by the California legislature as part of the 2009 Comprehensive Water Package (Special Session Policy Bills and Bond Summary). SB X7-7 provides the regulatory framework to support the state-wide 20 percent reduction in urban per capita water use by the year 2020 set forth in the 20x2020 Water Conservation Plan. The bill requires that each urban water supplier develop 2015 interim and 2020 urban water use targets consistent with the requirements of the bill. The bill also addresses agricultural water use, along with commercial, industrial, and institutional water use.

1.3 Urban Water Management Plans in Relation to Other Planning Efforts

The following Coachella Valley regional documents are related to this urban water management planning effort:

- 2010 Coachella Valley Integrated Regional Water Management Plan
- 2012 Coachella Valley Water Management Plan Update

1.4 UWMP Organization

This UWMP follows the format provided by DWR's Guidebook, with supporting documentation included as appendices. This UWMP is organized as follows:

- Section 1 – Introduction and Overview: This section includes background information on Myoma Dunes Mutual Water Company (MDMWC) and urban water management planning.
- Section 2 – Plan Preparation: This section provides information on the process for developing the UWMP, including efforts regarding coordination and outreach.
- Section 3 – System Description: This section provides a description of the service area, climate, and demographics.
- Section 4 – System Water Use: This section provides current and projected water uses within the MDMWC service area.
- Section 5 – SB X7-7 Baselines and Targets: This section includes descriptions of methods for calculating baseline and target water consumption, demonstration of achieving 2015 interim water use target, and plans for achieving the 2020 water use target.
- Section 6 – System Supplies: This section includes descriptions of current and projected water supply sources available to MDMWC.
- Section 7 – Water Supply Reliability Assessment: This section analyzes projected water supply reliability over the next 20 years, including normal, single dry years, and multiple dry years.
- Section 8 – Water Shortage Contingency Planning: This section includes MDMWC's staged plan for dealing with water shortages, including catastrophic supply interruption.
- Section 9 – Demand Management Measures: This section describes MDMWC's efforts to promote water conservation and to reduce demand.
- Section 10 – Plan Adoption, Submittal and Implementation: This section describes the required notifications and steps taken for Plan adoption.
- Section 11 – References: This section includes a list of references that were used in support of the UWMP preparation.

1.5 UWMP and Grant or Loan Eligibility

1.5.1 Funding Eligibility for Retail Suppliers

CWC 10617

"Urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water

CWC 10608.56

(a) On and after July 1, 2016, an urban retail water supplier is not eligible for a water grant or loan awarded or administered by the state unless the supplier complies with this part.

(c) Notwithstanding subdivision (a), the department shall determine that an urban retail water supplier is eligible for a water grant or loan even though the supplier has not met the per capita reductions required pursuant to Section 10608.24, if the urban retail water supplier has submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for achieving the per capita reductions. The supplier may request grant or loan funds to achieve the per capita reductions to the extent the request is consistent with the eligibility requirements applicable to the water funds.

(e) Notwithstanding subdivision (a), the department shall determine that an urban retail water supplier is eligible for a water grant or loan even though the supplier has not met the per capita reductions required pursuant to Section 10608.24, if the urban retail water supplier has submitted to the department for approval documentation demonstrating that its entire service area qualifies as a disadvantaged community.

(f) The department shall not deny eligibility to an urban retail water supplier or agricultural water supplier in compliance with the requirements of this part and Part 2.8 (commencing with Section 10800), that is participating in a multiagency water project, or an integrated regional water management plan, developed pursuant to Section 75026 of the Public Resources Code, solely on the basis that one or more of the agencies participating in the project or plan is not implementing all of the requirements of this part or Part 2.8 (commencing with Section 10800).

CCR Section 596.1

(b)(2) "disadvantaged community" means a community with an annual median household income that is less than 80 percent of the statewide annual median household income.

In order for a water agency to be eligible for water management grants or loans administered by DWR, the water agency must maintain a current UWMP on file that meets the requirements of the CWC and must also be in compliance with the target demand reductions of SB X7-7, unless the agency demonstrates that it meets the exceptions allowed in the CWC. An UWMP may also be required in order to be eligible for other State funding assistance depending on the specific funding conditions.

2. Plan Preparation

This section provides information on MDMWC's process for developing this UWMP.

2.1 Basis for Preparing a Plan

CWC 10617

"Urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems…

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.

CWC 10621

(a) Each urban water supplier shall update its plan at least one every five years on or before December 31st, in years ending in five and zero, except as provided in subdivision (d).

(d) Each urban water supplier shall update and submit its 2015 plan to the department by July 1st, 2016.

Because MDMWC supplies over 3,000 acre-feet per year (AFY) of water for retail purposes, it is considered an "urban retail water supplier" according to the CWC, and therefore must prepare a 2015 UWMP.

2.1.1 Public Water Systems

CWC 10644

(a)(2) The plan, or amendments to the plan, submitted to the department … shall include any standardized forms, tables, or displays specified by the department.

CWC 10608.52

(a) The department, in consultation with the board, the California Bay-Delta Authority or its successor agency, the State Department of Public Health, and the Public Utilities Commission, shall develop a single standardized water use reporting form to meet the water use information needs of each agency, including the needs of urban water suppliers that elect

to determine and report progress toward achieving targets on a regional basis as provided in subdivision (a) of section 10608.28

(b) At a minimum, the form shall be developed to accommodate information sufficient to assess an urban water supplier's compliance with conservation targets pursuant to Section 10608.24… The form shall accommodate reporting by urban water suppliers on an individual or regional basis as provided in subdivision (a) of Section 10608.28.

California Health and Safety Code 116275

(h) "Public Water System" means a system for the provision of water for human consumption through pipes or other constructed conveyances that has 15 or more service connections or regularly serves at least 25 individuals daily at least 60 days of the year.

MDMWC operates one Public Water System (PWS) as defined by the California Health and Safety Code. Public Water Systems are regulated by the State Water Resources Control Board (SWRCB, or Board), Division of Drinking Water (DDW). MDMWC PWS information is shown in Table 2-1.

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

Table 2-1 Retail Only: Public Water Systems			
Public Water System Number	Public Water System Name	Number of Municipal Connections 2015	Volume of Water Supplied 2015
3310051	Myoma Dunes Mutual Water Company	2,514	1,083
	TOTAL	2,514	1,083
NOTES: Volume of water supplied is in units of million gallons.			

2.2 Regional Planning

Regional planning for the Coachella Valley is conducted by the Coachella Valley Regional Water Management Group (CVRWMG), which is a partnership of the following five Coachella Valley water agencies:

- Coachella Valley Water District (CVWD)
- Coachella Water Authority (CWA)
- Desert Water Agency (DWA)
- Indio Water Authority (IWA)
- Mission Springs Water District (MSWD)

This group prepared a Coachella Valley Integrated Regional Water Management (IRWM) Plan in 2010, which aimed to collaboratively address water management issues with the goals of optimizing water supply reliability, protecting or improving water quality, providing stewardship of water-related

natural resources, coordinating water resource management, and ensuring cultural, social, and economic sustainability in the Coachella Valley. MDMWC is a Planning Partner of the CVRWMG.

In addition, MDMWC is listed as an interested party in CVWD's Notice of Election to become a Groundwater Sustainability Agency (GSA), November 6, 2015, pursuant to CWC Section 10723.8 of the Sustainable Groundwater Management Act (SGMA). SGMA was established as a regulatory framework for sustainable, local groundwater management. GSA's develop and implement Groundwater Sustainability Plans (GSPs), which are required for high- or medium-priority basins.

2.3 Individual or Regional Planning and Compliance

MDMWC selects the Individual Reporting method for its 2015 UWMP, reporting solely on its own service area. Coordination and notifications are made with the appropriate regional entities. Refer to Table 2-2.

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

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

2.3.1 Regional UWMP

CWC 10620

(d)(1) An urban water supplier may satisfy the requirements of this part by participation in area wide, regional, watershed, or basin wide urban water management planning where those plans will reduce preparation costs and contribute to the achievement of conservation and efficient water use.

MDMWC has developed an individual UWMP; therefore, the regional UWMP does not apply.

2.3.2 Regional Alliance

CWC 10608.20

(a) (1) …Urban retail water suppliers may elect to determine and report progress toward achieving these targets on an individual or regional basis as provided in subdivision (a) of Section 10608.28…

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.

MDMWC has developed an individual UWMP; therefore, the regional alliance does not apply.

2.4 Fiscal or Calendar Year and Units of Measure

CWC 1608.20

(a)(1) Urban retail water suppliers…may determine the targets on a fiscal year or calendar year basis.

2.4.1 Fiscal or Calendar Year

This UWMP reports on a calendar year basis. Refer to Table 2-3.

2.4.2 Reporting Complete 2015 Data

This UWMP includes complete water use and planning data for calendar year 2015.

2.4.3 Units of Measure

This UWMP reports all volumes in units of million gallons (MG). Refer to Table 2-3.

Table 2-3: Agency Identification (DWR Table 2-3)

Table 2-3: Agency Identification	
Type of Agency (select one or both)	
☐	Agency is a wholesaler
☑	Agency is a retailer
Fiscal or Calendar Year (select one)	
☑	UWMP Tables Are in Calendar Years
☐	UWMP Tables Are in Fiscal Years
If Using Fiscal Years Provide Month and Date that the Fiscal Year Begins (mm/dd)	
Units of Measure Used in UWMP (select from Drop down)	
Unit	MG
NOTES:	

2.5 Coordination and Outreach

CWC 10631

(j) 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 (c). 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 (c).

2.5.1 Wholesale and Retail Coordination

MDMWC does not rely upon water supply from a wholesale agency as supply is provided exclusively from MDMWC groundwater wells; therefore, CWC section 10631 does not apply.

2.5.2 Coordination with Other Agencies and Community

CWC 10620

(d)(2) 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.

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 the plan...

Coordination of the preparation of UWMPs is important in order to maintain consistency in planning and reporting, and to consider the interests of interested parties. MDMWC has provided notification to the following entities encouraging input for the 2015 UWMP (see Appendix E).

- CVWD
- IWA
- City of La Quinta
- County of Riverside
- MDMWC customers

CVWD and IWA are both water suppliers that are located directly adjacent to MDMWC, share the same groundwater supply, and are involved in regional supply management. MDMWC also serves customers in a portion of the City of La Quinta, and Bermuda Dunes, a census-designated place (CDP) in Riverside County.

2.5.3 Notice to Cities and Counties

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.

Pursuant to CWC 10621, MDMWC has provided 60-day notices for the public/adoption hearing to the City of La Quinta and County of Riverside (see Appendix E). The letters of notice were sent out on November 10, 2017 for the public/adoption hearing at the Bermuda Dunes Community Center (78-

400 Avenue 42, Bermuda Dunes, CA 29903) on January 18, 2018. Notification was published in the Desert Sun and The Public Record newspapers on January 4, 2018 and January 11, 2018, and a copy of the draft UWMP was made available on MDMWC's website (http://www.myomawater.com/) on December 18, 2017.

3. System Description

This section includes a description of MDMWC's water system, service area, climate, population projections, and other water agencies in the region.

3.1 General Description

CWC 10631

Describe the service area of the supplier…

The Myoma Dunes Mutual Water Company (MDMWC) is a retail urban water supplier that was established in 1953 to provide potable water service to the community of Myoma, which was later renamed to Bermuda Dunes after the Bermuda Dunes Country Club (BDCC), constructed in 1958. MDMWC has grown over the years, seeing housing booms in the mid '80s, late '90s, and mid 2000s, and now provides service to both Bermuda Dunes and a portion of the City of La Quinta. MDMWC is a mutual water company that is governed by a four-member Board of Directors.

MDMWC's service area is located within the Coachella Valley in Southern California. Located in the Salton Trough roughly 100 miles east of Los Angeles, CA, the Coachella Valley lies primarily in Riverside County with portions extending into northern San Diego County and Imperial County. The Little San Bernardino Mountains, San Jacinto Mountains, and Santa Rosa Mountains surround the Coachella Valley on three sides, with the Salton Sea located to the south. MDMWC's service area is approximately 2.6 square miles, generally bound by the I-10 Freeway to the north, Washington Street to the west, Fred Waring Drive to the south, and Jefferson Street to the east. There is a small area of homes in the center of the MDMWC service area that is served by CVWD (see Exhibit 3-2).

The service area is predominantly comprised of single-family residential demands, with outdoor water use being a major component of this demand category. The service area also includes multi-family residential, commercial, and landscape irrigation demands. Currently, the BDCC and Bermuda Dunes Airport irrigation demands are met with private wells, not MDMWC potable water. The service area is near build-out, with some small pockets of potential development, more so towards the northern and western edges of the service area.

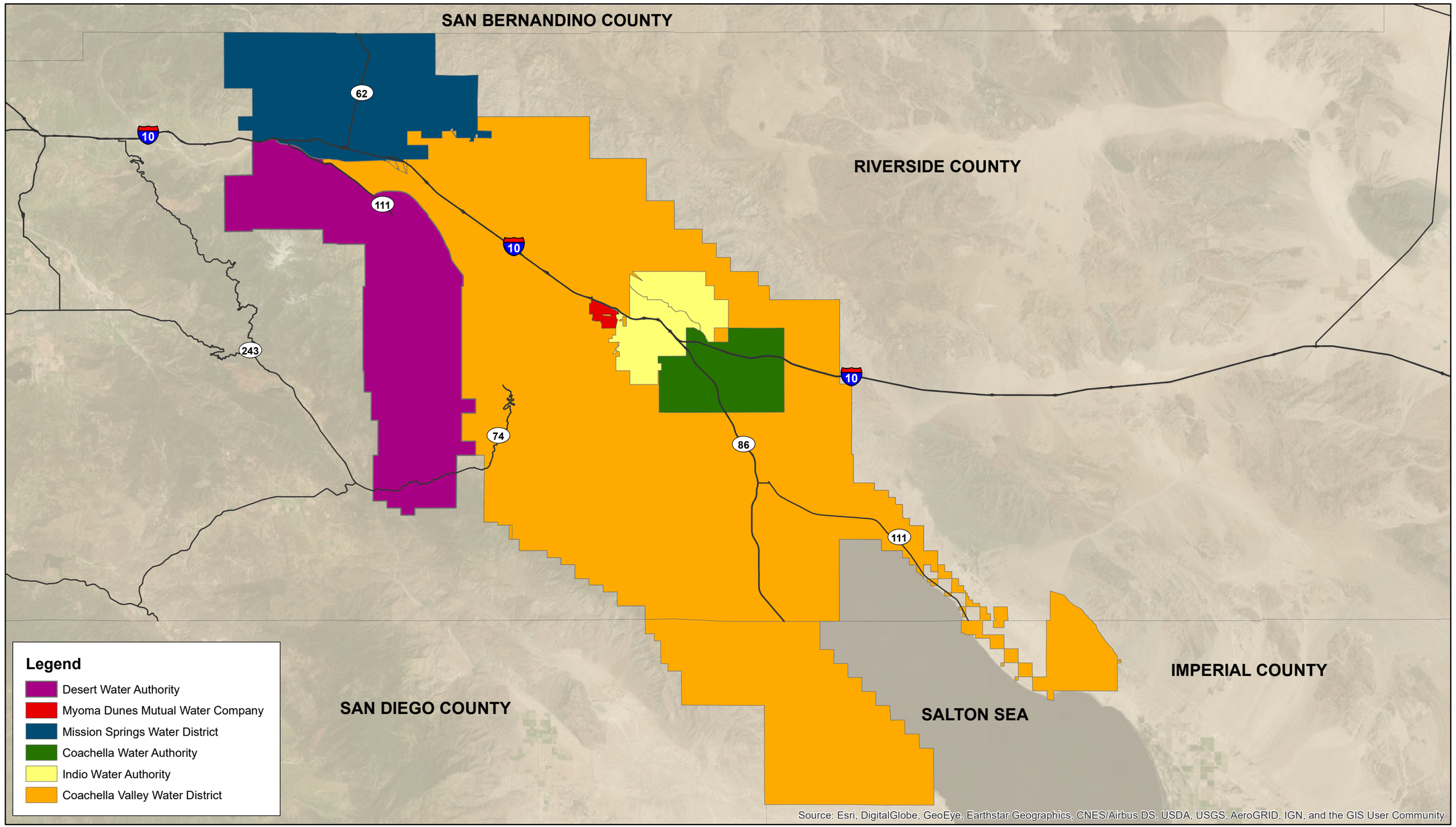
MDMWC serves its customers through a network of pressurized water distribution facilities. Myoma's water supply source consists solely of groundwater from the Whitewater River (Indio) Subbasin. Water is extracted via five active groundwater wells with a total nominal production capacity of 10,300 gallons per minute. Two of the wells pump directly into two respective 1 million gallon reservoirs, which serve as forebays to the distribution system. Two booster stations with nominal capacities totaling 7,500 gallons per minute deliver water from the forebays into the distribution system. The other three remaining wells pump directly into the distribution system. The distribution system consists of a single pressure zone that is operated at pressures from approximately 70 to 100 psi. Current treatment consists of wellhead chlorine injection. MDMWC is not interconnected with any other water purveyor and is completely reliant upon its own groundwater well supply and storage.

3.1.1 Water Agencies in the Region

In addition to MDMWC, the following water agencies are also present in the Coachella Valley:

- Mission Springs Water District
- Desert Water Agency
- Coachella Valley Water District
- Indio Water Authority
- Coachella Water Authority

The service areas of these Coachella Valley water agencies in relation to MDMWC is illustrated in Exhibit 3-1.



0 5 10 20 Miles

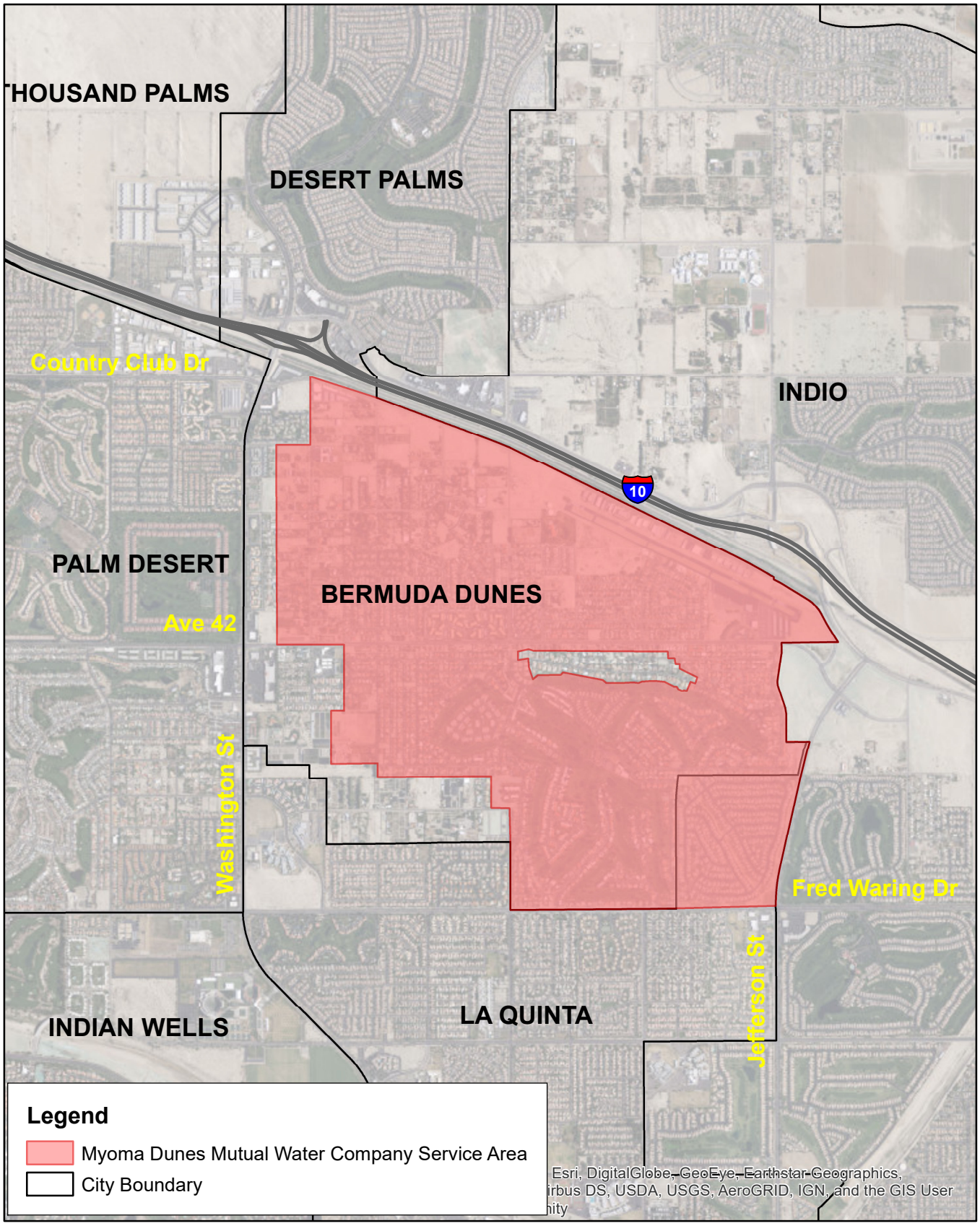
N

Exhibit 3-1
Regional Water Agency Boundaries

Myoma Dunes Mutual Water Company
2015 Urban Water Management Plan

3.2 Service Area Boundary Map

MDMWC's service area boundary is shown on Exhibit 3-2. MDMWC only provides potable water service, and therefore, has a single service area boundary. No changes have been made to the service area since the beginning of the baseline period (1995) through 2015.



0 0.35 0.7 1.4 Miles

Exhibit 3-2
Service Area

Myoma Dunes Water Co.

Hazen

Myoma Dunes Mutual Water Company
2015 Urban Water Management Plan

3.3 Service Area Climate

CWC 10631

Describe the service area of the supplier, including…climate…

The Coachella Valley has a unique climate due to it being situated between two mountain ranges, characterized as arid with year-round warm temperatures and relatively high winds. The climate stations nearest to the MDMWC service area are located in the City of Indio, which are considered representative of the MDMWC service area climate. The average maximum temperature is 88.9 degrees Fahrenheit (°F) and the average minimum temperature is 58.2 °F. Precipitation is minimal, typically occurring during the winter months, with an annual total average precipitation of 3.29 inches (in). MDMWC is located in Reference EvapoTranspiration (ETo) Zone 18 – Imperial Valley, Death Valley, and Palo Verde, described as "low desert areas with high sunlight and considerable heat advection", with a total annual ETo of 83.45 inches. Monthly climate data are summarized in Table 3-1.

Table 3-1: Monthly Climate Data

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual/ Total
Average Max. Temperature[1] (°F)	70.6	74.9	80.0	86.9	93.7	102.3	106.9	105.7	101.5	91.9	80.2	71.7	88.9
Average Min. Temperature[1] (°F)	39.2	44.3	50.4	57.4	64.4	71.9	77.8	76.9	70.3	59.4	46.7	39.4	58.2
Average Total Precipitation[1] (in)	0.64	0.51	0.31	0.11	0.05	0.01	0.12	0.25	0.31	0.20	0.26	0.54	3.29
ETo[2] (in)	2.97	3.53	6.28	8.39	10.55	10.95	10.78	9.66	8.25	5.85	3.63	2.61	83.45

[1] Monthly Climate Summary for Indio Fire Station (044259), 03/01/1894 to 06/10/2016, Western Regional Climate Center, https://wrcc.dri.edu.
[2] California Irrigation Management Information System (CIMIS) Monthly Average ETo Report, Station 200 – Indio 2, October 16, 2017.

The State of California experiences relatively high variability of weather patterns and precipitation, with drought cycles regularly occurring. The most recent event was a historic drought beginning in late 2011 with a State of Emergency declared in January 2014. The temporary water use restrictions instituted by the SWRCB in July 2014 and the Executive Order issued in April 2015 requiring MDMWC to reduce water usage by 36 percent has impacted MDMWC's water management and will have lasting impacts as water conservation becomes a way of life.

3.4 Service Area Population and Demographics

CWC 10631

Describe the service area of the supplier, including current and projected population …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.

3.4.1 Service Area Population

MDMWC serves the majority of Bermuda Dunes, which is a CDP in Riverside County, and a small portion of the City of La Quinta. Because MDMWC's service area is not substantially the same as a city or CDP, the DWR Population Tool methodology has been used for estimating MDMWC's current and historical service area population. DWR's Population Tool utilizes U.S. Census data and an electronic map of MDMWC's service area to obtain population data for census years. Using the number of service connections, the tool calculates the population for the non-census years.

To calculate the projected population growth, firstly the number and area of vacant parcels were measured based on aerial imagery and compared to the total service area acreage to calculate the undeveloped area, which was found to be approximately 10 percent (i.e., the MDMWC service area is currently 90 percent built-out). Assuming that the MDMWC service area will be fully built-out by year 2040, the populations between 2015 and 2040 were linearly interpolated. Current and projected populations within MDMWC's service area are presented in Table 3-2. Figure 3-1 graphically shows the historical and projected population growth to 2040.

Table 3-2: Current and Projected Service Area Population (DWR Table 3-1 R)

Table 3-1 Retail: Population - Current and Projected						
Population Served	2015	2020	2025	2030	2035	2040*(opt)*
	7,019	7,175	7,331	7,488	7,644	7,800
NOTES:						

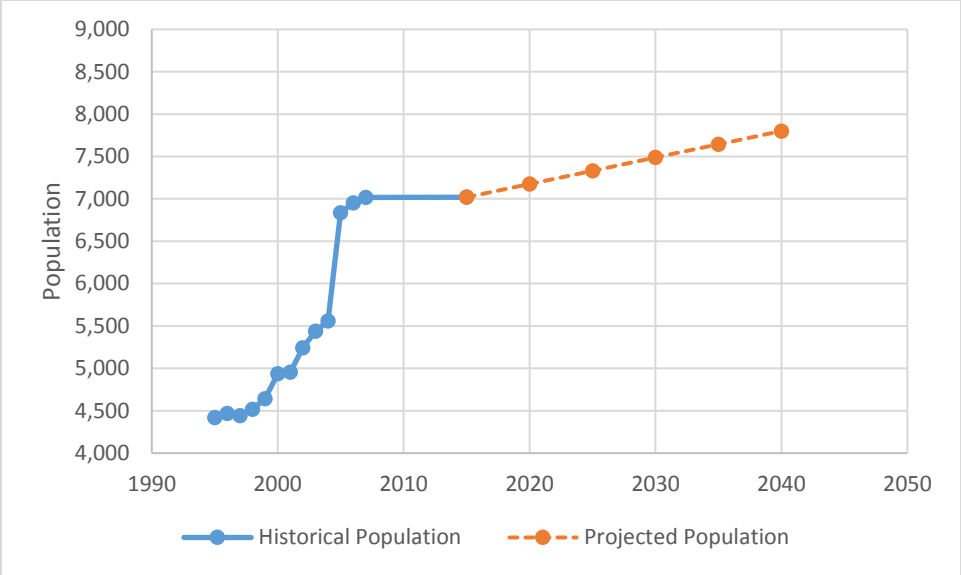


Figure 3-1: Historical and Projected Service Area Population

3.4.2 Other Demographic Factors

CWC 10631

Describe the service area of the supplier, including…other demographic factors affecting the supplier's water management planning.

The Coachella Valley region has a large seasonal population, with the majority of the influx typically occurring during the months of November to April. This seasonal population can be generally attributed to persons that wish to enjoy the mild winters of the Coachella Valley, as well as other recreational and tourist attractions.

In terms of water demand impacts, seasonal residents may not be counted toward census population, but often still use water throughout the year for landscape irrigation. This phenomenon can result in higher than typical per capita water usage. According to the 2011-2015 American Community Survey (ACS) 5-Year Estimates, of the 3,726 housing units in the Bermuda Dunes CDP, 888 of these (24 percent) were vacant, and 518 of these vacant units (58 percent) were used for seasonal, recreational, or occasional use. For the City of La Quinta, of the 24,125 housing units, 8,915 (37 percent) were vacant, with 7,102 (80 percent) used for seasonal, recreational, or occasional use.

A summary of the demographics of the Bermuda Dunes CDP and the City of La Quinta is presented in Table 3-3. Note that these values are not directly representative of MDMWC's as its water service boundary does not directly coincide with the CDP and City boundaries.

Table 3-3: Demographics

Description	Bermuda Dunes CDP Measure[1]	La Quinta Measure[1]
Population		
Census 2010 Total Population	7,282	37,467
2016 Population Estimate (as of July 1, 2016)	N/A	40,956
2015 ACS 5-Year Population Estimate	8,219	39,301
Median Age	33.3	45.7
Number of Companies	938	4,266
Educational Attainment: Percent high school graduate or higher	89.4%	89.6%
Total housing units	3,726	24,125
Median Household Income	60,020	71,091
Foreign Born Population	1,109	5,335
Individuals below poverty level	10.0%	9.6%
Race and Hispanic Origin		
White alone	6,407	31,602
Black or African American alone	551	615
American Indian and Alaska Native alone	110	25
Asian alone	31	1,190
Native Hawaiian and Other Pacific Islander alone	0	0
Some Other Race alone	804	4,317
Two or More Races	316	1,552
Hispanic or Latino (of any race)	2,944	13,031
White alone, Not Hispanic or Latino	4,462	23,811
Veterans	554	2,996

[1] U.S. Census Bureau, 2011-2015 American Community Survey 5-Year Estimates, https://factfinder.census.gov/, 10/17/2017.

4. System Water Use

This section describes current water use and water use projections within the MDMWC service area. Maintaining accurate water production and consumption records is important for water agencies to adequately track water use in order to evaluate existing water supply needs and plan for the future. Although the MDMWC service area is substantially built-out, there are still many complex factors that impact water use projections such as weather, demand restrictions, housing trends, landscaping conversions, etc. This Plan uses a 25-year planning period from 2015 to 2040.

4.1 Recycled versus Potable and Raw Water Demand

MDMWC does not currently serve any recycled water. Potential recycled water opportunities are discussed further in Section 6.

4.2 Water Uses by Sector

CWC 10631

(e)(1) 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, identifying the uses among water use sectors, including, but not necessarily limited to, all the following uses:

(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…

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

Water use for calendar year 2015 has been categorized by sector in accordance with the sectors accepted by the Water Use Efficiency (WUE) data online submittal tool. MDMWC's metering

categories generally coincide with the WUE sectors. MDMWC only supplies drinking water from groundwater wells for retail consumption (MDMWC does not supply raw water or recycled water), with water use provided in Table 4-1.

Table 4-1: Demands for Potable and Raw Water - Actual (DWR Table 4-1 R)

Table 4-1 Retail: Demands for Potable and Raw Water - Actual			
Use Type	2015 Actual		
	Additional Description	Level of Treatment When Delivered	Volume
Single Family		Drinking Water	721
Multi-Family		Drinking Water	58
Commercial		Drinking Water	112
Industrial		Drinking Water	0
Landscape		Drinking Water	48
Other	Metered construction, etc.	Drinking Water	38
Losses		Drinking Water	107
		TOTAL	1,083
NOTES:			

Demand projections were made by utilizing the 2015 per-capita water use, and the population projections and assumptions included in Section 3. Projections per demand sector were made assuming that the sector percentages for year 2015 remain relatively consistent as MDMWC builds out. Those sector percentages for the year of 2015 is as follows: Single Family (67%), Multi-Family (5%), Commercial (10%), Industrial (0%), Landscape (4%), Other (3%), and Losses (10%). The projected water use is included in Table 4-2.

Table 4-2: Demands for Potable and Raw Water - Projected (DWR Table 4-2 R)

Table 4-2 Retail: Demands for Potable and Raw Water - Projected						
Use Type	Additional Description	Projected Water Use				
		2020	2025	2030	2035	2040-opt
Single Family		737	753	769	785	801
Multi-Family		59	60	62	63	64
Commercial		114	117	119	122	124
Industrial		0	0	0	0	0
Landscape		49	50	51	52	53
Other	Metered construction, etc.	38	39	40	41	42
Losses		110	112	115	117	119
TOTAL		1,107	1,131	1,155	1,179	1,204
NOTES:						

Total water demands are listed in Table 4-3, which summarizes the values in Table 4-1 and Table 4-2.

Table 4-3: Total Water Demands (DWR Table 4-3 R)

Table 4-3 Retail: Total Water Demands						
	2015	2020	2025	2030	2035	2040 *(opt)*
Potable and Raw Water *From Tables 4-1 and 4-2*	1,083	1,107	1,131	1,155	1,179	1,204
Recycled Water Demand* *From Table 6-4*	0	0	0	0	0	0
TOTAL WATER DEMAND	1,083	1,107	1,131	1,155	1,179	1,204
NOTES:						

4.2.1 Demand Sectors Listed in Water Code

This section includes definitions for water sectors listed in the CWC that apply to MDMWC service area.

4.2.1.1 Single-Family Residential

A single-family dwelling unit. A lot with a free-standing building containing one dwelling unit that may include a detached secondary dwelling.

4.2.1.2 Multi-Family

Multiple dwelling units contained within one building or several buildings in a single complex.

4.2.1.3 Commercial

A water user that provides or distributes a product or service. CWC 10608.12 (d).

4.2.1.4 Landscape

Water connections supplying water solely for landscape irrigation. Such landscapes may be associated with multi-family, commercial, industrial, or institutional/governmental sites, but are considered a separate water use sector if the connection is solely for landscape irrigation.

4.2.1.5 Distribution System Losses

Reporting of system losses is required by the CWC in the 2015 UWMPs. See Section 4.3 and the Guidebook's Appendix L for the methodology for calculating system losses.

4.2.2 Demand Sectors in Addition to Those Listed in Water Code

This section describes demand sectors in addition to those listed in the CWC.

4.2.2.1 Other

Other metered water use that is not assigned a specific billing category, such as metered construction use, etc.

4.3 Distribution System Water Losses

CWC 10631

(e)(1) 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, identifying the uses among water use sectors, including, but not necessarily limited to, all of the following uses…

(J) Distribution system water loss

(3)(A) For the 2015 urban water management plan update, the distribution system water loss shall be quantified for the most recent 12-month period available. For all subsequent

updates, the distribution system water loss shall be quantified for each of the five years preceding the plan update.

(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

Distribution system water losses (also known as "real losses") are the physical water losses from the water distribution system as well as storage facilities, up to the point of customer consumption. Apparent losses (also known as "paper losses") include losses due to water theft, metering inaccuracies, or data errors. Combined, these two components make up total water losses. MDMWC water losses for year 2015 have been estimated using the American Water Works Association (AWWA) Method, covered in AWWA M36 – Water Audits and Loss Control Programs, utilizing the AWWA Water Audit Software (WAS) version 5.0. In summary for 2015, MDMWC supplied a total of 1,083.2 MG and metered a total of 975.8 MG, resulting in a total Non-Revenue Water (NRW) of 107.4 MG. Of the NRW, 13.54 MG of unbilled authorized consumption was calculated using AWWA's standard value of 1.25 percent of the total water supplied, resulting in 93.86 MG of water loss, as indicated in Table 4-4 (see Appendix F for more detail).

Table 4-4: 12-Month Water Loss Audit Reporting (DWR Table 4-4 R)

Table 4-4 Retail: 12 Month Water Loss Audit Reporting	
Reporting Period Start Date (mm/yyyy)	Volume of Water Loss*
01/2015	93.86
** Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet.*	
NOTES:	

4.4 Estimating Future Water Savings

CWC 10631.1

(e)(4)(A) If available and applicable to an urban water supplier, water use projections may 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.

The water use projections in Section 4.2 do not account for any future estimated water savings as MDMWC does not currently anticipate adopting any specific codes, standards, ordinances, or other type of plan that would result in water savings.

4.5 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 multi-family 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.

California Health and Safety Code 50079.5

(a) "Lower income households" means persons and families whose income does not exceed the qualifying limits for lower income families… In the event the federal standards are discontinued, the department shall, by regulation, establish income limits for lower income households for all geographic areas of the state at 80 percent of area median income, adjusted for family size and revised annually.

The portion of MDMWC's service area north of Avenue 42 is considered low income housing based on the DWR's Disadvantaged Communities (DAC) mapping tool. A DAC is those with an annual median household income (MHI) that is less than 80 percent of the Statewide annual MHI (Public Resources Code Section 75005 (g)). This information is based on the ACS 2010-2014 5-year data.

Using geographic meter records, the number of connections and water use within the DAC was determined. Using the same projection method described in Section 4.2, the projected number of lower income connections and corresponding water use was calculated, summarized in Table 4-5.

Table 4-5: Current and Projected Water Use for Lower Income Households

	2015	2020	2025	2030	2035	2040
Lower Income Connections	671	686	701	716	731	746
Water Use (MG)	289	295	302	308	315	321

A summary of inclusions of estimated future water savings and lower income household water use is provided in Table 4-6.

Table 4-6: Inclusion in Water Use Projections (DWR Table 4-5 R)

Table 4-5 Retail Only: Inclusion in Water Use Projections	
Are Future Water Savings Included in Projections? (Refer to Appendix K of UWMP Guidebook)	No
If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, etc… utilized in demand projections are found.	
Are Lower Income Residential Demands Included In Projections?	Yes
NOTES:	

5. SB X7-7 Baselines and Targets

The Water Conservation Act of 2009 (also known as Senate Bill X7-7, or SB X7-7) is a California State law enacted on November 10, 2009 to amend and repeal portions of the CWC requiring that the State achieve a 20 percent reduction in urban per capita water use in California by December 31, 2020. The bill also requires that the State make incremental progress towards the State's target by reducing urban per capita water use by at least 10 percent on or before December 31, 2015. Each urban water supplier is responsible for determining baseline periods and baseline per capita water usage along with 2015 and 2020 urban water use targets by using one of the acceptable methods in accordance with the CWC and *Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use* (DWR, February 2016) document. The bill separately addresses agricultural, commercial, industrial, and institutional water users. The purpose of the bill is to support the State's 20x2020 Water Conservation Plan to increase water efficiency and improve the Sacramento-San Joaquin Delta ecosystem among other potential benefits such as reducing greenhouse gas emissions, reducing or delaying the capital cost of new infrastructure, reducing electricity usage, reducing demand for wastewater treatment, and reducing chemicals entering the environment via landscape conservation.

5.1 Updating Calculations from 2010 UWMP

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).

Methodologies DWR 2011, Methodology 2 Service Area Population

Page 27 - Water suppliers may revise population estimates for baseline years between 2000 and 2010 when 2010 census information becomes available. 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.

This Plan provides updated service area population estimates based on 2000 and 2010 U.S. Census data, and an updated 2020 urban water use target.

5.1.1 Update of Target Method

MDMWC's 2020 Urban Water Use Target was updated utilizing Target Method 1: Eighty percent of the water supplier's baseline per capita water use, and the associated methods for the supporting data as described in further detail herein.

5.1.2 Required Use of 2010 U.S. Census Data

Baseline service area population calculations have been revised using 2000 and 2010 U.S. Census data.

5.1.3 SB X7-7 Verification Form

Select SB X7-7 Verification Form Tables have been included herein with the complete set included in Appendix C to demonstrate compliance with SB X7-7.

5.2 Baseline Periods

CWC 10608.20

(e) An urban retail water supplier shall include in its urban water management plan due in 2010…the baseline daily per capita water use…along with the bases for determining those estimates, including references to supporting data.

(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).

This Plan provides updated baseline daily per capita water use in accordance with the CWC and DWR's *Methodologies*, and an updated 2020 urban water use target. Daily per capita water use must be calculated and reported for two baseline periods: 1) a 10- to 15-year baseline period (Baseline Gallons per Capita per Day (GPCD)) and 2) a 5-year baseline period (Target Confirmation). The actual duration of the 10- to 15-year baseline period is dependent upon the percentage of demand served by recycled water in 2008 as described in further detail in the following section.

5.2.1 Determination of the 10-15 Year Baseline Period (Baseline GPCD)

CWC 10608.12

(b) "Base daily per capita water use" means any of the following:

(1) The urban retail water supplier's estimate of its average gross water use, reported in gallons per capita per day and calculated over a continuous 10-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.

(2) For an urban retail water supplier that meets at least 10 percent of its 2008 measured retail water demand through recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier, the urban retail water supplier may extend the calculation described in paragraph (1) up to an additional five years to a maximum of a continuous 15-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.

Because MDMWC does not supply any recycled water, the baseline period shall be a continuous duration of 10-years in accordance with the CWC. The selected 10-year baseline period is in calendar years from 1995 to 2004. This Plan provides an updated 10-year Baseline GPCD.

5.2.2 Determination of the 5-Year Baseline Period (Target Confirmation)

CWC 10608.12 (b)

(3) For the purposes of Section 10608.22, the urban retail water supplier's estimate of its average gross water use, reported in gallons per capita per day and calculated over a continuous five-year period ending no earlier than December 31, 2007, and no later than December 31, 2010.

MDMWC's 5-year baseline period is selected as the period in calendar years from 2003 to 2007. This Plan provides an updated 5-year Target Confirmation.

Refer to Table 5-1 for a summary of the baseline period ranges. All years reported are in calendar years, and all water use figures are reported in units of million gallons in accordance with the most commonly used unit in MDMWC' s production records.

Table 5-1: Baseline Period Ranges (SB X7-7 Table 1)

Baseline	Parameter	Value	Units
10-year baseline period	2008 total water deliveries	1,636	Million Gallons
	2008 total volume of delivered recycled water	-	Million Gallons
	2008 recycled water as a percent of total deliveries	0.00%	Percent
	Number of years in baseline period[1, 2]	10	Years
	Year beginning baseline period range	1995	
	Year ending baseline period range[3]	2004	
5-year baseline period	Number of years in baseline period	5	Years
	Year beginning baseline period range	2003	
	Year ending baseline period range[4]	2007	

[1]If the 2008 recycled water percent is less than 10 percent, then the first baseline period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first baseline period is a continuous 10- to 15-year period. [2] The Water Code requires that the baseline period is between 10 and 15 years. However, DWR recognizes that some water suppliers may not have the minimum 10 years of baseline data.

[3]The ending year must be between December 31, 2004 and December 31, 2010.

[4]The ending year must be between December 31, 2007 and December 31, 2010.

NOTES:

5.3 Service Area Population

CWC 10608.20

(e) An urban retail water supplier shall include in its urban water management plan due in 2010…the baseline per capita water use,…along with the bases for determining those estimates, including references to supporting data.

(f) When calculating per capita values for the purposes of this chapter, an urban retail water supplier shall determine population using federal, state, and local population reports and projections.

CWC10644

(a)(2) The plan…shall include any standardized forms, tables or displays specified by the department.

MDMWC serves the majority of the Bermuda Dunes CDP and a small portion of the City of La Quinta. Because MDMWC's service area is not substantially the same as a city or CDP ("substantially the same" defined as service area boundaries corresponding by 95 percent or more with the boundaries of a city or CDP during the baseline period), the DWR Population Tool methodology has been used for estimating MDMWC's service area population. DWR's Population Tool utilizes U.S. Census data and an electronic map of MDMWC's service area to obtain population data for census years. Using the number of service connections, the tool calculates the population for the non-census years.

The MDMWC service area population, based on the DWR Population Tool, is indicated in Table 5-2. From the period of 1995 to 2004, MDMWC experienced a relatively constant population growth on the order of 2 to 3 percent, with a relatively large jump in population around 2004 and 2005 of approximately 20 percent due to the addition of the Esplanade community in La Quinta. Since 2006, population growth in the MDMWC service area has been relatively slow, averaging a growth rate of approximately 0.5 percent per year. Approximately 90 percent of the MDMWC service area is already developed and this relatively slow growth rate is expected to continue as the service area approaches buildout. There is limited opportunities for new development and any potential redevelopment, is anticipated to have a relatively minor impact on demands.

Table 5-2: Service Area Population (SB X7-7 Table 3)

SB X7-7 Table 3: Service Area Population		
Year		Population
10 to 15 Year Baseline Population		
Year 1	1995	4,418
Year 2	1996	4,470
Year 3	1997	4,442
Year 4	1998	4,518
Year 5	1999	4,642
Year 6	2000	4,936
Year 7	2001	4,956
Year 8	2002	5,244
Year 9	2003	5,440
Year 10	2004	5,558
Year 11		
Year 12		
Year 13		
Year 14		
Year 15		
5 Year Baseline Population		
Year 1	2003	5,440
Year 2	2004	5,558
Year 3	2005	6,837
Year 4	2006	6,954
Year 5	2007	7,017
2015 Compliance Year Population		
2015		7,019
NOTES:		

5.4 Gross Water Use

CWC 10608.12

(g) "Gross Water Use" means the total volume of water, whether treated or untreated, entering the distribution system of an urban retail water supplier, excluding all of the following:

(1) Recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier

(2) The net volume of water that the urban retail water supplier places into long term storage

(3) The volume of water the urban retail water supplier conveys for use by another urban water supplier

(4) The volume of water delivered for agricultural use, except as otherwise provided in subdivision (f) of Section 10608.24.

California Code of Regulations Title 23 Division 2 Chapter 5.1 Article

Section 596 (a) An urban retail water supplier that has a substantial percentage of industrial water use in its service area is eligible to exclude the process water use of existing industrial water customers from the calculation of its gross water use to avoid a disproportionate burden on another customer sector.

One hundred percent of MDMWC's supply entering the distribution system is provided by groundwater wells owned and operated by MDMWC. All groundwater wells pump from the Whitewater River (Indio) Subbasin. As MDMWC does not utilize recycled water, does not place water into long term storage, does not convey water to another urban supplier, does not deliver water for agricultural uses, and does not deliver water to industrial users, no deductions to gross water use have been made. See Table 5-3 for a summary of annual gross water use.

Table 5-3: Annual Gross Water Use (SB X7-7 Table 4)

SB X7-7 Table 4: Annual Gross Water Use *								
Baseline Year		Volume Into Distribution System	Deductions					Annual Gross Water Use
			Exported Water	Change in Dist. System Storage (+/-)	Indirect Recycled Water	Water Delivered for Agricultural Use	Process Water	
10 to 15 Year Baseline - Gross Water Use								
Year 1	1995	1,521	-	-	-	-	-	1,521
Year 2	1996	1,492	-	-	-	-	-	1,492
Year 3	1997	1,455	-	-	-	-	-	1,455
Year 4	1998	1,411	-	-	-	-	-	1,411
Year 5	1999	1,454	-	-	-	-	-	1,454
Year 6	2000	1,456	-	-	-	-	-	1,456
Year 7	2001	1,492	-	-	-	-	-	1,492
Year 8	2002	1,640	-	-	-	-	-	1,640
Year 9	2003	1,613	-	-	-	-	-	1,613
Year 10	2004	1,670	-	-	-	-	-	1,670
Year 11	0	-			-	-	-	-
Year 12	0	-			-		-	-
Year 13	0	-			-		-	-
Year 14	0	-			-		-	-
Year 15	0	-			-		-	-
10 - 15 year baseline average gross water use								**1,520**
5 Year Baseline - Gross Water Use								
Year 1	2003	1,613	-	-	-	-	-	1,613
Year 2	2004	1,670	-	-	-	-	-	1,670
Year 3	2005	1,622	-	-	-	-	-	1,622
Year 4	2006	1,678	-	-	-	-	-	1,678
Year 5	2007	1,691	-	-	-	-	-	1,691
5 year baseline average gross water use								**1,655**
2015 Compliance Year - Gross Water Use								
2015		1,083	-	-	-	-	-	**1,083**
* NOTE that the units of measure must remain consistent throughout the UWMP, as reported in Table 2-3								
NOTES:								

As previously stated, MDMWC's groundwater wells are the only source of water supply to the distribution system. No meter error adjustment has been made. See Table 5-4.

Table 5-4: Volume Entering the Distribution System (SB X7-7 Table 4-A)

SB X7-7 Table 4-A: Volume Entering the Distribution System Complete one table for each source.				
Name of Source		Whitewater River (Indio) Subbasin		
This water source is:				
☑	The supplier's own water source			
☐	A purchased or imported source			
Baseline Year*3*		Volume Entering Distribution System	Meter Error Adjustment* *Optional (+/-)*	Corrected Volume Entering Distribution System
10 to 15 Year Baseline - Water into Distribution System				
Year 1	1995	1,521	-	1,521
Year 2	1996	1,492	-	1,492
Year 3	1997	1,455	-	1,455
Year 4	1998	1,411	-	1,411
Year 5	1999	1,454	-	1,454
Year 6	2000	1,456	-	1,456
Year 7	2001	1,492	-	1,492
Year 8	2002	1,640	-	1,640
Year 9	2003	1,613	-	1,613
Year 10	2004	1,670	-	1,670
Year 11	0			-
Year 12	0			-
Year 13	0			-
Year 14	0			-
Year 15	0			-
5 Year Baseline - Water into Distribution System				
Year 1	2003	1,613	-	1,613
Year 2	2004	1,670	-	1,670
Year 3	2005	1,622	-	1,622
Year 4	2006	1,678	-	1,678
Year 5	2007	1,691	-	1,691
2015 Compliance Year - Water into Distribution System				
2015		1,083	-	1,083
** Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document*				
NOTES:				

5.5 Baseline Daily Per Capita Water Use

Baseline daily per capita water use is calculated based on the gross water entering the distribution system and the service area populations established in the previous sections for the 10-year and 5-year baseline periods. MDMWC's 10-year and 5-year baseline urban per capita water use are 859 GPCD and 721 GPCD, respectively. These values are relatively high when compared to the Colorado River hydrologic region 20x2020 Water Conservation Plan Regional Target of 211 GPCD. Per capita water use has been historically high in the MDMWC service area, which may be attributed in part to the following reasons:

- Hot, dry climate with very little rainfall
- Irrigated turf yards
- Swimming pools
- Past water use habits from a historical flat water rate
- Vacation homes and seasonal habitants underrepresenting service area population

It should be noted that the BDCC golf course, which occupies a relatively large portion of MDMWC's service area, irrigates with a private well supply – MDMWC only supplies potable water to BDCC's clubhouse, restrooms, and drinking fountains. In more recent years, MDMWC's GPCD has substantially decreased as evidenced by the 2015 Compliance Year GPCD of 423 GPCD. A summary of GPCD calculations are provided in Table 5-5.

Table 5-5: Gallons per Capita per Day (GPCD) (SB X7-7 Table 5)

SB X7-7 Table 5: Gallons Per Capita Per Day (GPCD)				
Baseline Year		Service Area Population	Annual Gross Water Use	Daily Per Capita Water Use (GPCD)
10 to 15 Year Baseline GPCD				
Year 1	1995	4,418	1,521	943
Year 2	1996	4,470	1,492	914
Year 3	1997	4,442	1,455	897
Year 4	1998	4,518	1,411	856
Year 5	1999	4,642	1,454	858
Year 6	2000	4,936	1,456	808
Year 7	2001	4,956	1,492	825
Year 8	2002	5,244	1,640	857
Year 9	2003	5,440	1,613	813
Year 10	2004	5,558	1,670	823
Year 11	0	-	-	
Year 12	0	-	-	
Year 13	0	-	-	
Year 14	0	-	-	
Year 15	0	-	-	
10-15 Year Average Baseline GPCD				**859**
5 Year Baseline GPCD				
Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use
Year 1	2003	5,440	1,613	813
Year 2	2004	5,558	1,670	823
Year 3	2005	6,837	1,622	650
Year 4	2006	6,954	1,678	661
Year 5	2007	7,017	1,691	660
5 Year Average Baseline GPCD				**721**
2015 Compliance Year GPCD				
2015		7,019	1,083	**423**
NOTES:				

5.6 2015 and 2020 Targets

CWC 10608.20

(e) An urban retail water supplier shall include in its urban water management plan due in 2010. . . urban water use target, interim urban water use target,…along with the bases for determining those estimates, including references to supporting data (10608.20(e)).

CWC 10608.20

(g) An urban retail water supplier may update its 2020 urban water use target in its 2015 urban water management plan…

This Plan provides an updated target method and 2020 urban water use target. Of the four methods set forth by CWC 10608.20 and DWR's Methodologies, Method 1 has been utilized to calculate MDMWC's 2020 Target, which is 80 percent of the urban retail water supplier's baseline per capita daily water use. The 2020 Target, utilizing Method 1, has been calculated to be 687 GPCD, which is 80 percent of the 10-year baseline of 859 GPCD (see Table 5-6).

Table 5-6: 2020 Target Method 1 (SB X7-7 Table 7-A)

SB X7-7 Table 7-A: Target Method 1 20% Reduction	
10-15 Year GPCD	**2020 Target GPCD**
859	**687**
NOTES:	

5.7 5-Year Baseline – 2020 Target Confirmation

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.

Because MDMWC has a base daily per capita water use above 100 GPCD, the 5-year baseline 2020 Target confirmation was performed. The 2020 Target must be the lesser of 95 percent of the 5-year baseline period GPCD and 80 percent of the 10-year baseline period GPCD. Although the values are relatively similar, 95 percent of the 5-year baseline period daily per capita water use at 685 GPCD is slightly lower, and therefore has been confirmed as the 2020 Target GPCD. See Table 5-7.

Table 5-7: Confirm Minimum Reduction for 2020 Target (SB X7-7 Table 7-F)

SB X7-7 Table 7-F: Confirm Minimum Reduction for 2020 Target			
5 Year Baseline GPCD	Maximum 2020 Target[1]	Calculated 2020 Target[2]	**Confirmed 2020 Target**
721	685	687	**685**
[1]Maximum 2020 Target is 95% of the 5 Year Baseline GPCD except for suppliers at or below 100 GPCD. *[2]2020 Target is calculated based on the selected Target Method, see SB X7-7 Table 7 and corresponding tables for agency's calculated target.*			
NOTES:			

5.8 2015 Interim Urban Water Use Target

The 2015 Interim Target GPCD is the midpoint value between the 10-year baseline period GPCD and the confirmed 2020 Target. As shown in Table 5-8, the 2015 Interim Target GPCD, based on the 10-year baseline of 859 GPCD and the confirmed 2020 Target of 685 GPCD, is equal to 772 GPCD.

Table 5-8: 2015 Interim Target GPCD (SB X7-7 Table 8)

SB X7-7 Table 8: 2015 Interim Target GPCD		
Confirmed 2020 Target	10 year Baseline GPCD	**2015 Interim Target GPCD**
685	859	**772**
NOTES:		

5.9 Baselines and Targets Summary

A summary of the 10-year and 5-year baseline periods, GPCDs, Interim Target, and Confirmed 2020 Target is provided in Table 5-9.

Table 5-9: Baselines and Targets Summary (DWR Table 5-1)

Baseline Period	Start Year	End Year	Average Baseline GPCD*	2015 Interim Target *	Confirmed 2020 Target*
10-year	*1995*	*2004*	*859*	*772*	*685*
5 Year	*2003*	*2007*	*721*		
*All values are in Gallons per Capita per Day (GPCD)					
NOTES:					

5.10 2015 Compliance Daily per Capita Water Use (GPCD)

CWC 10608.12

(e) "Compliance daily per-capita water use" means the gross water use during the final year of the reporting period…

CWC 10608.24

(a) Each urban retail water supplier shall meet its interim urban water use target by December 31, 2015.

CWC 10608.20

(e) An urban retail water supplier shall include in its urban water management plan due in 2010 . . . compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.

5.10.1 Adjustments to 2015 Gross Water Use

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.

Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use, Methodology 4

This section discusses adjustments to compliance-year GPCD because of changes in distribution area caused by mergers, annexation, and other scenarios that occur between the baseline and compliance years.

No adjustments have been made to MDMWC's actual 2015 GPCD. As shown in Table 5-10, MDMWC is in compliance with SB X7-7, having achieved the targeted reduction for 2015 of 772 GPCD with an actual 2015 GPCD of 423, representing a reduction in GPCD from the 10-year baseline by approximately 50 percent, which is also below the 2020 water use target. The reduced per capita consumption already achieved is largely expected to continue as water use habits developed during the recent drought period become more permanent, turf is replaced with more drought-tolerant landscaping, alternative water supply sources are secured, and tiered rate structures are utilized.

Table 5-10: 2015 Compliance (DWR Table 5-2)

Actual 2015 GPCD*	2015 Interim Target GPCD*	**Optional Adjustments to 2015 GPCD** Enter "0" if no adjustment is made *From Methodology 8*					2015 GPCD* *(Adjusted if applicable)*	Did Supplier Achieve Targeted Reduction for 2015? Y/N
		Extraordinary Events*	Economic Adjustment*	Weather Normalization*	TOTAL Adjustments*	Adjusted 2015 GPCD*		
423	772	0	0	0	0	423	423	Yes
**All values are in Gallons per Capita per Day (GPCD)*								
NOTES:								

6. System Supplies

This section describes and quantifies the sources of water available to MDMWC. Within the MDMWC service area, the only direct water source employed for potable urban water use is local groundwater from MDMWC wells. This groundwater is pumped from the Whitewater (Indio) Subbasin of the Coachella Valley hydrologic basin.

6.1 Purchased or Imported Water

MDMWC does not independently purchase, exchange, or import water from any source outside of Coachella Valley. All of MDMWC's demands are met through their groundwater wells located within the MDMWC service area; however, CVWD and DWA have contracted for State Water Project (SWP) and Colorado River water used to recharge the Whitewater (Indio) Subbasin from which MDMWC extracts all of its groundwater supplies. Colorado River water is delivered to the Coachella Valley via the Coachella Canal (Canal), while SWP water is exchanged for Colorado River water. A portion of this water is used to replenish the groundwater basin at the western and eastern ends of the Whitewater (Indio) Subbasin (Exhibit 6-1). MDMWC customer bills include a replenishment fee to cover the Replenishment Assessment Charge (RAC) levied by CVWD that partially funds the replenishment of the aquifer, discussed in further detail in Section 6.2.3.

6.2 Groundwater

The primary source of potable water in the Coachella Valley is groundwater. The Coachella Valley Groundwater Basin (DWR Basin No. 7-21) encompasses the entire floor of the Coachella Valley and consists of four subbasins as identified in California Department of Water Resources Bulletin 118 (DWR Bulletin 118, 2003): San Gorgonio Pass, Whitewater (Indio), Mission Creek, and Desert Hot Springs. The United States Geological Survey (USGS) recognizes a fault-bounded portion of the western end of the Whitewater (Indio) Subbasin as the Garnet Hill Subbasin (a fifth subbasin). Of these subbasins, the Whitewater (Indio) subbasin is the only one from which MDMWC extracts groundwater. The majority of the groundwater in the Whitewater River Subbasin originated from deep percolation of rainfall, stream runoff from the adjacent mountains, and artificial recharge using Colorado River water.

Groundwater is the sole source of supply for MDMWC. MDMWC supplies are primarily from the eastern end of the Whitewater River Subbasin. Because the Whitewater River Subbasin is a non-adjudicated basin, MDMWC operates under overlying groundwater rights and pumps supplies from the aquifer as needed to meet demands within its service area.

6.2.1 Basin Description

CWC 10631

(b) If groundwater is identified as an existing or planned source of water available to the supplier, all of the following shall be included in the plan:

(2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater.

The boundaries between subbasins within the Coachella Valley groundwater basin are generally based upon faults that are effective barriers to the lateral movement of groundwater. Exhibit 6-1 shows the locations of the above described subbasins and recharge facilities.

The following is a list of the subbasins for the Coachella Valley Groundwater Basin (7-21), based on the DWR designations:

- Indio (also named Whitewater River) Subbasin (7-21.01)
- Mission Creek Subbasin (7-21.02)
- Desert Hot Springs Subbasin (7-21.03)
- San Gorgonio Pass Subbasin (7-21.04)

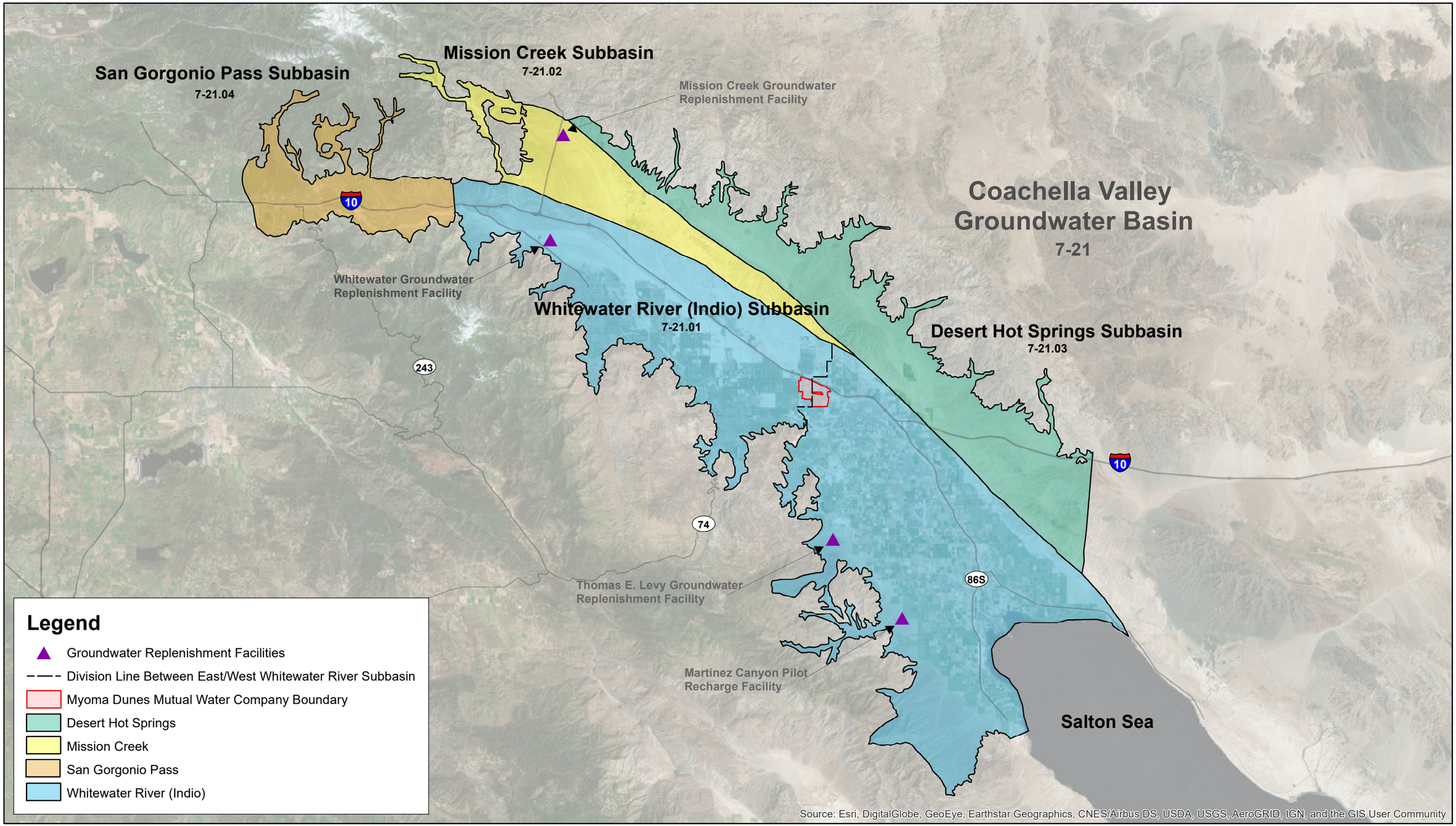
The Whitewater River Subbasin, designated the Indio Subbasin (Basin No. 7-21.01) in DWR Bulletin No. 118 (2003), underlies the major portion of the Coachella Valley floor and encompasses approximately 400 square miles. Beginning approximately one mile west of the junction of State Highway 111 and Interstate 10, the Whitewater River Subbasin extends southeast approximately 70 miles to the Salton Sea as shown in Exhibit 6-1.

The Whitewater River (Indio) subbasin underlies the cities of Palm Springs, Cathedral City, Rancho Mirage, Palm Desert, Indian Wells, La Quinta, Indio, and Coachella, and the unincorporated communities of Thousand Palms, Thermal, Bermuda Dunes (the MDMWD service area), Oasis, and Mecca. From about Indio southeasterly to the Salton Sea, the subbasin contains increasingly thick layers of silt and clay, especially in the shallower portions of the subbasin. These silt and clay layers, which are remnants of ancient lake bed deposits, impede the percolation of water applied for irrigation and limit groundwater replenishment opportunities to the westerly fringe of the subbasin (DWR 1964).

The CVWD Engineer's Report on Water Supply and Replenishment Assessment (CVWD Assessment Report, April 2017) provides the following description of the historical perspective of groundwater in the Whitewater River (Indio) Subbasin: In 1964, DWR estimated that the Coachella Valley Groundwater Basin contained a total of approximately 39.2 million acre-feet of water in the first 1,000 feet below the ground surface; much of this water originated as runoff from the adjacent mountains. Of this amount, approximately 28.8 million acre-feet of water was stored in the Whitewater River (Indio) Subbasin (DWR 1964). However, the amount of water in the Whitewater River (Indio) Subbasin has decreased over the years due to significant groundwater production occurring (CVWD Water Management Plan Update (WMPU), 2012). The natural supply of water to the northwestern part of the Coachella Valley is not keeping pace with the basin outflow, due mainly

to large consumptive uses created by the resort-recreation economy and permanent resident population. Imported SWP water allocations are utilized for replenishment in the western portion of the Whitewater River (Indio) Subbasin to replace consumptive uses created by the resort-recreation economy and permanent resident population.

As described in CVWD Engineer's report of April 2017 (CVWD Assessment Report April 2017), the Whitewater River (Indio) Subbasin is not adjudicated. From a management perspective, CVWD divides the portion of the subbasin within its service area into two areas of benefit (AOB) designated the West Whitewater River Subbasin AOB and the East Whitewater River Subbasin AOB. The dividing line between these two areas is an irregular line trending northeast to southwest between the Indio Hills north of the City of Indio and Point Happy in La Quinta (Exhibit 6-1). The West Whitewater River Subbasin AOB is jointly managed by CVWD and DWA under the terms of the 1976 Water Management Agreement. The East Whitewater River Subbasin AOB is managed by CVWD (CVWD WMPU, 2012). MDMWC pays a Recharge Assessment Charge based on recharge to the East Whitewater River Subbasin AOB.



0 5 10 20 Miles

Exhibit 6-1
Groundwater Subbasins

Myoma Dunes Mutual Water Company
2015 Urban Water Management Plan

6.2.2 Groundwater Management

CWC 10631

(b)… If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:

(1) A copy of any groundwater management plan adopted by the urban water supplier … or any other specific authorization for groundwater management.

(2)… 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.

Major water purveyors in the region make up the CVRWMG and jointly developed the Final Coachella Valley Integrated Regional Water Management Plan (IRWMP, 2010) for proper management of groundwater resources. The major topics for groundwater management include creating more opportunities for imported water supplies, water conservation and recharge, and source substitution, all to eliminate overdraft. The Coachella Valley Water Management Plan (CVWD WMPU, 2012), Mission Creek and Garnet Hill Subbasins Water Management Plan (Mission Creek/Garnet Hill WMP, 2013), Engineer's Reports on Water Supply and Replenishment Assessment (CVWD Assessment Report, April 2017), make up the guiding documents for groundwater management in the region.

Pursuant to CWC SGMA, the CVWD provided notice on November 6, 2015 of its election to serve as the GSA, for the portions of the Indio Sub-Basin (DWR Sub-Basin No. 7-21.01) and Mission Creek Sub-Basin (DWR Sub-Basin No. 7-21.02). Both sub-basins are designated as medium priority sub-basins by DWR. The MDMWD service area is within the area of CVWD GSA (Exhibit 6-2).

CVWD is a public agency of the State of California organized and operating under the County Water District Law, CWC section 30000, et seq, and the Coachella Valley Water District Merger Law, Water Code section 33100, et seq. CVWD has groundwater management powers under its enabling legislation and other applicable law. CVWD manages two replenishment assessment programs in the Whitewater River (Indio) Subbasin and one replenishment assessment program in the Mission Creek Sub-Basin. CVWD also implements the Coachella Valley Water Management Plan, updated in 2010, and the Mission Creek and Garnet Hill Water Management Plan. Both plans are implemented for the purpose of eliminating long term overdraft. CVWD relies on the Indio and Mission Creek Sub-Basins to help meet the water related needs of its customers. Participating in this GSA supports MDMWC's ongoing efforts to eliminate overdraft and ensure water supply sustainability for the MDMWC service area.

SAN BERNANDINO COUNTY

RIVERSIDE COUNTY

Coachella Valley Water District GSA

Indio Water Authority GSA

Coachella Water Authority GSA

SALTON SEA

IMPERIAL COUNTY

SAN DIEGO COUNTY

Legend

- Myoma Dunes Mutual Water Company
- Coachella Water Authority
- Desert Water Authority
- Mission Springs Water District
- Coachella Valley Water District
- Indio Water Authority
- Coachella Valley Groundwater Basin
- Coachella Water Authority GSA
- Coachella Valley Water District GSA
- Indio Water Authority GSA

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

0 5 10 20 Miles

N

Exhibit 6-2
Groundwater Sustainability Agency Boundaries

Myoma Dunes Water Co.

Hazen

Myoma Dunes Mutual Water Company
2015 Urban Water Management Plan

6.2.3 Overdraft Conditions

CWC 10631

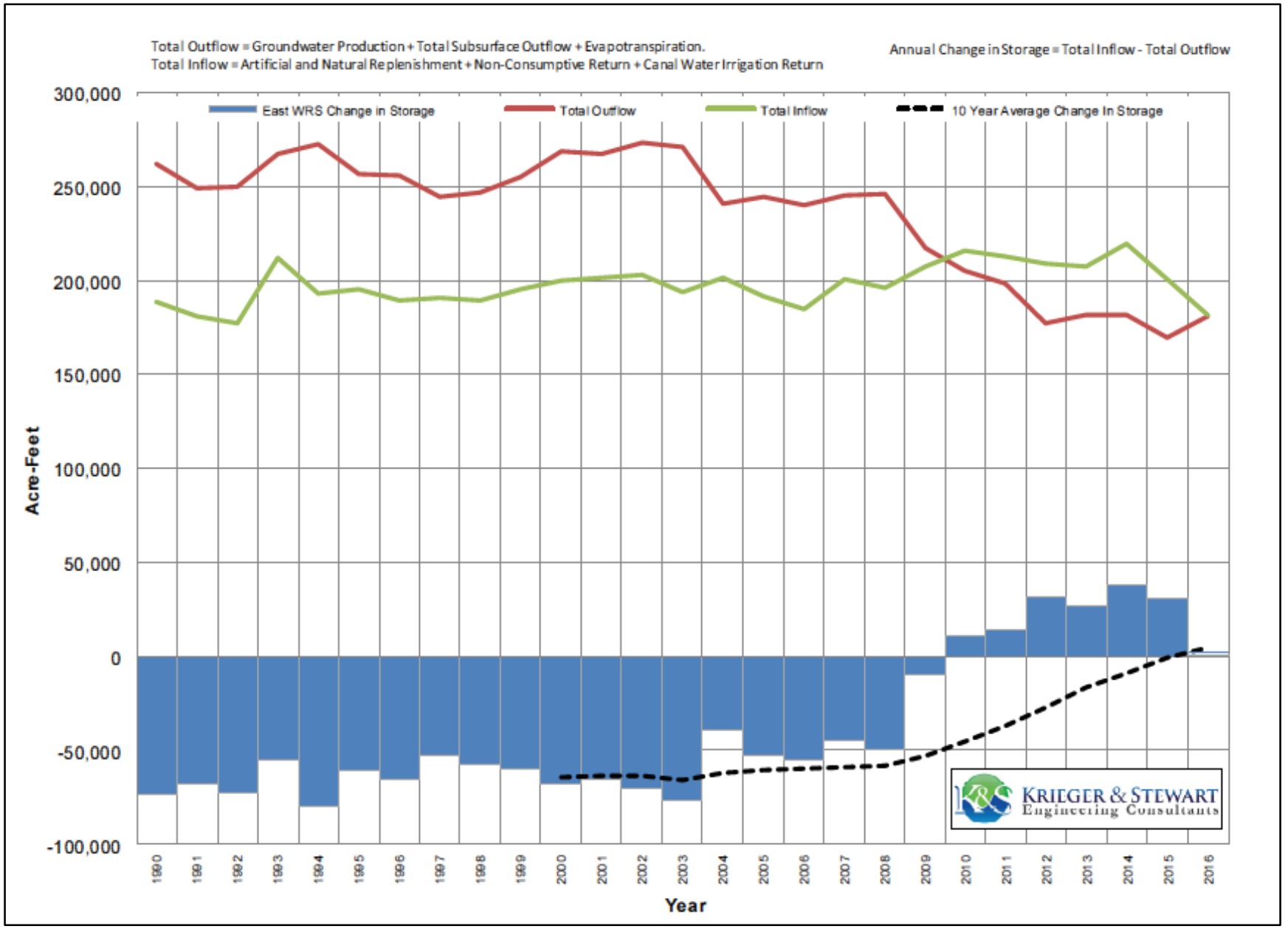
(b)(2) For basins that have not been adjudicated, (provide) information as to whether the department has identified the basin or basins as over drafted or has projected that the basin will become over drafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.

Since the early part of the twentieth century, the Coachella Valley has been dependent on groundwater as a source of supply. The demand for groundwater has annually exceeded the limited natural recharge of the groundwater basin. Overdraft in the eastern portion of the Whitewater River Subbasin was initially eliminated with the introduction of Colorado River supplies in 1949. However, development in the Valley again resulted in overdraft. CVWD and DWA contracted for SWP water in the early 1960s, with deliveries of SWP Exchange Water to the Whitewater River Replenishment Facility located north of Palm Springs commencing in 1973. As growth continued, overdraft became more significant, prompting CVWD to commence development of a water management plan in the early 1990s. These programs have focused on water conservation, water supply acquisition, projects to replenish the groundwater basin, and source substitution projects to convert users from groundwater pumping to recycled water and imported water supplies (IWA UWMP, 2015).

In response to overdraft, CVWD prepared the Coachella Valley Water Management Plan, which was adopted by the CVWD Board in October 2002, and an update was prepared in 2012. This serves as the groundwater management plan for the Whitewater River (Indio) subbasin. This plan also defines CVWD's long-term approach for eliminating groundwater overdraft and providing sustainable water supply for the Coachella Valley. MDMWC cooperates with the CVWD to manage overdraft in the aquifer.

DWR Bulletin 118 (DWR Bulletin 118, 2003) is the most recent DWR bulletin that characterize the condition of the Coachella Valley aquifer as a whole. Bulletin 118 stated that overdraft remains a "primary challenge" in the aquifer. CVWD estimates the change in storage annually in its Engineer's Reports on Water Supply and Replenishment Assessment. The most recent iteration of this annual report was issued in April 2017 (CVWD Assessment Report, April 2017). The findings presented in the most recent report indicates that the levels of aquifer storage have substantially recovered for the East Whitewater Subbasin AOB from which MDMWC pumps its groundwater. Provided in Exhibit 6-3 is a chart summarizing the change in aquifer water storage since 1990.

Costs for replenishment under CVWD's groundwater replenishment program (GRP) are recovered through a RAC applied to all non-exempted groundwater production (25 acre-feet per year or more). The East Whitewater River Subbasin AOB RAC is recommended to be levied at $66 per acre-foot (CVWD Assessment Report, April 2017). For calculating the RAC, the groundwater extracted by MDMWD is considered to be derived from the East Whitewater River Subbasin AOB.



Source: Engineer's Report on Water Supply and Replenishment Assessment 2017 – 2018
Mission Creek, West Whitewater River, and East Whitewater River Subbasin Areas of Benefit

Exhibit 6-3
East Whitewater River Subbasin Change in Storage

Myoma Dunes Water Co.

Hazen

6.2.4 Historical Groundwater Pumping

CWC 10631

(b)… If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:

(3) 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.

MDMWC's historical groundwater pumping is summarized in Table 6-1. Groundwater usage through pumping has been on a slight decline with a large drop in production in 2015 because of continued conservation and drought restrictions in the region. Groundwater pumping is directly proportional to total demand since groundwater is the sole supply of potable water within MDMWC's service area. Groundwater pumping has historically been sufficient to meet all demands.

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

Table 6-1 Retail: Groundwater Volume Pumped						
☐	Supplier does not pump groundwater. The supplier will not complete the table below.					
Groundwater Type	Location or Basin Name	2011	2012	2013	2014	2015
Alluvial Basin	Whitewater River Subbasin	1,458	1,470	1,438	1,402	1,083
	TOTAL	1,458	1,470	1,438	1,402	1,083
NOTES:						

6.3 Surface Water

Irrigation needs at the BDCC golf course and Bermuda Dunes Airport are currently met with private well supply. There is a planned CVWD project to serve Canal water to the BDCC for irrigation purposes to help decrease groundwater basin overdraft, which includes the construction of a new pump station and transmission main. There is also the potential for serving Bermuda Dunes Airport irrigation demands from the Canal, whose irrigation demand amounts to slightly over 20 acre-feet per year; however, there is currently no planned project.

6.4 Stormwater

MDMWC does not currently use stormwater as a water supply. Stormwater in the Coachella Valley typically percolates into the groundwater basin or is conveyed to the Coachella Valley Stormwater Channel (CVSC); however, there is some stormwater catchment at the Whitewater River Recharge Facility and other smaller recharge basins. Due to the extremely limited amount of rainfall and runoff in the region, stormwater is not currently regarded as a high priority potential water source.

6.5 Wastewater and Recycled Water

6.5.1 Recycled Water Coordination

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.

MDMWC does not possess any recycled water infrastructure and does not produce or serve any recycled water. In the immediate vicinity of MDMWC, CVWD is the only agency that is currently producing recycled water. CVWD operates five water reclamation plants (WRPs), three of which generate recycled water for irrigation of golf courses and large landscaped areas, including communities from La Quinta to Mecca, and isolated communities near the Salton Sea (CVWD UWMP, 2015). IWA and Valley Sanitary District (VSD) are currently evaluating potential options for recycled water use, although no recycled water is produced at this time.

Irrigation needs at the BDCC golf course and Bermuda Dunes Airport are currently met with private well supplies. Current plans are to serve Canal water to the BDCC for irrigation purposes as mentioned previously. There are currently no plans to provide recycled water to these customers, or to any other customer.

6.5.2 Wastewater Collection, Treatment and Disposal

CWC 10633

(a) (Describe) 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.

(b) (Describe) the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in the recycled water project

6.5.2.1 Wastewater Collected Within Service Area

MDMWC does not currently provide any wastewater collection services within its service area. Roughly a third of MDMWC's customers have wastewater collection services provided by CVWD, with the remainder on septic systems. The wastewater that is collected by CVWD is conveyed to CVWD's WRP-7 facility, which treats and supplies recycled water. The wastewater within the MDMWC service area that is sent to CVWD's WRP-7 facility is not separately metered; therefore, volumes are currently unknown.

6.5.2.2 Wastewater Treatment and Discharge within Service Area

MDMWC does not provide any wastewater treatment service. As mentioned previously, roughly a third of MDMWC's customers have wastewater collection services provided by CVWD, with the remainder on septic systems. The wastewater that is collected by CVWD is conveyed to CVWD's WRP-7 facility. WRP-7 is located approximately 3 miles north of MDMWC's service area in north Indio. WRP-7 blends Canal water with disinfected tertiary recycled water to serve two local 18-hole golf courses and an additional 9 holes on another course (CVWD UWMP, 2015).

6.5.3 Actions to Encourage and Optimize Future Recycled Water Use

CWC 10633

(f) (Describe the) 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) (Provide 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 recirculation uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

MDMWC does not have current or planned uses for recycled water primarily due to the lack of wastewater treatment capabilities within the service area. Some limited recycled water service is being provided in the surrounding area, and while water agencies in the vicinity are continuing to evaluate and plan for recycled water use, the future availability of recycled water and location of recycled water facilities with respect to MDMWC is uncertain. Costs to install wastewater treatment facilities or a dual recycled water distribution system are likely prohibitive at this time. Furthermore, the largest potential recycled water users currently utilize low cost private well supplies, with Canal water already planned as the new supply for the BDCC golf course irrigation.

6.6 Desalinated Water Opportunities

CWC 10631

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

Developing new desalinated water sources for MDMWC is currently impractical for several reasons including the lack of a saline water source; the distance, costs, and lack of infrastructure for desalinated ocean water; and brine management issues. While MDMWC's groundwater supply does not require any desalination treatment, increasing salinity in the Coachella Valley Groundwater Basin is being managed through CVWD, DWA, and IWA's Coachella Valley Groundwater Basin Salt and Nutrient Management Plan, June 2015, with emphasis on source control.

6.7 Exchanges or Transfers

CWC 10631

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

6.7.1 Exchanges

MDMWC does not currently have plans to participate in direct water exchanges. Water exchanges related to the exchange of SWP rights for Colorado River Water (CRW) rights for basin replenishment are handled by CVWD and DWA.

6.7.2 Transfers

MDMWC does not currently have plans to participate in direct water transfers. Water transfers related to basin replenishment are handled by CVWD and DWA.

6.7.3 Emergency Interties

MDMWC does not have any existing emergency interties. Opportunities may exist for the construction of emergency interties between MDMWC and CVWD and/or IWA based on the proximity of water distribution infrastructure; however, there are no planned projects at this time.

6.8 Future Water Projects

CWC 10631

(g) …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 average, single-dry, and multiple-dry 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.

Because MDMWC's service area is substantially built-out and demands have recently significantly reduced due to drought conditions and water conservation measures, MDMWC does not have plans

for substantial water supply projects within the urban water management planning horizon outside of MDMWC's capital improvement projects that are part of regular system maintenance. The planned project to serve Canal water to the BDCC for irrigation purposes is being implemented by CVWD; therefore, specific project details are not included in this Plan.

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 10631(a).

(4) (Provide 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.

Existing water supply volumes are presented in Table 6-2. These figures are based on MDMWC production records for year 2015. One hundred percent of the supply was from the Whitewater River Subbasin.

Table 6-2: Retail Water Supplies - Actual (DWR Table 6-8 R)

Table 6-8 Retail: Water Supplies — Actual			
Water Supply	Additional Detail on Water Supply	2015	
		Actual Volume	Water Quality
Groundwater		1,083	Drinking Water
Total		1,083	
NOTES:			

Planned water supply volumes are presented in Table 6-3. As the Whitewater River Subbasin is anticipated to be reasonably reliable for the urban water management planning horizon, the projected water supply is assumed to be equivalent to the projected water demand.

Table 6-3: Retail Water Supplies - Projected (DWR Table 6-9 R)

Table 6-9 Retail: Water Supplies — Projected						
Water Supply	Additional Detail on Water Supply	**Projected Water Supply** *Report To the Extent Practicable*				
		2020	**2025**	**2030**	**2035**	**2040** *(opt)*
		Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume
Groundwater		1,107	1,131	1,155	1,179	1,204
Total		1,107	1,131	1,155	1,179	1,204
NOTES:						

7. Water Supply Reliability Assessment

This section describes MDMWC's long term water supply reliability including historical reliability, reliability for average, single dry, and multiple dry years, and constraints that may impact supply reliability.

7.1 Constraints on Water Sources

CWC 10631

(c)(2) For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.

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 manner in which water quality affects water management strategies and supply reliability.

The Whitewater River (Indio) Subbasin is non-adjudicated, and historically, has been a reliable source of supply for MDMWC as there has never been an occurrence where groundwater production has been limited. Groundwater is inherently one of the more reliable sources of supply as seasonal and climatic changes do not have a significant effect on the groundwater basin. However, the Whitewater River Subbasin groundwater levels have been historically on the decline and the basin has been in overdraft for a number of years. In response, CVWD adopted the Coachella Valley Water Management Plan in 2002 and has been successfully implementing that plan. CVWD and DWA have also acquired additional SWP supplies and CVWD is signatory to the 2003 Quantification Settlement Agreement (WSA), which provides additional Colorado River water for groundwater recharge and source substitution. These activities help assure the reliability of future groundwater supplies (CVWD UWMP, 2016).

As discussed in Section 6, CVWD and DWA jointly operate a groundwater replenishment program in the West Whitewater Subbasin management area and CVWD operates the replenishment program in the East Whitewater Subbasin management area where MDMWC extracts its supply. These programs have had a significant beneficial effect on overdraft. In particular, the East Whitewater Subbasin groundwater elevations have shown a recovery in recent years. Additional programs by others in the Coachella Valley that are focusing on conversion of groundwater pumpers to recycled and imported Colorado River water from the Coachella Canal are expected to fully eliminate long-term overdraft over the next ten years. During extended drought periods when exchange water from SWP are reduced and hence groundwater replenishment is not occurring, continued groundwater pumping could result in short-term overdraft. Short-term reductions in replenishment due to droughts are not expected to affect long-term supply reliability (IWA UWMP, 2016).

While CVWD has been actively managing the groundwater basin through its Coachella Valley Water Management Plan in coordination with other groundwater users in the Valley, the Coachella Valley Water Management Plan has recently been bridged as the GSP for CVWD's GSA under SGMA. The GSP focuses on groundwater monitoring and data management, and projects and management strategies including water conservation, acquiring additional water supplies, groundwater supply substitution, groundwater recharge, and water quality improvements.

Water quality in the groundwater basin is also an important component of supply reliability. MDMWC actively samples and monitors all federally and State-required constituents, and is in compliance with all required maximum contaminant limits (MCL), which is published in MDMWC's annual Water Quality Report (http://www.myomawater.com/WaterQuality.aspx). The constituent of particular interest to MDMWC is Hexavalent Chromium (Chromium-6), which is a naturally-occurring element in the Coachella Valley. The State had set the MCL for Chromium-6 at 10 parts per billion (ppb) in 2014, which had impacted all of MDMWC's wells; however, on August 1, 2017, the State adopted a resolution to remove the MCL and begin the process for establishing a new MCL. Depending on the determination made by the State for the new Chromium-6 MCL, MDMWC's supplies may or may not be impacted. Total dissolved solids (TDS) and salinity of the groundwater basin is also an important water quality parameter, although as described in Section 6, efforts are being made to control this through CVWD, DWA, and IWA's Coachella Valley Groundwater Basin Salt and Nutrient Management Plan, June 2015, with emphasis on source control.

7.2 Reliability by Type of Year

CWC 10631

(c)(1) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following.

a) An average water year.

b) a single dry water year,

c) Multiple dry water years.

7.2.1 Types of Years

7.2.1.1 Average Year

Average year is defined as, one year, or an averaged range of years, that most closely represents the median average water supply available to the agency. The UWMP Act uses the term "normal" conditions. Within the UWMP guidebook, the terms "normal" and "average" are used interchangeably.

7.2.1.2 Single-dry Year

The single-dry year is the year that represents the lowest water supply available to the agency.

7.2.1.3 Multiple-dry Year Period

The multiple-dry year period is the period that represents the lowest average water supply availability to the agency for a consecutive multiple year period (three years or more). DWR has interpreted "multiple dry years" to mean three dry years, however, water agencies may project their water supplies for a longer time period.

7.2.2 Sources Base Years

MDMWC only has one source for meeting its potable water demands. All potable water demands are met using groundwater wells in the Whitewater River Subbasin. As mentioned previously, the groundwater basin has been historically reliable as it is not significantly affected by short-term seasonal or climate changes, and there has been no historical occurrence of pumping limitations. Year 2012 has been taken as an average year, and it represents approximately the average yearly production volume for years 1995 to current. Single and multiple dry years have been taken as the most recent years available, impacted by the drought and conservation measures. Table 7-1 provides a summary of base years and supply availability.

Table 7-1: Basis of Water Year Data (DWR Table 7-1 R)

Table 7-1 Retail: Basis of Water Year Data			
Year Type	**Base Year** *If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 1999-2000, use 2000*	**Available Supplies if Year Type Repeats**	
		☐	Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____
		☑	Quantification of available supplies is provided in this table as either volume only, percent only, or both.
		Volume Available	**% of Average Supply**
Average Year	2012	1470	100%
Single-Dry Year	2013	1438	
Multiple-Dry Years 1st Year	2013	1438	
Multiple-Dry Years 2nd Year	2014	1402	
Multiple-Dry Years 3rd Year	2015	1083	
NOTES:			

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 total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry 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.

7.3.1.1 Average Year

The expected water supply reliability for an average (normal) year is provided in Table 7-2. The available supply is assumed equivalent to the projected demands developed in Section 4 since the basin is non-adjudicated and based on the expected reliability of the groundwater basin.

Table 7-2: Average Year Supply and Demand Comparison (DWR Table 7-2 R)

Table 7-2 Retail: Normal Year Supply and Demand Comparison					
	2020	2025	2030	2035	2040 *(Opt)*
Supply totals *(autofill from Table 6-9)*	1,107	1,131	1,155	1,179	1,204
Demand totals *(autofill from Table 4-3)*	1,107	1,131	1,155	1,179	1,204
Difference	(0)	(0)	(0)	(0)	0
NOTES:					

7.3.1.2 Single-Dry Year

Supply reliability during a single-dry year scenario was assumed to be similar to the average year scenario for reasons discussed previously. Table 7-3 summarizes the single-dry year supply and demand scenario.

Table 7-3: Single-dry Year Supply and Demand Comparison (DWR Table 7-3 R)

Table 7-3 Retail: Single Dry Year Supply and Demand Comparison					
	2020	2025	2030	2035	2040 (Opt)
Supply totals	1,107	1,131	1,155	1,179	1,204
Demand totals	1,107	1131	1,155	1,179	1,204
Difference	0	0	0	0	0
NOTES:					

7.3.1.3 Multiple-Dry Year Period

Reliability during a multiple-dry year scenario was assumed to be similar to the average year scenario for reasons discussed previously. Table 7-4 summarizes the multiple-dry year supply and demand scenario.

Table 7-4: Multiple Dry Year Supply and Demand Comparison (DWR Table 7-4 R)

Table 7-4 Retail: Multiple Dry Years Supply and Demand Comparison						
		2020	2025	2030	2035	2040 (Opt)
First year	Supply totals	1,107	1,131	1,155	1,179	1,204
	Demand totals	1,107	1,131	1,155	1,179	1,204
	Difference	(0)	(0)	(0)	(0)	0
Second year	Supply totals	1,107	1,131	1,155	1,179	1,204
	Demand totals	1,107	1,131	1,155	1,179	1,204
	Difference	(0)	(0)	(0)	(0)	0
Third year	Supply totals	1,107	1,131	1,155	1,179	1,204
	Demand totals	1,107	1,131	1,155	1,179	1,204
	Difference	(0)	(0)	(0)	(0)	0
NOTES:						

7.4 Regional 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.

While MDMWC relies on groundwater to meet their demands, which has historically been a local and reliable source of water, it is recognized that declining groundwater levels in the Coachella Valley Groundwater Basin and the issue of overdraft must be addressed in order to ensure the long-term reliability of groundwater as a source of supply. The recharge of the Coachella Valley Groundwater Basin is also heavily dependent upon CRW and the exchange of SWP water rights.

Among the urban water management planning process, water management programs include CVWD's GSA and GSP, which includes CVWD's Coachella Valley Water Management Plan; the CVRWMG Coachella Valley IRWMP; and CVWD, DWA, and IWA's Coachella Valley Groundwater Basin Salt and Nutrient Management Plan. These programs include water management tools such as resource management strategies, monitoring and data management guidelines, alternative sources of supply, potential projects, and implementation plans with the goal of ensuring long-term water quality and reliability in the Coachella Valley Groundwater Basin.

Supply reliability projects in the Coachella Valley include DWA's and CVWD's GRP, conversion of golf course irrigation from private well water to Canal water, development of recycled water supplies, flood control improvements to enhance surface water recharge, desalinated agricultural irrigation drain water, salt and nutrient source control, acquiring of additional water rights, and demand management measures.

8. Water Shortage Contingency Planning

CWC 10632

(a) The plan shall provide an urban water shortage contingency analysis that includes each of the following elements that are within the authority of the urban water supplier:

(1) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions that are applicable to each stage.

(2) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.

(3) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.

(4) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.

(5) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.

(6) Penalties or charges for excessive use, where applicable.

(7) An analysis of the impacts of each of the actions and conditions described in paragraphs (1) to (6), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.

(8) A draft water shortage contingency resolution or ordinance.

(9) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.

(b) Commencing with the urban water management plan update due July 1, 2016, for purposes of developing the water shortage contingency analysis pursuant to subdivision (a), the urban water supplier shall analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas, as defined in subdivision (a) of Section 115921 of the Health and Safety Code.

Water shortage contingency planning is a program that is developed in the form of a Water Shortage Contingency Plan (WSCP) that is used to help manage droughts and other short-term water shortages or supply interruptions by temporarily reducing demand and finding alternate water sources to temporarily increase supply utilizing methods that are within the authority of the water agency. As droughts are part of the normal water cycle in California, this type of planning is a necessity. Thoughtful planning and preparedness allows water agencies to anticipate and react to water shortages in a logical manner, which helps support public understanding and coordination. It is important to recognize that early action must be taken during water shortages as delaying response can increase water shortage severity, deplete reserves, and ultimately have a greater impact on the public.

8.1 Stages of Action

CWC 10632

(a)(1) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions that are applicable to each stage.

MDMWC's WSCP includes four stages of increasing supply reduction from normal long-term average supply conditions up to a 50 percent reduction in supply as indicated in Table 8-1. These supply reductions could be the result of a variety of potential causes including natural forces, system component failure or interruption, regulatory actions, contamination, or any combination thereof.

As previously discussed, MDMWC's supply source is groundwater, which is affected more slowly than other source types by seasonal or climatic changes. Measuring local groundwater levels on a regular basis and anticipating shortages that directly (CRW) and indirectly (State Project Water, which is exchanged for CRW) recharge MDMWC's local groundwater basin, will allow shortages to be identified and anticipated well in advance.

Table 8-1: Stages of Water Shortage Contingency Plan (DWR Table 8-1 R)

Table 8-1 Retail Stages of Water Shortage Contingency Plan		
Stage	Complete Both	
	Percent Supply Reduction[1] *Numerical value as a percent*	Water Supply Condition (*Narrative description)*
I	0-15%	Minor supply reduction
II	15-25%	Moderate supply reduction
III	25-35%	Serious supply reduction
IV	35-50%	Severe supply reduction
[1] One stage in the Water Shortage Contingency Plan must address a water shortage of 50%.		
NOTES:		

Most commonly, these stages are triggered by SWRCB mandates. For example, most recently in May of 2015, the SWRCB adopted an Emergency Conservation Resolution and Regulation requiring that MDMWC reduce water usage by 36 percent. MDMWC responded to the resolution on May 15, 2015 by adopting drought restriction measures.

8.2 Prohibitions on End Uses

CWC 10632

(a)(4) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.

(5) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.

MDMWC encourages customers to voluntarily use water efficiently and to eliminate the waste of water; however, necessary restrictions and prohibitions will be implemented by MDMWC based on the water shortage stage of action and in accordance with the WSCP. Many of these restrictions and prohibitions are mandated by the SWRCB, although MDMWC has the ability to implement more specific measures in order to meet the SWRCB's requirements through adoption of resolution by MDMWC's Board of Directors. A list of these restrictions and prohibitions are included in Table 8-2.

Note that restrictions and prohibitions for early stages also apply to the later stages. The SWRCB has adopted certain restrictions and prohibitions (identified as State Stage 1 restrictions in Table 8-2) permanently in support of water conservation as a way of life.

Table 8-2: Restrictions and Prohibitions on End Users (DWR Table 8-2 R)

Table 8-2 Retail Only: Restrictions and Prohibitions on End Uses			
Stage	Restrictions and Prohibitions on End Users	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement?
1	Other	Customers are encouraged to voluntarily use water wisely and eliminate wasteful practices	No
1	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Customers are encouraged to repair leaks, break, or other malfunctions expeditiously	No
1	Landscape - Restrict or prohibit runoff from landscape irrigation	State restriction	Yes
1	Landscape - Other landscape restriction or prohibition	State restriction - prohibit irrigation with potable water of ornamental turf on public street medians	Yes
1	Landscape - Other landscape restriction or prohibition	State restriction - Irrigating outdoors during and within 48 hours following measureable rainfall	Yes
1	Water Features - Restrict water use for decorative water features, such as fountains	State restriction - prohibit use of potable water in decorative water features that do not recirculate the water	Yes
1	Other - Require automatic shut of hoses	State restriction	Yes
1	Other - Prohibit use of potable water for washing hard surfaces	State restriction	Yes

Table 8-2 Retail Only: Restrictions and Prohibitions on End Uses			
Stage	Restrictions and Prohibitions on End Users	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement?
2	Landscape - Other landscape restriction or prohibition	State restriction - irrigation with potable water outside of newly constructed homes and buildings not in accordance with emergency regulations or other requirements established by the Building Standards Commission and the Department of Housing and Community Development	Yes
2	CII - Lodging establishment must offer opt out of linen service	State restriction	Yes
2	CII - Restaurants may only serve water upon request	State restriction	Yes
3	Landscape - Limit landscape irrigation to specific times	Lawn watering limited to Monday, Wednesday, and Friday before 7 a.m. and after 8 p.m. Customers are allowed to water other plants during those hours any day of the week.	Yes
4	Other	Up to 50 percent reduction in water budget, enforced through rate penalties. Must be adopted by MDMWC Board of Directors.	Yes
NOTES: CII = Commercial, Industrial, Institutional water use sectors			

8.3 Defining Water Features

CWC 10632

(b) Commencing with the urban water management plan update due July 1, 2016, for purposes of developing the water shortage contingency analysis pursuant to subdivision (a), the urban water supplier shall analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas, as defined in subdivision (a) of Section 115921 of the Health and Safety Code.

Health and Safety Code Section 115921

As used in this article the following terms have the following meanings:

(a) "Swimming pool" or "pool" means any structure intended for swimming or recreational bathing that contains water over 18 inches deep. "Swimming pool" includes in-ground and aboveground structures and includes, but is not limited to, hot tubs, spas, portable spas, and non-portable wading pools.

Large water features that exist within the MDMWC service area include several lakes at the BDCC golf course; however, these lakes are supplied by BDCC private wells. Other water features in the service area may include customer decorative water features such as fountains although these are not specifically identified. Currently, restrictions and prohibitions on decorative water features are covered by the State's Executive Order B-37-16. MDMWC does not currently have any restrictions or prohibitions on swimming pool use.

8.4 Penalties, Charges, and other Enforcement of Prohibitions

CWC 10632

(a)(6) Penalties or charges for excessive use, where applicable.

Restrictions and prohibitions that are enacted in accordance with the WSCP are enforced through the following measures:

- First violation: written warning
- Second violation: $100 surcharge
- Third violation: $200 surcharge
- Fourth violation: $400 surcharge
- Fifth violation: $500 surcharge and discontinuance of service

8.5 Consumption Reduction Methods

CWC 10632

(a)(5) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.

Consumption reduction methods are actions taken by an agency to reduce water demand during water shortages. Although water savings are not specifically estimated for each consumption reduction method, past experiences indicate that the most influential methods include implementing a conservation rate structure and the replacement of turf with drought-tolerant landscaping. A list of consumption reduction methods are provided in Table 8-3.

Table 8-3: Stages of Water Shortage Contingency Plan – Consumption Reduction Methods (DWR Table 8-3)

Table 8-3 Retail Only: Stages of Water Shortage Contingency Plan - Consumption Reduction Methods		
Stage	Consumption Reduction Methods by Water Supplier	Additional Explanation or Reference *(optional)*
I	Expand Public Information Campaign	Links to CV Water Counts, water conservation measures, and landscaping tips are available at the MDMWC website. Water conservation and drought-tolerant landscaping brochures are available at the MDMWC office.
I	Offer Water Use Surveys	Conservation assistance is made available to customers at no cost including instructing how to read a water meter, isolate areas of leakage or high consumption, and irrigation improvements
I	Reduce System Water Loss	Water loss is controlled by comparing production to consumption, regular inspection of distribution facilities, advising customers of suspected leakage downstream of meters, immediate leakage repair and replacement, and replacement of under-registering meters
II	Decrease Line Flushing	Reduce frequency of hydrant and dead-end line flushing
III	Implement or Modify Drought Rate Structure or Surcharge	MDMWC utilizes a four-tier budget-based rate structure that encourages water conservation
IV	Increase Water Waste Patrols	MDMWC makes direct contact to customers known to be wasting water
IV	Moratorium or Net Zero Demand Increase on New Connections	MDMWC reviews any proposed project referred by the County of Riverside
NOTES:		

8.6 Determining Water Shortage Reductions

CWC 10632

(a)(9) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.

MDMWC has two methods of tracking reductions in water use: through production records and through consumption records. MDMWC meters groundwater production at all wells on a monthly basis. MDMWC also meters all service connections and can track water use through monthly consumption records for each customer. This data can be used to track individual customer usage, usage based on land use type, total usage, and usage per service connection. While MDMWC strives to account for all water use and minimize water losses, there will inevitably be some amount of non-revenue water through leaks, firefighting, unauthorized use, and metering inaccuracies.

8.7 Revenue and Expenditure Impacts

CWC 10632

(a)(7) An analysis of the impacts of each of the actions and conditions described in paragraphs (1) to (6), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.

Based on MDMWC's past experiences, the occurrence of droughts or other water shortages tend to change customers' water habits. Water shortages and implementing the WSCP has historically lowered water consumption significantly, which in turn significantly lowers revenue. At the same time, water shortages can also place additional strain on MDMWC staff via customer service interaction, the need to develop water restriction resolutions to comply with State mandates, and increasing enforcement measures, which are expected to increase expenditures. Although not specifically quantified, penalties or other surcharges are not expected to compensate for the overall reduction in consumption and therefore, a net reduction in revenue would be expected.

8.7.1 Drought Rate Structures and Surcharges

Effective June 3, 2016, MDMWC has adopted a 4-tier budget based rate structure, which is a conservation rate structure. Historically, MDMWC has not implemented drought rate structures, and currently does not have plans to do so; however, MDMWC reserves the right to implement a drought rate structure if warranted to maintain MDMWC's ability to provide water service and maintain infrastructure. During water shortages, surcharges will be implemented for violations of water use restrictions or prohibitions as mentioned in Section 8.4.

8.7.2 Use of Financial Reserves

MDMWC maintains a 1-year operating budget with zero revenue. Should a short-term water shortage produce revenue shortfalls, MDMWC has the ability to use financial reserves to maintain solvency; however, MDMWC's goal is to only use financial reserves as needed during emergency situations.

8.7.3 Other Measures

Other measures that MDMWC may employ to mitigate potential revenue shortages and increases in expenditures include postponing capital improvement projects, and seeking State or federal grants or funding assistance.

8.8 Resolution or Ordinance

CWC 10632

(a)(8) A draft water shortage contingency resolution or ordinance.

A draft water shortage contingency resolution is included in Appendix D.

8.9 Catastrophic Supply Interruption

CWC 10632

(a)(3) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.

In the event of a regional power outage, MDMWC is equipped with an emergency generator at one of the production well locations, which can supply a nominal flow of 1,800 gallons per minute (2.59 MGD), and a natural gas-driven engine booster pump station that can supply water stored in above-grade forebays to the system at a rate of up to 2,400 gallons per minute (3.46 MGD). These forebays can store a volume of up to 2 million gallons and can also provide a source of water for fire-fighting purposes. Historically, these measures have proven to be adequate for short-term power outages; however, long-term power outages may require additional measures such as trucking in water or delivering bottled water to maintain service.

In the event of an earthquake, damage to water conveyance infrastructure may occur, most commonly in the form of pipeline leaks or breaks. Above-grade reservoirs may also be susceptible to damage, typically to the side shell and at locations where connecting pipes transition from above grade to below grade at shear planes. To a lesser extent, groundwater wells may be damaged during severe earthquakes. In response to an earthquake, MDMWC Operations and Maintenance staff are prepared to promptly repair leaks, replace pipe as needed, as well as repair other damaged infrastructure. No notable earthquake damage has occurred during the history of MDMWC. Production sites are also spaced out strategically throughout the service area such that unaffected areas can remain operational while isolating damaged facilities.

MDMWC does not currently have interconnections with other water purveyors, although potential interconnections with adjacent water agencies CVWD and IWA appear to be feasible. Interconnections may require metering facilities, pressure reducing facilities, or pumping facilities with emergency back-up power depending on the location and systems interconnected. In the event of a catastrophic regional supply interruption, interconnections may be minimally beneficial as adjacent water agencies share the same supply source as MDMWC; however, interconnections may prove beneficial in the event of a local, short-term supply interruption to MDMWC.

MDMWC also possesses an Emergency Response Plan (ERP) to address the Public Health Security and Bioterrorism Preparedness and Response Act of 2002.

8.10 Minimal Supply Next Three Years

CWC 10632

(a)(2) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.

One hundred percent of MDMWC's water supply comes from the Whitewater River (Indio) Subbasin, which is a non-adjudicated basin recharged predominantly by CRW, and to a lesser extent by runoff, flows from outside the basin, and return flows. Water is extracted via groundwater production wells in the Lower Whitewater River Subbasin. This groundwater source has historically been reliable with no water production shortages or restrictions to date; however, the Basin has been in a state of overdraft since perhaps the 1930s, with a cumulative reduction in groundwater storage of approximately 1.4 million acre-feet from 1936 to 1999[1]. Through ongoing groundwater replenishment efforts of CVWD and DWA, planning efforts of the CVRWMG and CVWD GSA, and Valley-wide efforts to reduce pumping, water levels in most areas of the basin have been increasing in the past 10 years. Future projections indicate that long-term water reliability will be maintained. For these reasons, the minimum supply for the next three years is based upon the demand projections in Section 6. Refer to Table 8-4.

Table 8-4: Minimum Supply Next Three Years (DWR Table 8-4 R)

Table 8-4 Retail: Minimum Supply Next Three Years			
	2016	2017	2018
Available Water Supply	1,088	1,093	1,098
NOTES:			

[1] Coachella Valley Final Water Management Plan, September 2002

9. Demand Management Measures

This section describes MDMWC water conservation goals, existing and proposed conservation programs, and efforts to promote conservation and reduce demand in order to meet its urban water use reduction targets. Setting goals and selecting appropriate water conservation measures is a continuous process that evolves based upon legislation, technologies, and past measure effectiveness.

9.1 Demand Management Measures for Retail Agencies

CWC 10631

(f)(A) … The narrative shall describe the water demand management measure 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.

MDMWC aims to reduce unnecessary water usage and eliminate wasteful practices. MDMWC plans to achieve these goals through a combination of promotion, public outreach, voluntary, and mandatory measures. MDMWC also employs a water conservation staff for support.

9.1.1 Water Waste Prevention Ordinances

As discussed in Section 8 as part of MDMWC's WSCP, there are a series of SWRCB ordinances regarding the waste of water that remain in act at all times. Depending on State mandates for water use reduction and depending on the stage of the WSCP, additional water waste prevention ordinances may be enacted.

9.1.2 Metering

CWC 526

(a) Notwithstanding any other provisions of law, an urban water supplier that, on or after January 1st, 2014, 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 1st, 2013, install water meters on all service connections to residential and nonagricultural commercial buildings…located within its service area.

CWC 527

(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 1st, 2025.

Except for fire protection services, all customer service connections are fully metered. Most multi-family units are served by one meter. A few multi-family units are metered separately at the owner's request. MDMWC is also in the process of implementing a meter replacement program.

9.1.3 Conservation Pricing

MDMWC has adopted a 4-tier budget-based rate structure, which is a conservation rate structure that remains active at all times. Tiers are based upon customer water budgets. As the customer uses water in excess of their budget, the tier increases with a progressively increasing unit water cost.

9.1.4 Public Education and Outreach

MDMWC is a partner and contributing member of CV Water Counts (http://cvwatercounts.com), a local program consisting of the six water agencies in the Coachella Valley: CVWD, IWA, CWA, MSWD, DWA, and MDMWC. CV Water Counts promotes the message of water conservation, provides water saving tips, landscaping and leak detection resources, as well as resources for parents, teachers, and children. MDMWC provides links on their website (http://www.myomawater.com/) to CV Water Counts as well as Save Our Water (http://saveourwater.com), a statewide conservation program that aims to make water conservation a daily habit through partnering with local water agencies, social marketing, and event sponsorships.

MDMWC also reaches its customers by providing water conservation pamphlets at the MDMWC office as well as by periodically distributing water conservation related materials through customer water bills.

In addition, the State provides rebate incentives for turf replacement and water-efficient toilet replacement.

9.1.5 Programs to Assess and Manage Distribution System Real Loss

MDMWC controls water loss by comparing production with consumption, regular and frequent inspection of distribution facilities, advising customers of observed or suspected leakage downstream of meters, and immediate leak repair.

9.1.6 Water Conservation Program Coordination and Staffing Support

MDMWC adopted a conservation policy in 2003 as part of its Rules and Regulations, encouraging efficiency in water use and actively discouraging the waste of water. The policy covers shortages, waste, and landscaping provisions. MDMWC has recently added a conservation coordinator to their staff and is in the process of developing a formal water conservation program.

9.1.7 Other Demand Management Measures

MDMWC makes the following conservation assistance available to high consumption users or those who request it at no cost:

- Location and instructions on how to read water meter.
- Identifications of high consumption areas.
- Check for leakage.
- Irrigation schedule and check timers.
- Recommendations on sprinkler repair or improvements.
- Information on landscape conservation methods including water efficient design, maintenance, and plant selection.

9.2 Implementation over the Past Five Years

MDMWC has been implementing its conservation policy since 2003, and has continued to support water conservation over the past five years through the demand management measures (DMMs) described herein. The conservation pricing, public outreach, and State-mandated measures due to the drought have all had a significant impact on reducing per capita demands. In addition, voluntary customer turf replacement has reduced MDMWC's largest demand component: landscape irrigation.

9.3 Planned Implementation to Achieve Water Use Targets

As described in Section 5, MDMWC has already achieved its 2020 target per capita water use. MDMWC plans to continue support of its water conservation policy, water conservation program development, and implementation of DMMs to support water conservation as a way of life.

9.4 Members of California Urban Water Conservation Council

CWC 10631

(I) For purposes of this part, urban water suppliers that are members of the California Urban Water Conservation Council shall be deemed in compliance with the requirements of subdivision (f) by complying with all the provisions of the "memorandum of Understanding Regarding Urban Water Conservation in California," dated December 10th, 2008, as it may be amended, and by submitting the annual reports required by Section 6.2 of that memorandum.

MDWMC is not a member of the California Urban Water Conservation Council, which is now referred to as the California Water Efficiency Partnership; therefore, this section does not apply.

10. Plan Adoption, Submittal, and Implementation

This section addresses the CWC requirements for a public hearing, the UWMP adoption process, submitting an adopted UWMP, plan implementation, and the process for amending an adopted UWMP.

10.1 Inclusion of All 2015 Data

This UWMP includes all water use and planning data for the entire calendar year of 2015.

10.2 Notice of Public Hearing

Water suppliers must hold a public hearing prior to adopting the Plan to provide opportunity for public input and must provide adequate notice of public hearing in accordance with the CWC.

10.2.1 Notice to Cities and Counties

CWC 10621

(b) Every urban water supplier required to prepare a plan shall… at least 60 days prior to the public hearing on the plan … 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.

CWC 10642

…The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area…

MDMWC supplies water to the Bermuda Dunes CDP in the County of Riverside and to a portion of the City of La Quinta. Notifications of a public hearing were provided on November 10, 2017 in accordance with the CWC as indicated in Table 10-1. Copies of notifications are provided in Appendix E.

Table 10-1: Notification to Cities and Counties (DWR Table 10-1 R)

Table 10-1 Retail: Notification to Cities and Counties		
City Name	60 Day Notice	Notice of Public Hearing
La Quinta	☑	☑
County Name	60 Day Notice	Notice of Public Hearing
Riverside County	☑	☑

10.2.2 Notice to Public

CWC 10642

…Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection…Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to code 6066 of the Government Code…

Government Code 6066

Publication of notice pursuant to this section shall be once a week for two successive weeks. Two publications in a newspaper published once a week or oftener, with at least five days intervening between the respective publication dates not counting such publication dates, are sufficient. The period of notice commences upon the first day of publication and terminates at the end of the fourteenth day, including therein the first day.

Notification of public hearing has been provided in accordance with the CWC and Government Code 6066. Copies of notifications are provided in Appendix E. A copy of the draft UWMP was made available on MDMWC's website (http://www.myomawater.com) in electronic format and a hard copy was made available at MDMWC's office.

10.3 Public Hearing and Adoption

CWC 10642

… Prior to adopting a plan, the urban water supplier shall hold a public hearing thereon.

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 this part.

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

A public/adoption hearing was held prior to MDMWC's adoption of the 2015 UWMP. This hearing took place on January 18, 2018 at the Bermuda Dunes Community Center (78-400 Avenue 42, Bermuda Dunes, CA 29903). Information was provided on MDMWC's baseline values, water use targets, and economic impacts of Plan implementation. Public comments were solicited and addressed.

10.3.1 Adoption

CWC 10642

… After the hearing, the plan shall be adopted as prepared or as modified after the hearing.

The UWMP was adopted as prepared by the MDMWC Board of Directors on January 18, 2018.

10.4 Plan Submittal

CWC 10621

(d) An urban water supplier shall submit to the department by July 1, 2016.

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 own plan no later than 30 days after adoption.

CWC 10635

> (b) 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.

MDMWC's 2015 UWMP will be submitted to DWR, California State Library, County of Riverside, and City of La Quinta within 30 days after adoption. The submittal to DWR will be done electronically online through DWR's submittal tool WUEdata (https://wuedata.water.ca.gov/secure). The submittal to the California State Library will be made by CD or hardcopy to:

California State Library
Government Publications Section
P.O. Box 942837
Sacramento, CA 94237-0001
Attention: Coordinator, Urban Water Management Plans

Or if delivered by courier or overnight carrier:

California State Library
Government Publications Section
914 Capital Mall
Sacramento, CA 95814

10.5 Public Availability

CWC 10645

> Not later than 30 days after filling 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.

MDMWC will make the plan available to the public online in electronic format on MDMWC's website (http://www.myomawater.com).

11. References

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2. American Water Works Association Water Audit Software (WAS) version 5.0.
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4. California Department of Water Resources. Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use. February 2016.
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6. California Irrigation Management Information System. http://www.cimis.water.ca.gov/.
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8. Coachella Valley Regional Water Management Group. Coachella Valley Integrated Regional Water Management Plan. December 2010. (IRWMP, 2010).
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12. Coachella Valley Water District. 2015 Urban Water Management Plan, Final Report. July 1, 2016. (CVWD UWMP, 2015).
13. Coachella Valley Water District. Coachella Valley Water Management Plan 2010 Update, Final Report. January 2012. (CVWD WMPU, 2012).
14. Coachella Valley Water District. Engineer's Report on Water Supply and Replenishment Assessment for the Mission Creek Subbasin Area of Benefit, West Whitewater River Subbasin Area of Benefit, and East Whitewater River Subbasin Area of Benefit 2017-2018. April, 2017. (CVWD Assessment Report, April 2017).
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17. Department of Water Resources. Bulletin No. 118. 2003. (DWR Bulletin 118, 2003).
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19. Indio Water Authority. 2015 Urban Water Management Plan, Final Report. July 1, 2016. (IWA UWMP, 2015).
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21. State Water Resources Control Board Executive Order B-29-15, April 1, 2015.
22. State Water Resources Control Board Executive Order B-37-16, May 9, 2016.
23. State Water Resources Control Board Resolution No. 2016-0007 to Adopt an Emergency Regulation for Statewide Urban Water Conservation. February 2, 2016.
24. United States Census Bureau 2011-2015 American Community Survey 5-Year Estimates.
25. Western Regional Climate Center. https://wrcc.dri.edu/.

Appendix A: UWMP Checklist

Checklist Arranged by Water Code Section

CWC Section	UWMP Requirement	Subject	Guidebook Location	UWMP Location *(Optional Column for Agency Use)*
10608.20(b)	Retail suppliers shall adopt a 2020 water use target using one of four methods.	Baselines and Targets	Section 5.7 and App E	**Section 5.6**
10608.20(e)	Retail suppliers shall provide 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.	Baselines and Targets	Chapter 5 and App E	**Section 5.2; Section 5.3; Section 5.6; Section 5.10**
10608.22	Retail suppliers' per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use of the 5 year baseline. This does not apply if the suppliers base GPCD is at or below 100.	Baselines and Targets	Section 5.7.2	**Section 5.7**
10608.24(a)	Retail suppliers shall meet their interim target by December 31, 2015.	Baselines and Targets	Section 5.8 and App E	**Section 5.10**
10608.24(d)(2)	If the retail supplier adjusts its compliance GPCD using weather normalization, economic adjustment, or extraordinary events, it shall provide the basis for, and data supporting the adjustment.	Baselines and Targets	Section 5.8.2	**Section 5.10.1**
10608.26(a)	Retail suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets.	Plan Adoption, Submittal, and Implementation	Section 10.3	**Section 10.3**
10608.36	Wholesale suppliers shall include an assessment of present and proposed future measures, programs, and policies to help their retail water suppliers achieve targeted water use reductions.	Baselines and Targets	Section 5.1	**Not applicable**
10608.40	Retail suppliers shall report on their progress in meeting their water use targets. The data shall be reported using a standardized form.	Baselines and Targets	Section 5.8 and App E	**Section 5.10**
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.	Plan Preparation	Section 2.1	**Section 2.1**
10620(d)(2)	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.	Plan Preparation	Section 2.5.2	**Section 2.5.2**

10620(f)	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	Water Supply Reliability Assessment	Section 7.4	**Section 7.4**
10621(b)	Notify, at least 60 days prior to the public hearing, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan.	Plan Adoption, Submittal, and Implementation	Section 10.2.1	**Section 10.2.1**
10621(d)	Each urban water supplier shall update and submit its 2015 plan to the department by July 1, 2016.	Plan Adoption, Submittal, and Implementation	Sections 10.3.1 and 10.4	**Section 10.4**
10631(a)	Describe the water supplier service area.	System Description	Section 3.1	**Section 3.1**
10631(a)	Describe the climate of the service area of the supplier.	System Description	Section 3.3	**Section 3.3**
10631(a)	Indicate the current population of the service area.	System Description and Baselines and Targets	Sections 3.4 and 5.4	**Section 3.4; Section 5.3**
10631(a)	Provide population projections for 2020, 2025, 2030, and 2035.	System Description	Section 3.4	**Section 3.4.1**
10631(a)	Describe other demographic factors affecting the supplier's water management planning.	System Description	Section 3.4	**Section 3.4.2**
10631(b)	Identify and quantify the existing and planned sources of water available for 2015, 2020, 2025, 2030, and 2035.	System Supplies	Chapter 6	**Section 6.9**
10631(b)	Indicate whether groundwater is an existing or planned source of water available to the supplier.	System Supplies	Section 6.2	**Section 6.2**
10631(b)(1)	Indicate whether a groundwater management plan has been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	System Supplies	Section 6.2.2	**Section 6.2.2**
10631(b)(2)	Describe the groundwater basin.	System Supplies	Section 6.2.1	**Section 6.2.1**
10631(b)(2)	Indicate if the basin has been adjudicated and include a copy of the court order or decree and a description of the amount of water the supplier has the legal right to pump.	System Supplies	Section 6.2.2	**Section 6.2.1**
10631(b)(2)	For unadjudicated basins, indicate whether or not the department has identified the basin as overdrafted, or projected to become overdrafted. Describe efforts by the supplier to eliminate the long-term overdraft condition.	System Supplies	Section 6.2.3	**Section 6.2.3**

10631(b)(3)	Provide a detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years	System Supplies	Section 6.2.4	**Section 6.2.4**
10631(b)(4)	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	System Supplies	Sections 6.2 and 6.9	**Section 6.9**
10631(c)(1)	Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage.	Water Supply Reliability Assessment	Section 7.1	**Section 7.1**
10631(c)(1)	Provide data for an average water year, a single dry water year, and multiple dry water years	Water Supply Reliability Assessment	Section 7.2	**Section 7.2**
10631(c)(2)	For any water source that may not be available at a consistent level of use, describe plans to supplement or replace that source.	Water Supply Reliability Assessment	Section 7.1	**Section 7.4**
10631(d)	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	System Supplies	Section 6.7	**Section 6.7**
10631(e)(1)	Quantify past, current, and projected water use, identifying the uses among water use sectors.	System Water Use	Section 4.2	**Section 4.2**
10631(e)(3)(A)	Report the distribution system water loss for the most recent 12-month period available.	System Water Use	Section 4.3	**Section 4.3**
10631(f)(1)	Retail suppliers shall provide a description of the nature and extent of each demand management measure implemented over the past five years. The description will address specific measures listed in code.	Demand Management Measures	Sections 9.2 and 9.3	**Section 9.2;**
10631(f)(2)	Wholesale suppliers shall describe specific demand management measures listed in code, their distribution system asset management program, and supplier assistance program.	Demand Management Measures	Sections 9.1 and 9.3	**Not applicable**
10631(g)	Describe the expected future water supply projects and programs that may be undertaken by the water supplier to address water supply reliability in average, single-dry, and multiple-dry years.	System Supplies	Section 6.8	**Section 6.8**
10631(h)	Describe desalinated water project opportunities for long-term supply.	System Supplies	Section 6.6	**Section 6.6**
10631(i)	CUWCC members may submit their 2013-2014 CUWCC BMP annual reports in lieu of, or in addition to, describing the DMM implementation in their UWMPs. This option is only allowable if the supplier has been found to be in full compliance with the CUWCC MOU.	Demand Management Measures	Section 9.5	**Not applicable**

10631(j)	Retail suppliers will include documentation that they have provided their wholesale supplier(s) – if any - with water use projections from that source.	System Supplies	Section 2.5.1	**Section 2.5**
10631(j)	Wholesale suppliers will include documentation that they have provided their urban water suppliers with identification and quantification of the existing and planned sources of water available from the wholesale to the urban supplier during various water year types.	System Supplies	Section 2.5.1	**Not applicable**
10631.1(a)	Include projected water use needed for lower income housing projected in the service area of the supplier.	System Water Use	Section 4.5	**Section 4.5**
10632(a) and 10632(a)(1)	Provide an urban water shortage contingency analysis that specifies stages of action and an outline of specific water supply conditions at each stage.	Water Shortage Contingency Planning	Section 8.1	**Section 8.1**
10632(a)(2)	Provide an estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency.	Water Shortage Contingency Planning	Section 8.9	**Section 8.10**
10632(a)(3)	Identify actions to be undertaken by the urban water supplier in case of a catastrophic interruption of water supplies.	Water Shortage Contingency Planning	Section 8.8	**Section 8.9**
10632(a)(4)	Identify mandatory prohibitions against specific water use practices during water shortages.	Water Shortage Contingency Planning	Section 8.2	**Section 8.2**
10632(a)(5)	Specify consumption reduction methods in the most restrictive stages.	Water Shortage Contingency Planning	Section 8.4	**Section 8.2**
10632(a)(6)	Indicated penalties or charges for excessive use, where applicable.	Water Shortage Contingency Planning	Section 8.3	**Section 8.4**
10632(a)(7)	Provide an analysis of the impacts of each of the actions and conditions in the water shortage contingency analysis on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts.	Water Shortage Contingency Planning	Section 8.6	**Section 8.7**
10632(a)(8)	Provide a draft water shortage contingency resolution or ordinance.	Water Shortage Contingency Planning	Section 8.7	**Section 8.8; Appendix D**
10632(a)(9)	Indicate a mechanism for determining actual reductions in water use pursuant to the water shortage contingency analysis.	Water Shortage Contingency Planning	Section 8.5	**Section 8.6**
10633	For wastewater and recycled water, coordinate with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.1	**Section 6.5.1**

10633(a)	Describe the wastewater collection and treatment systems in the supplier's service area. Include quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.	System Supplies (Recycled Water)	Section 6.5.2	**Section 6.5.2**
10633(b)	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	System Supplies (Recycled Water)	Section 6.5.2.2	**Section 6.5.2**
10633(c)	Describe the recycled water currently being used in the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.3 and 6.5.4	**Section 6.5.2.2**
10633(d)	Describe and quantify the potential uses of recycled water and provide a determination of the technical and economic feasibility of those uses.	System Supplies (Recycled Water)	Section 6.5.4	**Section 6.5**
10633(e)	Describe 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.	System Supplies (Recycled Water)	Section 6.5.4	**Section 6.5.3**
10633(f)	Describe the actions 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.	System Supplies (Recycled Water)	Section 6.5.5	**Section 6.5.4**
10633(g)	Provide a plan for optimizing the use of recycled water in the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.5	**Section 6.5.4**
10634	Provide information on the quality of existing sources of water available to the supplier and the manner in which water quality affects water management strategies and supply reliability	Water Supply Reliability Assessment	Section 7.1	**Section 7.1**
10635(a)	Assess the water supply reliability during normal, dry, and multiple dry water years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years.	Water Supply Reliability Assessment	Section 7.3	**Section 7.3**
10635(b)	Provide supporting documentation that Water Shortage Contingency Plan has been, or will be, provided to any city or county within which it provides water, no later than 60 days after the submission of the plan to DWR.	Plan Adoption, Submittal, and Implementation	Section 10.4.4	**Section 10.4**
10642	Provide supporting documentation that the water supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan.	Plan Preparation	Section 2.5.2	**Section 2.5.2**

10642	Provide supporting documentation that the urban water supplier made the plan available for public inspection, published notice of the public hearing, and held a public hearing about the plan.	Plan Adoption, Submittal, and Implementation	Sections 10.2.2, 10.3, and 10.5	**Section 10.2; Section 10.3**
10642	The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water.	Plan Adoption, Submittal, and Implementation	Sections 10.2.1	**Section 10.2.1**
10642	Provide supporting documentation that the plan has been adopted as prepared or modified.	Plan Adoption, Submittal, and Implementation	Section 10.3.1	**Section 10.3.1**
10644(a)	Provide supporting documentation that the urban water supplier has submitted this UWMP to the California State Library.	Plan Adoption, Submittal, and Implementation	Section 10.4.3	**Section 10.4**
10644(a)(1)	Provide supporting documentation that the urban water supplier has submitted this UWMP to any city or county within which the supplier provides water no later than 30 days after adoption.	Plan Adoption, Submittal, and Implementation	Section 10.4.4	**Section 10.4**
10644(a)(2)	The plan, or amendments to the plan, submitted to the department shall be submitted electronically.	Plan Adoption, Submittal, and Implementation	Sections 10.4.1 and 10.4.2	**Section 10.4**
10645	Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the supplier has or will make the plan available for public review during normal business hours.	Plan Adoption, Submittal, and Implementation	Section 10.5	**Section 10.5**

Appendix B: 2015 UWMP Standardized Tables

Table 2-1 Retail Only: Public Water Systems			
Public Water System Number	Public Water System Name	Number of Municipal Connections 2015	Volume of Water Supplied 2015
3310051	Myoma Dunes Mutual Water Company	2,514	1,083
	TOTAL	2,514	1,083
NOTES:			

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

Table 2-3: Agency Identification	
Type of Agency (select one or both)	
☐	Agency is a wholesaler
☑	Agency is a retailer
Fiscal or Calendar Year (select one)	
☑	UWMP Tables Are in Calendar Years
☐	UWMP Tables Are in Fiscal Years
If Using Fiscal Years Provide Month and Date that the Fiscal Year Begins (mm/dd)	
Units of Measure Used in UWMP (select from Drop down)	
Unit	MG
NOTES:	

Table 2-4 Retail: Water Supplier Information Exchange
The retail supplier has informed the following wholesale supplier(s) of projected water use in accordance with CWC 10631.
Wholesale Water Supplier Name *(Add additional rows as needed)*
N/A
NOTES:

Table 3-1 Retail: Population - Current and Projected						
Population Served	2015	2020	2025	2030	2035	2040*(opt)*
	7,019	7,175	7,331	7,488	7,644	7,800
NOTES:						

Table 4-1 Retail: Demands for Potable and Raw Water - Actual			
Use Type *(Add additional rows as needed)*	2015 Actual		
Drop down list *May select each use multiple times* *These are the only Use Types that will be recognized by the WUEdata online submittal tool*	Additional Description *(as needed)*	Level of Treatment When Delivered *Drop down list*	Volume
Single Family		Drinking Water	721
Multi-Family		Drinking Water	58
Commercial		Drinking Water	112
Industrial		Drinking Water	0
Landscape		Drinking Water	48
Other	Metered construction, etc.	Drinking Water	38
Losses		Drinking Water	107
		TOTAL	1,083
NOTES:			

Table 4-2 Retail: Demands for Potable and Raw Water - Projected						
Use Type *(Add additional rows as needed)*	Additional Description *(as needed)*	Projected Water Use *Report To the Extent that Records are Available*				
Drop down list *May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool*		2020	2025	2030	2035	2040-opt
Single Family		737	753	769	785	801
Multi-Family		59	60	62	63	64
Commercial		114	117	119	122	124
Industrial		0	0	0	0	0
Landscape		49	50	51	52	53
Other	Metered construction, etc.	38	39	40	41	42
Losses		110	112	115	117	119
TOTAL		1,107	1,131	1,155	1,179	1,204
NOTES:						

Table 4-3 Retail: Total Water Demands						
	2015	2020	2025	2030	2035	2040 *(opt)*
Potable and Raw Water *From Tables 4-1 and 4-2*	1,083	1,107	1,131	1,155	1,179	1,204
Recycled Water Demand* *From Table 6-4*	0	0	0	0	0	0
TOTAL WATER DEMAND	1,083	1,107	1,131	1,155	1,179	1,204
**Recycled water demand fields will be blank until Table 6-4 is complete.*						
NOTES:						

Table 4-4 Retail: 12 Month Water Loss Audit Reporting	
Reporting Period Start Date (mm/yyyy)	Volume of Water Loss*
01/2015	93.86
** Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet.*	
NOTES:	

Table 4-5 Retail Only: Inclusion in Water Use Projections	
Are Future Water Savings Included in Projections? (Refer to Appendix K of UWMP Guidebook) *Drop down list (y/n)*	No
If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, etc… utilized in demand projections are found.	
Are Lower Income Residential Demands Included In Projections? *Drop down list (y/n)*	Yes
NOTES:	

Table 5-1 Baselines and Targets Summary

Retail Agency or Regional Alliance Only

Baseline Period	Start Year	End Year	Average Baseline GPCD*	2015 Interim Target *	Confirmed 2020 Target*
10-15 year	*1995*	*2004*	*859*	*772*	*685*
5 Year	*2003*	*2007*	*721*		

*All values are in Gallons per Capita per Day (GPCD)

NOTES:

Table 5-2: 2015 Compliance

Retail Agency or Regional Alliance Only

Actual 2015 GPCD*	2015 Interim Target GPCD*	Optional Adjustments to 2015 GPCD Enter "0" if no adjustment is made *From Methodology 8*					2015 GPCD* *(Adjusted if applicable)*	Did Supplier Achieve Targeted Reduction for 2015? Y/N
		Extraordinary Events*	Economic Adjustment*	Weather Normalization*	TOTAL Adjustments*	Adjusted 2015 GPCD*		
423	772	0	0	0	0	423	423	Yes

**All values are in Gallons per Capita per Day (GPCD)*

NOTES:

Table 6-1 Retail: Groundwater Volume Pumped						
☐	Supplier does not pump groundwater. The supplier will not complete the table below.					
Groundwater Type ***Drop Down List*** *May use each category multiple times*	Location or Basin Name	2011	2012	2013	2014	2015
Add additional rows as needed						
Alluvial Basin	Whitewater River Subbasin	1,458	1,470	1,438	1,402	1,083
	TOTAL	1,458	1,470	1,438	1,402	1,083
NOTES:						

Table 6-2 Retail: Wastewater Collected Within Service Area in 2015						
☑	There is no wastewater collection system. The supplier will not complete the table below.					
	Percentage of 2015 service area covered by wastewater collection system *(optional)*					
	Percentage of 2015 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? *Drop Down List*	Volume of Wastewater Collected from UWMP Service Area 2015	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area? *Drop Down List*	Is WWTP Operation Contracted to a Third Party? *(optional)* *Drop Down List*
Add additional rows as needed						
Total Wastewater Collected from Service Area in 2015:		0				

NOTES:

Table 6-3 Retail: Wastewater Treatment and Discharge Within Service Area in 2015

☑	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 ***Drop down list***	Does This Plant Treat Wastewater Generated Outside the Service Area?	Treatment Level ***Drop down list***	2015 volumes			
							Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area
Add additional rows as needed										
						Total	0	0	0	0

NOTES:

Table 6-4 Retail: Current and Projected Recycled Water Direct Beneficial Uses Within Service Area

☑ 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 Agency Producing (Treating) the Recycled Water:	
Name of Agency Operating the Recycled Water Distribution System:	
Supplemental Water Added in 2015	
Source of 2015 Supplemental Water	

Beneficial Use Type	General Description of 2015 Uses	Level of Treatment *Drop down list*	2015	2020	2025	2030	2035	2040 (opt)
Agricultural irrigation								
Landscape irrigation (excludes golf courses)								
Golf course irrigation								
Commercial use								
Industrial use								
Geothermal and other energy production								
Seawater intrusion barrier								
Recreational impoundment								
Wetlands or wildlife habitat								
Groundwater recharge (IPR)*								
Surface water augmentation (IPR)*								
Direct potable reuse								
Other *(Provide General Description)*								
		Total:	0	0	0	0	0	0

**IPR - Indirect Potable Reuse*

NOTES:

Table 6-5 Retail: 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual			
☑	Recycled water was not used in 2010 nor projected for use in 2015. The supplier will not complete the table below.		
Use Type		**2010 Projection for 2015**	**2015 Actual Use**
Agricultural irrigation			
Landscape irrigation (excludes golf courses)			
Golf course irrigation			
Commercial use			
Industrial use			
Geothermal and other energy production			
Seawater intrusion barrier			
Recreational impoundment			
Wetlands or wildlife habitat			
Groundwater recharge (IPR)			
Surface water augmentation (IPR)			
Direct potable reuse			
Other	*Type of Use*		
Total		0	0
NOTES:			

Table 6-6 Retail: Methods to Expand Future Recycled Water Use			
|✓|	Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.		
	Provide page location of narrative in UWMP		
Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use
Add additional rows as needed			
		Total	0
NOTES:			

Table 6-7 Retail: Expected Future Water Supply Projects or Programs						
☑	No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below.					
☐	Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.					
	Provide page location of narrative in the UWMP					
Name of Future Projects or Programs	Joint Project with other agencies?		Description (if needed)	Planned Implementation Year	Planned for Use in Year Type *Drop Down List*	Expected Increase in Water Supply to Agency *This may be a range*
	Drop Down List (y/n)	*If Yes, Agency Name*				
Add additional rows as needed						
NOTES:						

Table 6-8 Retail: Water Supplies — Actual				
Water Supply	Additional Detail on Water Supply	2015		
Drop down list *May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool*		Actual Volume	Water Quality *Drop Down List*	Total Right or Safe Yield *(optional)*
Add additional rows as needed				
Groundwater		1,083	Drinking Water	
	Total	1,083		0
NOTES:				

Table 6-9 Retail: Water Supplies — Projected						
Water Supply	Additional Detail on Water Supply	Projected Water Supply *Report To the Extent Practicable*				
Drop down list *May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool*		**2020**	**2025**	**2030**	**2035**	**2040** *(opt)*
		Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume
Add additional rows as needed						
Groundwater		1,107	1,131	1,155	1,179	1,204
	Total	1,107	1,131	1,155	1,179	1,204
NOTES:						

Table 7-1 Retail: Basis of Water Year Data			
Year Type	**Base Year** *If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 1999-2000, use 2000*	**Available Supplies if Year Type Repeats**	
		☐ Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____	
		☑ Quantification of available supplies is provided in this table as either volume only, percent only, or both.	
		Volume Available	**% of Average Supply**
Average Year	2012	1470	100%
Single-Dry Year	2013	1438	
Multiple-Dry Years 1st Year	2013	1438	
Multiple-Dry Years 2nd Year	2014	1402	
Multiple-Dry Years 3rd Year	2015	1083	

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

NOTES:

Table 7-2 Retail: Normal Year Supply and Demand Comparison					
	2020	2025	2030	2035	2040 *(Opt)*
Supply totals *(autofill from Table 6-9)*	1,107	1,131	1,155	1,179	1,204
Demand totals *(autofill from Table 4-3)*	1,107	1,131	1,155	1,179	1,204
Difference	(0)	(0)	(0)	(0)	0
NOTES:					

Table 7-3 Retail: Single Dry Year Supply and Demand Comparison					
	2020	2025	2030	2035	2040 (Opt)
Supply totals	1,107	1,131	1,155	1,179	1,204
Demand totals	1,107	1131	1,155	1,179	1,204
Difference	0	0	0	0	0
NOTES:					

Table 7-4 Retail: Multiple Dry Years Supply and Demand Comparison						
		2020	2025	2030	2035	2040 (Opt)
First year	Supply totals	1,107	1,131	1,155	1,179	1,204
	Demand totals	1,107	1,131	1,155	1,179	1,204
	Difference	(0)	(0)	(0)	(0)	0
Second year	Supply totals	1,107	1,131	1,155	1,179	1,204
	Demand totals	1,107	1,131	1,155	1,179	1,204
	Difference	(0)	(0)	(0)	(0)	0
Third year	Supply totals	1,107	1,131	1,155	1,179	1,204
	Demand totals	1,107	1,131	1,155	1,179	1,204
	Difference	(0)	(0)	(0)	(0)	0
Fourth year *(optional)*	Supply totals					
	Demand totals					
	Difference	0	0	0	0	0
Fifth year *(optional)*	Supply totals					
	Demand totals					
	Difference	0	0	0	0	0
Sixth year *(optional)*	Supply totals					
	Demand totals					
	Difference	0	0	0	0	0
NOTES:						

Table 8-1 Retail Stages of Water Shortage Contingency Plan		
Stage	Complete Both	
	Percent Supply Reduction[1] *Numerical value as a percent*	Water Supply Condition (*Narrative description)*
Add additional rows as needed		
I	0-15%	Minor supply reduction
II	15-25%	Moderate supply reduction
III	25-35%	Serious supply reduction
IV	35-50%	Severe supply reduction
[1] *One stage in the Water Shortage Contingency Plan must address a water shortage of 50%.*		
NOTES:		

Table 8-2 Retail Only: Restrictions and Prohibitions on End Uses			
Stage	Restrictions and Prohibitions on End Users ***Drop down list*** *These are the only categories that will be accepted by the WUEdata online submittal tool*	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement? *Drop Down List*
Add additional rows as needed			
1	Other	Customers are encouraged to voluntarily use water wisely and eliminate wasteful practices	No
1	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Customers are encouraged to repair leaks, break, or other malfunctions expeditiously	No
1	Landscape - Restrict or prohibit runoff from landscape irrigation	State restriction	Yes
1	Landscape - Other landscape restriction or prohibition	State restriction - prohibit irrigation with potable water of ornamental turf on public street medians	Yes
1	Landscape - Other landscape restriction or prohibition	State restriction - Irrigating outdoors during and within 48 hours following measureable rainfall	Yes
1	Water Features - Restrict water use for decorative water features, such as fountains	State restriction - prohibit use of potable water in decorative water features that do not recirculate the water	Yes
1	Other - Require automatic shut of hoses	State restriction	Yes
1	Other - Prohibit use of potable water for washing hard surfaces	State restriction	Yes
2	Landscape - Other landscape restriction or prohibition	State restriction - irrigation with potable water outside of newly constructed homes and buildings not in accordance with emergency regulations or other requirements established by the Building Standards Commission and the Department of Housing and Community Development	Yes
2	CII - Lodging establishment must offer opt out of linen service	State restriction	Yes
2	CII - Restaurants may only serve water upon request	State restriction	Yes

Table 8-2 Retail Only: Restrictions and Prohibitions on End Uses			
Stage	Restrictions and Prohibitions on End Users ***Drop down list*** *These are the only categories that will be accepted by the WUEdata online submittal tool*	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement? *Drop Down List*
Add additional rows as needed			
3	Landscape - Limit landscape irrigation to specific times	Lawn watering limited to Monday, Wednesday, and Friday before 7 a.m. and after 8 p.m. Customers are allowed to water other plants during those hours any day of the week.	Yes
4	Other	Up to 50 percent reduction in water budget, enforced through rate penalties. Must be adopted by MDMWC Board of Directors.	Yes
NOTES:			

Table 8-3 Retail Only: Stages of Water Shortage Contingency Plan - Consumption Reduction Methods		
Stage	Consumption Reduction Methods by Water Supplier ***Drop down list*** *These are the only categories that will be accepted by the WUEdata online submittal tool*	Additional Explanation or Reference *(optional)*
Add additional rows as needed		
I	Expand Public Information Campaign	Links to water conservation and landscaping tips are available at the MDMWC website. Water conservation and drought-tolerant landscaping brochures are available at the MDMWC office.
I	Offer Water Use Surveys	Conservation assistance is made available to customers at no cost including instructing how to read a water meter, isolate areas of leakage or high consumption, and irrigation improvements
I	Reduce System Water Loss	Water loss is controlled by comparing production to consumption, regular inspection of distribution facilities, advising customers of suspected leakage downstream of meters, immediate leakage repair and replacement, and replacement of under-registering meters
II	Decrease Line Flushing	Reduce frequency of hydrant and dead-end line flushing
III	Implement or Modify Drought Rate Structure or Surcharge	MDMWC utilizes a four-tier budget-based rate structure that encourages water conservation
IV	Increase Water Waste Patrols	MDMWC makes direct contact to customers known to be wasting water
IV	Moratorium or Net Zero Demand Increase on New Connections	MDMWC reviews any proposed project referred by the County of Riverside
NOTES:		

Table 8-4 Retail: Minimum Supply Next Three Years			
	2016	2017	2018
Available Water Supply	1,088	1,093	1,098
NOTES:			

Table 10-1 Retail: Notification to Cities and Counties		
City Name	60 Day Notice	Notice of Public Hearing
Add additional rows as needed		
La Quinta	☑	☑
	☐	☐
	☐	☐
County Name *Drop Down List*	60 Day Notice	Notice of Public Hearing
Add additional rows as needed		
Riverside County	☑	☑
	☐	☐

Appendix C: SB X7-7 Standardized Tables

SB X7-7 Table 0: Units of Measure Used in UWMP* *(select one from the drop down list)*
Million Gallons
**The unit of measure must be consistent with Table 2-3*
NOTES:

SB X7-7 Table-1: Baseline Period Ranges			
Baseline	**Parameter**	**Value**	**Units**
10- to 15-year baseline period	2008 total water deliveries	2,401	Million Gallons
	2008 total volume of delivered recycled water	-	Million Gallons
	2008 recycled water as a percent of total deliveries	0.00%	Percent
	Number of years in baseline period[1, 2]	10	Years
	Year beginning baseline period range	1995	
	Year ending baseline period range[3]	2004	
5-year baseline period	Number of years in baseline period	5	Years
	Year beginning baseline period range	2003	
	Year ending baseline period range[4]	2007	

[1] If the 2008 recycled water percent is less than 10 percent, then the first baseline period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first baseline period is a continuous 10- to 15-year period. *[2] The Water Code requires that the baseline period is between 10 and 15 years. However, DWR recognizes that some water suppliers may not have the minimum 10 years of baseline data.*

[3] The ending year must be between December 31, 2004 and December 31, 2010.

[4] The ending year must be between December 31, 2007 and December 31, 2010.

NOTES:

SB X7-7 Table 2: Method for Population Estimates	
Method Used to Determine Population (may check more than one)	
☐	**1. Department of Finance** (DOF) DOF Table E-8 (1990 - 2000) and (2000-2010) and DOF Table E-5 (2011 - 2015) when available
☐	**2. Persons-per-Connection Method**
☑	**3. DWR Population Tool**
☐	**4. Other** DWR recommends pre-review
NOTES:	

SB X7-7 Table 3: Service Area Population		
Year		**Population**
10 to 15 Year Baseline Population		
Year 1	1995	4,418
Year 2	1996	4,470
Year 3	1997	4,442
Year 4	1998	4,518
Year 5	1999	4,642
Year 6	2000	4,936
Year 7	2001	4,956
Year 8	2002	5,244
Year 9	2003	5,440
Year 10	2004	5,558
Year 11		
Year 12		
Year 13		
Year 14		
Year 15		
5 Year Baseline Population		
Year 1	2003	5,440
Year 2	2004	5,558
Year 3	2005	6,837
Year 4	2006	6,954
Year 5	2007	7,017
2015 Compliance Year Population		
2015		7,019
NOTES:		

SB X7-7 Table 4: Annual Gross Water Use *

Baseline Year *Fm SB X7-7 Table 3*		Volume Into Distribution System *This column will remain blank until SB X7-7 Table 4-A is completed.*	Deductions					Annual Gross Water Use
			Exported Water	Change in Dist. System Storage (+/-)	Indirect Recycled Water *This column will remain blank until SB X7-7 Table 4-B is completed.*	Water Delivered for Agricultural Use	Process Water *This column will remain blank until SB X7-7 Table 4-D is completed.*	
10 to 15 Year Baseline - Gross Water Use								
Year 1	1995	1,521	-	-	-	-	-	1,521
Year 2	1996	1,492	-	-	-	-	-	1,492
Year 3	1997	1,455	-	-	-	-	-	1,455
Year 4	1998	1,411	-	-	-	-	-	1,411
Year 5	1999	1,454	-	-	-	-	-	1,454
Year 6	2000	1,456	-	-	-	-	-	1,456
Year 7	2001	1,492	-	-	-	-	-	1,492
Year 8	2002	1,640	-	-	-	-	-	1,640
Year 9	2003	1,613	-	-	-	-	-	1,613
Year 10	2004	1,670	-	-	-	-	-	1,670
Year 11	0	-			-	-	-	-
Year 12	0	-			-		-	-
Year 13	0	-			-		-	-
Year 14	0	-			-		-	-
Year 15	0	-			-		-	-
10 - 15 year baseline average gross water use								**1,520**
5 Year Baseline - Gross Water Use								
Year 1	2003	1,613	-	-	-	-	-	1,613
Year 2	2004	1,670	-	-	-	-	-	1,670
Year 3	2005	1,622	-	-	-	-	-	1,622
Year 4	2006	1,678	-	-	-	-	-	1,678
Year 5	2007	1,691	-	-	-	-	-	1,691
5 year baseline average gross water use								**1,655**
2015 Compliance Year - Gross Water Use								
2015		1,083	-	-	-	-	-	**1,083**

* NOTE that the units of measure must remain consistent throughout the UWMP, as reported in Table 2-3

NOTES:

SB X7-7 Table 4-A: Volume Entering the Distribution System(s)

Complete one table for each source.

Name of Source	Groundwater wells
This water source is:	
☑	The supplier's own water source
☐	A purchased or imported source

Baseline Year *Fm SB X7-7 Table 3*		Volume Entering Distribution System	Meter Error Adjustment* *Optional (+/-)*	Corrected Volume Entering Distribution System
10 to 15 Year Baseline - Water into Distribution System				
Year 1	1995	1,521	-	1,521
Year 2	1996	1,492	-	1,492
Year 3	1997	1,455	-	1,455
Year 4	1998	1,411	-	1,411
Year 5	1999	1,454	-	1,454
Year 6	2000	1,456	-	1,456
Year 7	2001	1,492	-	1,492
Year 8	2002	1,640	-	1,640
Year 9	2003	1,613	-	1,613
Year 10	2004	1,670	-	1,670
Year 11	0			-
Year 12	0			-
Year 13	0			-
Year 14	0			-
Year 15	0			-
5 Year Baseline - Water into Distribution System				
Year 1	2003	1,613	-	1,613
Year 2	2004	1,670	-	1,670
Year 3	2005	1,622	-	1,622
Year 4	2006	1,678	-	1,678
Year 5	2007	1,691	-	1,691
2015 Compliance Year - Water into Distribution System				
2015		1,083	-	1,083

** Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document*

NOTES:

SB X7-7 Table 5: Gallons Per Capita Per Day (GPCD)				
Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Annual Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use (GPCD)
10 to 15 Year Baseline GPCD				
Year 1	1995	4,418	1,521	943
Year 2	1996	4,470	1,492	914
Year 3	1997	4,442	1,455	897
Year 4	1998	4,518	1,411	856
Year 5	1999	4,642	1,454	858
Year 6	2000	4,936	1,456	808
Year 7	2001	4,956	1,492	825
Year 8	2002	5,244	1,640	857
Year 9	2003	5,440	1,613	813
Year 10	2004	5,558	1,670	823
Year 11	0	-	-	
Year 12	0	-	-	
Year 13	0	-	-	
Year 14	0	-	-	
Year 15	0	-	-	
10-15 Year Average Baseline GPCD				**859**
5 Year Baseline GPCD				
Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use
Year 1	2003	5,440	1,613	813
Year 2	2004	5,558	1,670	823
Year 3	2005	6,837	1,622	650
Year 4	2006	6,954	1,678	661
Year 5	2007	7,017	1,691	660
5 Year Average Baseline GPCD				**721**
2015 Compliance Year GPCD				
2015		7,019	1,083	**423**
NOTES:				

SB X7-7 Table 6: Gallons per Capita per Day *Summary From Table SB X7-7 Table 5*	
10-15 Year Baseline GPCD	859
5 Year Baseline GPCD	721
2015 Compliance Year GPCD	423
NOTES:	

SB X7-7 Table 7: 2020 Target Method *Select Only One*		
Target Method		Supporting Documentation
☑	Method 1	SB X7-7 Table 7A
☐	Method 2	SB X7-7 Tables 7B, 7C, and 7D
☐	Method 3	SB X7-7 Table 7-E
☐	Method 4	Method 4 Calculator
NOTES:		

SB X7-7 Table 7-A: Target Method 1 20% Reduction	
10-15 Year Baseline GPCD	**2020 Target GPCD**
859	**687**
NOTES:	

SB X7-7 Table 7-F: Confirm Minimum Reduction for 2020 Target			
5 Year Baseline GPCD *From SB X7-7 Table 5*	Maximum 2020 Target[1]	Calculated 2020 Target[2]	**Confirmed 2020 Target**
721	685	687	**685**

[1] Maximum 2020 Target is 95% of the 5 Year Baseline GPCD except for suppliers at or below 100 GPCD.

[2] 2020 Target is calculated based on the selected Target Method, see SB X7-7 Table 7 and corresponding tables for agency's calculated target.

NOTES:

SB X7-7 Table 8: 2015 Interim Target GPCD		
Confirmed 2020 Target *Fm SB X7-7 Table 7-F*	10-15 year Baseline GPCD *Fm SB X7-7 Table 5*	**2015 Interim Target GPCD**
685	859	**772**
NOTES:		

SB X7-7 Table 9: 2015 Compliance

Actual 2015 GPCD	2015 Interim Target GPCD	Optional Adjustments *(in GPCD)* Enter "0" if Adjustment Not Used			TOTAL Adjustments	Adjusted 2015 GPCD	2015 GPCD *(Adjusted if applicable)*	**Did Supplier Achieve Targeted Reduction for 2015?**
		Extraordinary Events	Weather Normalization	Economic Adjustment				
423	772	-	-	-	-	423	423	**YES**

NOTES:

Appendix D: Draft Water Shortage Contingency Resolution

RESOLUTION NO. _____

RESOLUTION OF THE BOARD OF DIRECTORS OF MYOMA DUNES MUTUAL WATER COMPANY TO ADOPT MANDATORY CONSERVATION MEASURES

WHEREAS, the State of California is facing a historic drought; and

WHEREAS, on _____, the Governor of California proclaimed a State of Emergency and on _____, the Governor proclaimed a continued State of Emergency due to the historic drought affecting the state; and

WHEREAS, on _____, the Governor issued an Executive Order directing the State Water Resources Control Board ("SWRCB") to impose restrictions to achieve a statewide ____% reduction in potable urban water usage through _____; and

WHEREAS, on _____, the SWRCB amended its drought-related emergency regulation to achieve a statewide ____% reduction in potable urban water usage through _____ as directed in the Executive Order; and

WHEREAS, the drought-related emergency regulation requires each urban water supplier whose average _____ residential gallons per capita per day ("R-GPCD") was ____ or more to reduce its total potable water production by ____% for each month as compared to the amount used in the same month in _____; and

WHEREAS, Myoma Dunes Mutual Water Company ("MDWC") is an urban water supplier whose average _____ R-GPCD was _____ and is therefore required to reduce its total potable water production by ____%;

NOW, THEREFORE, pursuant to the MDWC Water Shortage Contingency Plan and Section 12.2 of the MDWC "Regulations Governing Water Service," the Board of Directors of MDWC does hereby adopt mandatory conservation measures to achieve a ____% reduction in MDWC's total potable water production in compliance with SWRCB emergency regulations as follows:

BE IT RESOLVED that commencing on _____, watering of turf landscapes is limited to Monday, Wednesday and Friday before 7 a.m. and after 8 p.m. Watering of non-turf and outdoor ornamental landscapes is permitted before 7 a.m. and after 8 p.m. on all days of the week.

BE IT FURTHER RESOLVED that violations of this resolution shall be subject to penalties as follows:

(1) First Violation - written warning
(2) Second Violation - $100.00 surcharge
(3) Third Violation - $200.00 surcharge
(4) Fourth Violation - $400.00 surcharge
(5) Fifth Violation - $500.00 and discontinuance of service.

BE IT FURTHER RESOLVED that this resolution shall become effective immediately upon adoption.

BE IT FURTHER RESOLVED that this resolution shall remain in effect until further notice.

ADOPTED this ____ day of _____.

By:
Joy Dunlevie, Director

By:
Geoff Dunlevie, Director

By:
Michael Dunlevie, Director

By:
Michele Donze, Director

Appendix E: MDMWC Board Resolution of Adoption, Proof of Publication Affidavits, and Public Notices

Myoma Dunes Water Co.
Est. 1953

79-050 Avenue 42, Bermuda Dunes CA 92203
(760)772-1967 fax: (760)772-0955
email: info@myomawater.com
www.myomawater.com

November 10, 2017

Brian Macy, General Manager
Indio Water Authority
150 Civic Center Mall
Indio, CA. 92201

Re: 2015 Urban Water Management Plan

Dear Mr. Macy:

Notice is hereby given that the Myoma Dunes Mutual Water Company (MDMWC) is in the process of preparing an Urban Water Management Plan (UWMP) update in accordance with the requirements of the California Water Code.

MDMWC will be holding a public/adoption hearing to receive public comments and adopt its 2015 UWMP no earlier than 60 days from the date of this notice. This hearing is currently scheduled to occur on January 18, 2018, at 4:00pm in the Bermuda Dunes Community Center, located at 78-400 42nd Avenue Bermuda Dunes, CA 92203. Another public notice will be issued at least two weeks prior to the hearing.

Interested parties are invited to attend the hearing and comment on MDMWC's Draft 2015 UWMP. Comments may also be submitted to MDMWC in writing. A copy of MDMWC's Draft 2015 UWMP will be made available at MDMWC's offices, located at 79-050 Avenue 42, Bermuda Dunes, CA 92203, and on MDMWC's website, http://myomawater.com, at least two weeks prior to the hearing. If there are any questions regarding this notice, please contact Shane Carre at (760) 772-1967 or Shane@myomawater.com.

Sincerely,

Mark Meeler
General Manager

MM:md

Myoma Dunes Water Co.
Est. 1953

79-050 Avenue 42, Bermuda Dunes CA 92203
(760)772-1967 fax: (760)772-0955
email: info@myomawater.com
www.myomawater.com

November 10, 2017

James M. Barrett, General Manager
Coachella Valley Water District
Steve Robbins Administration Building
75515 Hovley Lane East
Palm Desert, CA 92211

Re: 2015 Urban Water Management Plan

Dear Mr. Barrett:

Notice is hereby given that the Myoma Dunes Mutual Water Company (MDMWC) is in the process of preparing an Urban Water Management Plan (UWMP) update in accordance with the requirements of the California Water Code.

MDMWC will be holding a public/adoption hearing to receive public comments and adopt its 2015 UWMP no earlier than 60 days from the date of this notice. This hearing is currently scheduled to occur on January 18, 2018, at 4:00pm in the Bermuda Dunes Community Center, located at 78-400 42nd Avenue Bermuda Dunes, CA 92203. Another public notice will be issued at least two weeks prior to the hearing.

Interested parties are invited to attend the hearing and comment on MDMWC's Draft 2015 UWMP. Comments may also be submitted to MDMWC in writing. A copy of MDMWC's Draft 2015 UWMP will be made available at MDMWC's offices, located at 79-050 Avenue 42, Bermuda Dunes, CA 92203, and on MDMWC's website, http://myomawater.com, at least two weeks prior to the hearing. If there are any questions regarding this notice, please contact Shane Carre at (760) 772-1967 or Shane@myomawater.com.

Sincerely,

Mark Meeler
General Manager

MM:md

Myoma Dunes Water Co.
Est. 1953

79-050 Avenue 42, Bermuda Dunes CA 92203
(760)772-1967 fax: (760)772-0955
email: info@myomawater.com
www.myomawater.com

November 10, 2017

Supervisor V. Manuel Perez
Fourth District Board of Supervisors
County of Riverside
73-710 Fred Waring Drive, Suite 222
Palm Desert, CA 92260

Re: 2015 Urban Water Management Plan

Dear Supervisor V. Manuel Perez:

Notice is hereby given that the Myoma Dunes Mutual Water Company (MDMWC) is in the process of preparing an Urban Water Management Plan (UWMP) update in accordance with the requirements of the California Water Code.

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email: info@myomawater.com
www.myomawater.com

November 10, 2017

Frank J. Spevacek, City Manager
City of La Quinta
78495 Calle Tampico
La Quinta, California 92253

Re: 2015 Urban Water Management Plan

Dear Mr. Spevacek:

Notice is hereby given that the Myoma Dunes Mutual Water Company (MDMWC) is in the process of preparing an Urban Water Management Plan (UWMP) update in accordance with the requirements of the California Water Code.

MDMWC will be holding a public/adoption hearing to receive public comments and adopt its 2015 UWMP no earlier than 60 days from the date of this notice. This hearing is currently scheduled to occur on January 18, 2018, at 4:00pm in the Bermuda Dunes Community Center, located at 78-400 42nd Avenue Bermuda Dunes, CA 92203. Another public notice will be issued at least two weeks prior to the hearing.

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Sincerely,

Mark Meeler
General Manager

MM:md

Desert Sun mediagroup
PART OF THE USA TODAY NETWORK

750 N Gene Autry Trail
Palm Springs, CA 92262
Tel: 760-778-4578 / Fax 760-778-4731
Email: legals@thedesertsun.com

PROOF OF PUBLICATION

STATE OF CALIFORNIA SS.
COUNTY OF RIVERSIDE

MYOMA DUNES WATER CO.
79-050 AVENUE 42

INDIO CA 92203

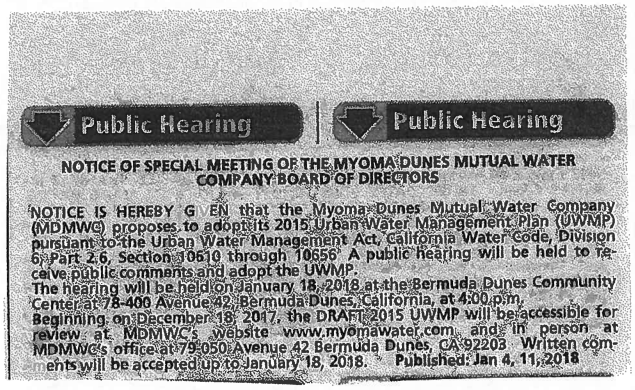
I am over the age of 18 years old, a citizen of the United States and not a party to, or have interest in this matter. I hereby certify that the attached advertisement appeared in said newspaper (set in type not smaller than non pariel) in each and entire issue of said newspaper and not in any supplement thereof on the following dates, to wit:

01/04/18, 01/11/18

I acknowledge that I am a principal clerk of the printer of the Desert Post Weekly, printed and published weekly in the City of Cathedral City, County of Riverside, State of California. The Desert Post Weekly was adjudicated a Newspaper of general circulation on September 4, 2001 by the Superior Court of the County of Riverside, State of California Case No. 024022.

I declare under penalty of perjury that the foregoing is true and correct. Executed on this 11th of January 2018 in Palm Springs, California.

DECLARANT



Public Hearing | Public Hearing

NOTICE OF SPECIAL MEETING OF THE MYOMA DUNES MUTUAL WATER COMPANY BOARD OF DIRECTORS

NOTICE IS HEREBY G EN that the Myoma Dunes Mutual Water Company (MDMWC) proposes to adopt its 2015 Urban Water Management Plan (UWMP) pursuant to the Urban Water Management Act, California Water Code, Division 6, Part 2.6, Section 10610 through 10656. A public hearing will be held to receive public comments and adopt the UWMP.
The hearing will be held on January 18, 2018 at the Bermuda Dunes Community Center at 78-400 Avenue 42, Bermuda Dunes, California, at 4:00 p.m.
Beginning on December 18, 2017, the DRAFT 2015 UWMP will be accessible for review at MDMWC's website www.myomawater.com and in person at MDMWC's office at 79-050 Avenue 42 Bermuda Dunes, CA 92203. Written comments will be accepted up to January 18, 2018. Published: Jan 4, 11, 2018

Ad#:0002621647
P O : 2015 Urban Water Management Plan
# of Affidavits :1

Proof of Publication
In Newspaper
STATE OF CALIFORNIA
County of Riverside

1. I am a citizen of the United States, a resident of the City of La Quinta, County of Riverside, State of California, and over the age of 18 years.

2. I am the Administrator of Production of The Public Record, a newspaper of general circulation printed and published in the City of Palm Springs, County of Riverside, State of California. Said The Public Record is a newspaper of general circulation as that term is defined in Government Code section 6000, its status as such having been established by judicial decree of the Superior Court of the State of California in and for the County of Riverside in Proceeding No. Indio 49271, dated March 31, 1987, entered in Judgment Book No. 129, page 355, on March 31, 1987.

3. The Public Record is a newspaper of general circulation ascertained and established in the City of Palm Springs in the County of Riverside, State of California.

4. The notice, of which the annexed is a true printed copy was published in the newspaper on the following publication dates to with:
January 4, 2018
January 11, 2018

I Certify under penalty of perjury that the above is true and correct.
Dated at La Quinta, California, this
11th Day of January 2018.

The Public Record
Administration

Admin@desertpublicrecord.com

NOTICE OF SPECIAL MEETING OF THE MYOMA DUNES MUTUAL WATER COMPANY BOARD OF DIRECTORS NOTICE IS HEREBY GIVEN that the Myoma Dunes Mutual Water Company (MDMWC) proposes to adopt its 2015 Urban Water Management Plan (UWMP) pursuant to the Urban Water Management Act, California Water Code, Division 6, Part 2.6, Section 10610 through 10656. A public hearing will be held to receive public comments and adopt the UWMP.
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#####

RESOLUTION NO. 2018-1

RESOLUTION OF THE BOARD OF DIRECTORS OF MYOMA DUNES MUTUAL WATER COMPANY TO ADOPT THE 2015 URBAN WATER MANAGEMENT PLAN

WHEREAS, the Urban Water Management Planning Act (the "Act"), found at California Water Code Section 10610 *et. seq.*, requires that every urban water supplier that supplies water for municipal purposes to more than 3,000 customers prepare an Urban Water Management Plan ("UWMP"), the primary objective of which is to plan for the conservation and efficient use of water; and

WHEREAS, Myoma Dunes Mutual Water Company ("MDWC") is an urban water supplier within the meaning of the Act; and

WHEREAS, a UWMP must be adopted by the Board, after public review and hearing, and filed with the California Department of Water Resources within thirty (30) days of adoption; and

WHEREAS, MDWC has prepared the 2015 Urban Water Management Plan to meet the requirements of the Act, in accordance with the guidelines published by the California Department of Water Resources; and

WHEREAS, MDWC has circulated for public review a draft of the 2015 UWMP, and a properly noticed public hearing regarding said UWMP was held by the Board of Directors on January 18, 2018.

NOW, THEREFORE, THE BOARD OF DIRECTORS OF THE MYOMA DUNES MUTUAL WATER COMPANY DOES HEREBY RESOLVE AS FOLLOWS:

BE IT RESOLVED The Board of Directors of the Myoma Dunes Mutual Water Company finds that the 2015 Urban Water Management Plan is in conformance with all applicable requirements of the Urban Water Management Planning Act.

BE IT FURTHER RESOLVED The Board of Directors of the Myoma Dunes Mutual Water Company hereby adopts the 2015 Urban Water Management Plan.

BE IT FURTHER RESOLVED The General Manager is hereby authorized and directed to file the 2015 Urban Water Management Plan with the California Department of Water Resources within thirty (30) days after the date this Resolution is adopted.

PASSED, APPROVED AND ADOPTED this 18th day of January 2018, by the undersigned members of the Board of Directors of the Myoma Dunes Mutual Water Company.

By: _____
Joy Dunlevie, Director

By: _____
Geoff Dunlevie, Director

By: _____
Michael Dunlevie, Director

By: _____
Michele Donze, Director

Appendix F: Distribution System Water Loss

AWWA Free Water Audit Software v5.0

This spreadsheet-based water audit tool is designed to help quantify and track water losses associated with water distribution systems and identify areas for improved efficiency and cost recovery. It provides a "top-down" summary water audit format, and is not meant to take the place of a full-scale, comprehensive water audit format.

Auditors are strongly encouraged to refer to the most current edition of AWWA M36 Manual for Water Audits for detailed guidance on the water auditing process and targetting loss reduction levels

The spreadsheet contains several separate worksheets. Sheets can be accessed using the tabs towards the bottom of the screen, or by clicking the buttons below.

Please begin by providing the following information

Name of Contact Person:	Mark Meeler
Email Address:	MarkMeeler@myomawater.com
Telephone | Ext.:	760-772-1967
Name of City / Utility:	Myoma Dunes Mutual Water Company
City/Town/Municipality:	Bermuda Dunes
State / Province:	California (CA)
Country:	U.S.A.
Year:	2015 Calendar Year
Audit Preparation Date:	10/18/2017
Volume Reporting Units:	Million gallons (US)
PWSID / Other ID:	3310051

The following guidance will help you complete the Audit

All audit data are entered on the ***Reporting Worksheet***

- Value can be entered by user
- Value calculated based on input data
- These cells contain recommended default values

Use of Option (Radio) Buttons: Pcnt: 0.25% Value:

Select the default percentage by choosing the option button on the left

To enter a value, choose this button and enter a value in the cell to the right

The following worksheets are available by clicking the buttons below or selecting the tabs along the bottom of the page

Instructions
The current sheet. Enter contact information and basic audit details (year, units etc)

Reporting Worksheet
Enter the required data on this worksheet to calculate the water balance and data grading

Comments
Enter comments to explain how values were calculated or to document data sources

Performance Indicators
Review the performance indicators to evaluate the results of the audit

Water Balance
The values entered in the Reporting Worksheet are used to populate the Water Balance

Dashboard
A graphical summary of the water balance and Non-Revenue Water components

Grading Matrix
Presents the possible grading options for each input component of the audit

Service Connection Diagram
Diagrams depicting possible customer service connection line configurations

Definitions
Use this sheet to understand the terms used in the audit process

Loss Control Planning
Use this sheet to interpret the results of the audit validity score and performance indicators

Example Audits
Reporting Worksheet and Performance Indicators examples are shown for two validated audits

Acknowledgements
Acknowledgements for the AWWA Free Water Audit Software v5.0

If you have questions or comments regarding the software please contact us via email at: wlc@awwa.org

AWWA Free Water Audit Software:
Reporting Worksheet

WAS v5.0

? Click to access definition
+ Click to add a comment

Water Audit Report for: Myoma Dunes Mutual Water Company (3310051)
Reporting Year: 2015 (1/2015 - 12/2015)

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: MILLION GALLONS (US) PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

Master Meter and Supply Error Adjustments

WATER SUPPLIED

<---------- Enter grading in column 'E' and 'J' ---------->

					Pcnt:	Value:	
Volume from own sources:	3	1,083.200	MG/Yr	n/a			MG/Yr
Water imported:	n/a	0.000	MG/Yr				MG/Yr
Water exported:	n/a	0.000	MG/Yr				MG/Yr

Enter negative % or value for under-registration
Enter positive % or value for over-registration

WATER SUPPLIED: 1,083.200 MG/Yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

				Pcnt:	Value:	
Billed metered:	5	975.800	MG/Yr			
Billed unmetered:	n/a	0.000	MG/Yr			
Unbilled metered:	n/a	0.000	MG/Yr			
Unbilled unmetered:		13.540	MG/Yr	1.25%		MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

Use buttons to select percentage of water supplied **OR** value

AUTHORIZED CONSUMPTION: 989.340 MG/Yr

WATER LOSSES (Water Supplied - Authorized Consumption) 93.860 MG/Yr

Apparent Losses

				Pcnt:	Value:	
Unauthorized consumption:		2.708	MG/Yr	0.25%		MG/Yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	3	30.179	MG/Yr	3.00%		MG/Yr
Systematic data handling errors:		2.440	MG/Yr	0.25%		MG/Yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: 35.327 MG/Yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 58.533 MG/Yr

WATER LOSSES: 93.860 MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER: 107.400 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	5	33.5	miles
Number of active AND inactive service connections:	7	2,514	
Service connection density:		75	conn./mile main

Are customer meters typically located at the curbstop or property line? Yes

Average length of customer service line: (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure: 5 80.0 psi

COST DATA

Total annual cost of operating water system:	10	$2,026,409	$/Year
Customer retail unit cost (applied to Apparent Losses):	9	$0.97	$/100 cubic feet (ccf)
Variable production cost (applied to Real Losses):	4	$33.61	$/Million gallons

☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 49 out of 100 *****

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Volume from own sources
2: Customer metering inaccuracies
3: Billed metered

AWWA Free Water Audit Software:
System Attributes and Performance Indicators

Water Audit Report for: Myoma Dunes Mutual Water Company (3310051)
Reporting Year: 2015 | 1/2015 - 12/2015

***** YOUR WATER AUDIT DATA VALIDITY SCORE IS: 49 out of 100 *****

System Attributes:

	Apparent Losses:	35.327	MG/Yr
+	Real Losses:	58.533	MG/Yr
=	**Water Losses:**	**93.860**	MG/Yr
?	Unavoidable Annual Real Losses (UARL):	16.30	MG/Yr
	Annual cost of Apparent Losses:	$45,808	
	Annual cost of Real Losses:	$1,967	Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumpiton

Performance Indicators:

Financial:	Non-revenue water as percent by volume of Water Supplied:	9.9%	
	Non-revenue water as percent by cost of operating system:	2.4%	Real Losses valued at Variable Production Cost
Operational Efficiency:	Apparent Losses per service connection per day:	38.50	gallons/connection/day
	Real Losses per service connection per day:	63.79	gallons/connection/day
	Real Losses per length of main per day*:	N/A	
	Real Losses per service connection per day per psi pressure:	0.80	gallons/connection/day/psi
	From Above, Real Losses = Current Annual Real Losses (CARL):	58.53	million gallons/year
?	Infrastructure Leakage Index (ILI) [CARL/UARL]:	3.59	

* This performance indicator applies for systems with a low service connection density of less than 32 service connections/mile of pipeline

AWWA Free Water Audit Software:
User Comments

Use this worksheet to add comments or notes to explain how an input value was calculated, or to document the sources of the information used.

General Comment:	

Audit Item	Comment
Volume from own sources:	Well production records.
Vol. from own sources: Master meter error adjustment:	
Water imported:	
Water imported: master meter error adjustment:	
Water exported:	
Water exported: master meter error adjustment:	
Billed metered:	Meter records.
Billed unmetered:	
Unbilled metered:	

Audit Item	Comment
Unbilled unmetered:	
Unauthorized consumption:	
Customer metering inaccuracies:	
Systematic data handling errors:	
Length of mains:	
Number of active AND inactive service connections:	
Average length of customer service line:	
Average operating pressure:	
Total annual cost of operating water system:	
Customer retail unit cost (applied to Apparent Losses):	
Variable production cost (applied to Real Losses):	

AWWA Free Water Audit Software: Water Balance

WAS v5.0

Water Audit Report for:	**Myoma Dunes Mutual Water Company (3310051)**	
Reporting Year:	**2015**	**1/2015 - 12/2015**
Data Validity Score:	**49**	

		Water Exported *0.000*			**Billed Water Exported**	**Revenue Water** 0.000
Own Sources (Adjusted for known errors) *1,083.200*	**System Input** *1,083.200*	**Water Supplied** *1,083.200*	**Authorized Consumption** *989.340*	**Billed Authorized Consumption** *975.800*	**Billed Metered Consumption (water exported is removed)** *975.800*	**Revenue Water** 975.800
					Billed Unmetered Consumption *0.000*	
				Unbilled Authorized Consumption *13.540*	**Unbilled Metered Consumption** *0.000*	**Non-Revenue Water (NRW)** 107.400
					Unbilled Unmetered Consumption *13.540*	
			Water Losses *93.860*	**Apparent Losses** *35.327*	**Unauthorized Consumption** *2.708*	
					Customer Metering Inaccuracies *30.179*	
					Systematic Data Handling Errors *2.440*	
Water Imported *0.000*				**Real Losses** *58.533*	**Leakage on Transmission and/or Distribution Mains** *Not broken down*	
					Leakage and Overflows at Utility's Storage Tanks *Not broken down*	
					Leakage on Service Connections *Not broken down*	

AWWA Free Water Audit Software:
Dashboard

WAS v5.0

The graphic below is a visual representation of the Water Balance with bar heights propotional to the volume of the audit components

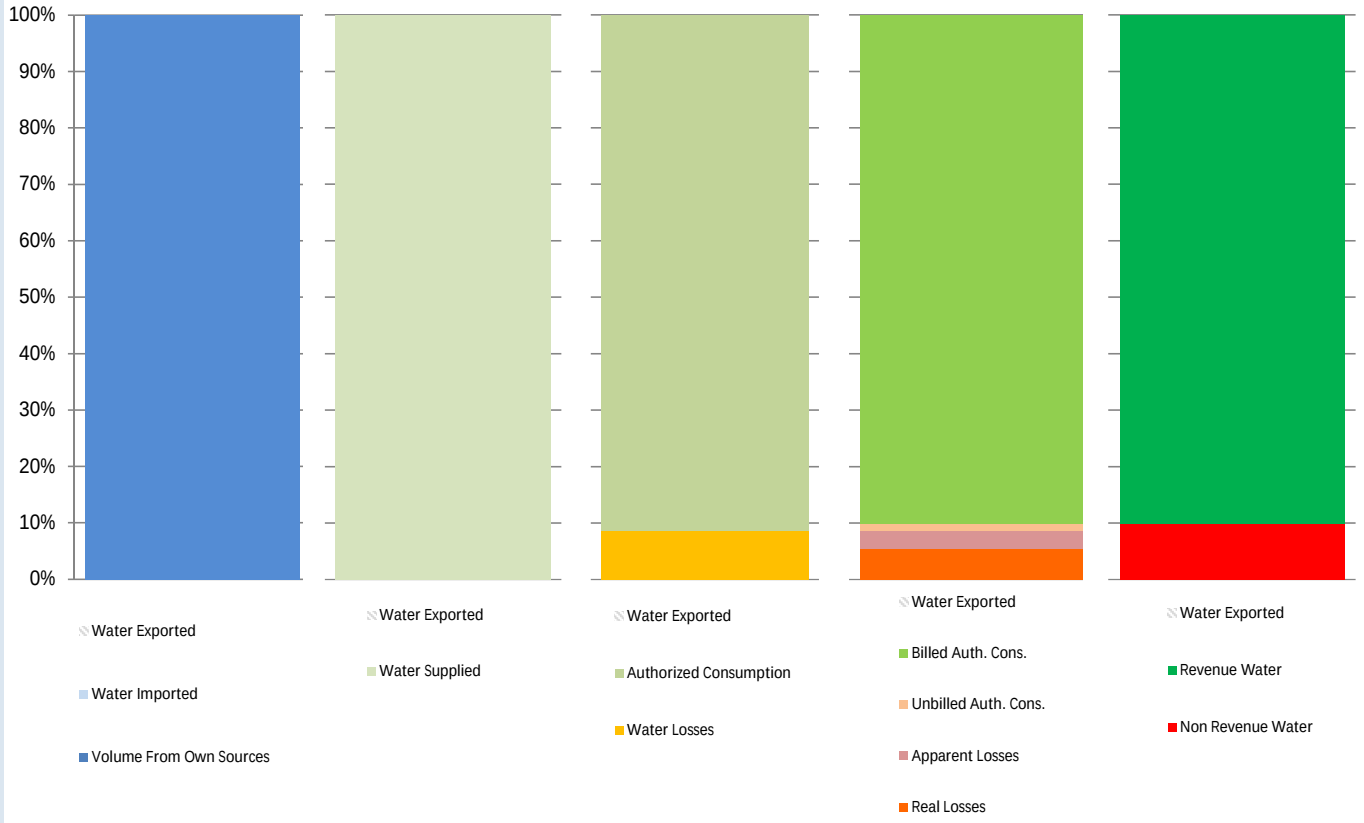
Water Audit Report for: Myoma Dunes Mutual Water Company (3310051)

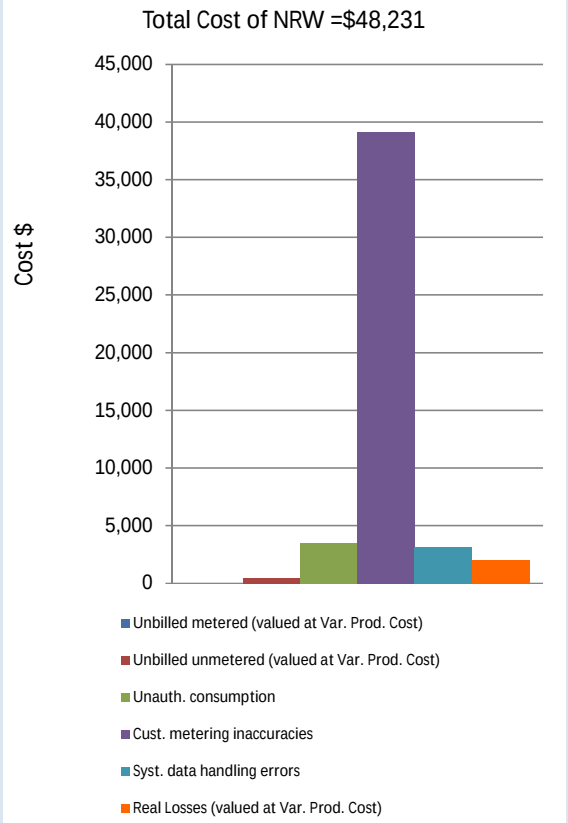
Reporting Year: 2015 | 1/2015 - 12/2015

Data Validity Score: 49

○ Show me the VOLUME of Non-Revenue Water

◉ Show me the COST of Non-Revenue Water





AWWA Free Water Audit Software: Grading Matrix

WAS 5.0

The grading assigned to each audit component and the corresponding recommended improvements and actions are highlighted in yellow. Audit accuracy is likely to be improved by prioritizing those items shown in red

Grading >>>	n/a	1	2	3	4	5	6	7	8	9	10
WATER SUPPLIED											
Volume from own sources:	Select this grading only if the water utility purchases/imports all of its water resources (i.e. has no sources of its own)	Less than 25% of water production sources are metered, remaining sources are estimated. No regular meter accuracy testing or electronic calibration conducted.	25% - 50% of treated water production sources are metered; other sources estimated. No regular meter accuracy testing or electronic calibration conducted.	Conditions between 2 and 4	50% - 75% of treated water production sources are metered, other sources estimated. Occasional meter accuracy testing or electronic calibration conducted.	Conditions between 4 and 6	At least 75% of treated water production sources are metered, or at least 90% of the source flow is derived from metered sources. Meter accuracy testing and/or electronic calibration of related instrumentation is conducted annually. Less than 25% of tested meters are found outside of +/- 6% accuracy.	Conditions between 6 and 8	100% of treated water production sources are metered, meter accuracy testing and electronic calibration of related instrumentation is conducted annually, less than 10% of meters are found outside of +/- 6% accuracy	Conditions between 8 and 10	100% of treated water production sources are metered, meter accuracy testing and electronic calibration of related instrumentation is conducted semi-annually, with less than 10% found outside of +/- 3% accuracy. Procedures are reviewed by a third party knowledgeable in the M36 methodology.
Improvements to attain higher data grading for "Volume from own Sources" component:		to qualify for 2: Organize and launch efforts to collect data for determining volume from own sources	to qualify for 4: Locate all water production sources on maps and in the field, launch meter accuracy testing for existing meters, begin to install meters on unmetered water production sources and replace any obsolete/defective meters.		to qualify for 6: Formalize annual meter accuracy testing for all source meters; specify the frequency of testing. Complete installation of meters on unmetered water production sources and complete replacement of all obsolete/defective meters.		to qualify for 8: Conduct annual meter accuracy testing and calibration of related instrumentation on all meter installations on a regular basis. Complete project to install new, or replace defective existing, meters so that entire production meter population is metered. Repair or replace meters outside of +/- 6% accuracy.		to qualify for 10: Maintain annual meter accuracy testing and calibration of related instrumentation for all meter installations. Repair or replace meters outside of +/- 3% accuracy. Investigate new meter technology; pilot one or more replacements with innovative meters in attempt to further improve meter accuracy.		to maintain 10: Standardize meter accuracy test frequency to semi-annual, or more frequent, for all meters. Repair or replace meters outside of +/- 3% accuracy. Continually investigate/pilot improving metering technology.
Volume from own sources master meter and supply error adjustment:	Select n/a only if the water utility fails to have meters on its sources of supply	Inventory information on meters and paper records of measured volumes exist but are incomplete and/or in a very crude condition; data error cannot be determined	No automatic datalogging of production volumes; daily readings are scribed on paper records without any accountability controls. Flows are not balanced across the water distribution system: tank/storage elevation changes are not employed in calculating the "Volume from own sources" component and archived flow data is adjusted only when grossly evident data error occurs.	Conditions between 2 and 4	Production meter data is logged automatically in electronic format and reviewed at least on a monthly basis with necessary corrections implemented. "Volume from own sources" tabulations include estimate of daily changes in tanks/storage facilities. Meter data is adjusted when gross data errors occur, or occasional meter testing deems this necessary.	Conditions between 4 and 6	Hourly production meter data logged automatically & reviewed on at least a weekly basis. Data is adjusted to correct gross error when meter/instrumentation equipment malfunction is detected; and/or error is confirmed by meter accuracy testing. Tank/storage facility elevation changes are automatically used in calculating a balanced "Volume from own sources" component, and data gaps in the archived data are corrected on at least a weekly basis.	Conditions between 6 and 8	Continuous production meter data is logged automatically & reviewed each business day. Data is adjusted to correct gross error from detected meter/instrumentation equipment malfunction and/or results of meter accuracy testing. Tank/storage facility elevation changes are automatically used in "Volume from own sources" tabulations and data gaps in the archived data are corrected on a daily basis.	Conditions between 8 and 10	Computerized system (SCADA or similar) automatically balances flows from all sources and storages; results are reviewed each business day. Tight accountability controls ensure that all data gaps that occur in the archived flow data are quickly detected and corrected. Regular calibrations between SCADA and sources meters ensures minimal data transfer error.
Improvements to attain higher data grading for "Master meter and supply error adjustment" component:		to qualify for 2: Develop a plan to restructure recordkeeping system to capture all flow data; set a procedure to review flow data on a daily basis to detect input errors. Obtain more reliable information about existing meters by conducting field inspections of meters and related instrumentation, and obtaining manufacturer literature.	to qualify for 4: Install automatic datalogging equipment on production meters. Complete installation of level instrumentation at all tanks/storage facilities and include tank level data in automatic calculation routine in a computerized system. Construct a computerized listing or spreadsheet to archive input volumes, tank/storage volume changes and import/export flows in order to determine the composite "Water Supplied" volume for the distribution system. Set a procedure to review this data on a monthly basis to detect gross anomalies and data gaps.		to qualify for 6: Refine computerized data collection and archive to include hourly production meter data that is reviewed at least on a weekly basis to detect specific data anomalies and gaps. Use daily net storage change to balance flows in calculating "Water Supplied" volume. Necessary corrections to data errors are implemented on a weekly basis.		to qualify for 8: Ensure that all flow data is collected and archived on at least an hourly basis. All data is reviewed and detected errors corrected each business day. Tank/storage levels variations are employed in calculating balanced "Water Supplied" component. Adjust production meter data for gross error and inaccuracy confirmed by testing.		to qualify for 10: Link all production and tank/storage facility elevation change data to a Supervisory Control & Data Acquisition (SCADA) System, or similar computerized monitoring/control system, and establish automatic flow balancing algorithm and regularly calibrate between SCADA and source meters. Data is reviewed and corrected each business day.		to maintain 10: Monitor meter innovations for development of more accurate and less expensive flowmeters. Continue to replace or repair meters as they perform outside of desired accuracy limits. Stay abreast of new and more accurate water level instruments to better record tank/storage levels and archive the variations in storage volume. Keep current with SCADA and data management systems to ensure that archived data is well-managed and error free.
Water Imported:	Select n/a if the water utility's supply is exclusively from its own water resources (no bulk purchased/ imported water)	Less than 25% of imported water sources are metered, remaining sources are estimated. No regular meter accuracy testing.	25% - 50% of imported water sources are metered; other sources estimated. No regular meter accuracy testing.	Conditions between 2 and 4	50% - 75% of imported water sources are metered, other sources estimated. Occasional meter accuracy testing conducted.	Conditions between 4 and 6	At least 75% of imported water sources are metered, meter accuracy testing and/or electronic calibration of related instrumentation is conducted annually for all meter installations. Less than 25% of tested meters are found outside of +/- 6% accuracy.	Conditions between 6 and 8	100% of imported water sources are metered, meter accuracy testing and electronic calibration of related instrumentation is conducted annually, less than 10% of meters are found outside of +/- 6% accuracy	Conditions between 8 and 10	100% of imported water sources are metered, meter accuracy testing and electronic calibration of related instrumentation is conducted semi-annually for all meter installations, with less than 10% of accuracy tests found outside of +/- 3% accuracy.
Improvements to attain higher data grading for "Water Imported Volume" component: *(Note: usually the water supplier selling the water - "the Exporter" - to the utility being audited is responsible to maintain the metering installation measuring the imported volume. The utility should coordinate carefully with the Exporter to ensure that adequate meter upkeep takes place and an accurate measure of the Water Imported volume is quantified.)*		to qualify for 2: Review bulk water purchase agreements with partner suppliers; confirm requirements for use and maintenance of accurate metering. Identify needs for new or replacement meters with goal to meter all imported water sources.	To qualify for 4: Locate all imported water sources on maps and in the field, launch meter accuracy testing for existing meters, begin to install meters on unmetered imported water interconnections and replace obsolete/defective meters.		to qualify for 6: Formalize annual meter accuracy testing for all imported water meters, planning for both regular meter accuracy testing and calibration of the related instrumentation. Continue installation of meters on unmetered imported water interconnections and replacement of obsolete/defective meters.		to qualify for 8: Complete project to install new, or replace defective, meters on all imported water interconnections. Maintain annual meter accuracy testing for all imported water meters and conduct calibration of related instrumentation at least annually. Repair or replace meters outside of +/- 6% accuracy.		to qualify for 10: Conduct meter accuracy testing for all meters on a semi-annual basis, along with calibration of all related instrumentation. Repair or replace meters outside of +/- 3% accuracy. Investigate new meter technology; pilot one or more replacements with innovative meters in attempt to improve meter accuracy.		to maintain 10: Standardize meter accuracy test frequency to semi-annual, or more frequent, for all meters. Continue to conduct calibration of related instrumentation on a semi-annual basis. Repair or replace meters outside of +/- 3% accuracy. Continually investigate/pilot improving metering technology.

Grading >>>	n/a	1	2	3	4	5	6	7	8	9	10
Water imported master meter and supply error adjustment:	Select n/a if the Imported water supply is unmetered, with Imported water quantities estimated on the billing invoices sent by the Exporter to the purchasing Utility.	Inventory information on imported meters and paper records of measured volumes exist but are incomplete and/or in a very crude condition; data error cannot be determined Written agreement(s) with water Exporter(s) are missing or written in vague language concerning meter management and testing.	No automatic datalogging of imported supply volumes; daily readings are scribed on paper records without any accountability controls to confirm data accuracy and the absence of errors and data gaps in recorded volumes. Written agreement requires meter accuracy testing but is vague on the details of how and who conducts the testing.	Conditions between 2 and 4	Imported supply metered flow data is logged automatically in electronic format and reviewed at least on a monthly basis by the Exporter with necessary corrections implemented. Meter data is adjusted by the Exporter when gross data errors are detected. A coherent data trail exists for this process to protect both the selling and the purchasing Utility. Written agreement exists and clearly states requirements and roles for meter accuracy testing and data management.	Conditions between 4 and 6	Hourly Imported supply metered data is logged automatically & reviewed on at least a weekly basis by the Exporter. Data is adjusted to correct gross error when meter/instrumentation equipment malfunction is detected; and to correct for error confirmed by meter accuracy testing. Any data gaps in the archived data are detected and corrected during the weekly review. A coherent data trail exists for this process to protect both the selling and the purchasing Utility.	Conditions between 6 and 8	Continuous Imported supply metered flow data is logged automatically & reviewed each business day by the Exporter. Data is adjusted to correct gross error from detected meter/instrumentation equipment malfunction and/or results of meter accuracy testing. Any data errors/gaps are detected and corrected on a daily basis. A data trail exists for the process to protect both the selling and the purchasing Utility.	Conditions between 8 and 10	Computerized system (SCADA or similar) automatically records data which is reviewed each business day by the Exporter. Tight accountability controls ensure that all error/data gaps that occur in the archived flow data are quickly detected and corrected. A reliable data trail exists and contract provisions for meter testing and data management are reviewed by the selling and purchasing Utility at least once every five years.
Improvements to attain higher data grading for "Water imported master meter and supply error adjustment" component:		to qualify for 2: Develop a plan to restructure recordkeeping system to capture all flow data; set a procedure to review flow data on a daily basis to detect input errors. Obtain more reliable information about existing meters by conducting field inspections of meters and related instrumentation, and obtaining manufacturer literature. Review the written agreement between the selling and purchasing Utility.	to qualify for 4: Install automatic datalogging equipment on Imported supply meters. Set a procedure to review this data on a monthly basis to detect gross anomalies and data gaps. Launch discussions with the Exporters to jointly review terms of the written agreements regarding meter accuracy testing and data management; revise the terms as necessary.		to qualify for 6: Refine computerized data collection and archive to include hourly Imported supply metered flow data that is reviewed at least on a weekly basis to detect specific data anomalies and gaps. Make necessary corrections to errors/data errors on a weekly basis.		to qualify for 8: Ensure that all Imported supply metered flow data is collected and archived on at least an hourly basis. All data is reviewed and errors/data gaps are corrected each business day.		to qualify for 10: Conduct accountability checks to confirm that all Imported supply metered data is reviewed and corrected each business day by the Exporter. Results of all meter accuracy tests and data corrections should be available for sharing between the Exporter and the purchasing Utility. Establish a schedule for a regular review and updating of the contractual language in the written agreement between the selling and the purchasing Utility; at least every five years.		to maintain 10: Monitor meter innovations for development of more accurate and less expensive flowmeters; work with the Exporter to help identify meter replacement needs. Keep communication lines with Exporters open and maintain productive relations. Keep the written agreement current with clear and explicit language that meets the ongoing needs of all parties.
Water Exported:	Select n/a if the water utility sells no bulk water to neighboring water utilities (no exported water sales)	Less than 25% of exported water sources are metered, remaining sources are estimated. No regular meter accuracy testing.	25% - 50% of exported water sources are metered; other sources estimated. No regular meter accuracy testing.	Conditions between 2 and 4	50% - 75% of exported water sources are metered, other sources estimated. Occasional meter accuracy testing conducted.	Conditions between 4 and 6	At least 75% of exported water sources are metered, meter accuracy testing and/or electronic calibration conducted annually. Less than 25% of tested meters are found outside of +/- 6% accuracy.	Conditions between 6 and 8	100% of exported water sources are metered, meter accuracy testing and electronic calibration of related instrumentation is conducted annually, less than 10% of meters are found outside of +/- 6% accuracy	Conditions between 8 and 10	100% of exported water sources are metered, meter accuracy testing and electronic calibration of related instrumentation is conducted semi-annually for all meter installations, with less than 10% of accuracy tests found outside of +/- 3% accuracy.
Improvements to attain higher data grading for "Water Exported Volume" component: *(Note: usually, if the water utility being audited sells (Exports) water to a neighboring purchasing Utility, it is the responsibility of the utility exporting the water to maintain the metering installation measuring the Exported volume. The utility exporting the water should ensure that adequate meter upkeep takes place and an accurate measure of the Water Exported volume is quantified.*)		to qualify for 2: Review bulk water sales agreements with purchasing utilities; confirm requirements for use & upkeep of accurate metering. Identify needs to install new, or replace defective meters as needed.	To qualify for 4: Locate all exported water sources on maps and in field, launch meter accuracy testing for existing meters, begin to install meters on unmetered exported water interconnections and replace obsolete/defective meters		to qualify for 6: Formalize annual meter accuracy testing for all exported water meters. Continue installation of meters on unmetered exported water interconnections and replacement of obsolete/defective meters.		to qualify for 8: Complete project to install new, or replace defective, meters on all exported water interconnections. Maintain annual meter accuracy testing for all exported water meters. Repair or replace meters outside of +/- 6% accuracy.		to qualify for 10: Maintain annual meter accuracy testing for all meters. Repair or replace meters outside of +/- 3% accuracy. Investigate new meter technology; pilot one or more replacements with innovative meters in attempt to improve meter accuracy.		to maintain 10: Standardize meter accuracy test frequency to semi-annual, or more frequent, for all meters. Repair or replace meters outside of +/- 3% accuracy. Continually investigate/pilot improving metering technology.
Water exported master meter and supply error adjustment:	Select n/a only if the water utility fails to have meters on its exported supply interconnections.	Inventory information on exported meters and paper records of measured volumes exist but are incomplete and/or in a very crude condition; data error cannot be determined Written agreement(s) with the utility purchasing the water are missing or written in vague language concerning meter management and testing.	No automatic datalogging of exported supply volumes; daily readings are scribed on paper records without any accountability controls to confirm data accuracy and the absence of errors and data gaps in recorded volumes. Written agreement requires meter accuracy testing but is vague on the details of how and who conducts the testing.	Conditions between 2 and 4	Exported metered flow data is logged automatically in electronic format and reviewed at least on a monthly basis, with necessary corrections implemented. Meter data is adjusted by the utility selling (exporting) the water when gross data errors are detected. A coherent data trail exists for this process to protect both the utility exporting the water and the purchasing Utility. Written agreement exists and clearly states requirements and roles for meter accuracy testing and data management.	Conditions between 4 and 6	Hourly exported supply metered data is logged automatically & reviewed on at least a weekly basis by the utility selling the water. Data is adjusted to correct gross error when meter/instrumentation equipment malfunction is detected; and to correct for error found by meter accuracy testing. Any data gaps in the archived data are detected and corrected during the weekly review. A coherent data trail exists for this process to protect both the selling (exporting) utility and the purchasing Utility.	Conditions between 6 and 8	Continuous exported supply metered flow data is logged automatically & reviewed each business day by the utility selling (exporting) the water. Data is adjusted to correct gross error from detected meter/instrumentation equipment malfunction and any error confirmed by meter accuracy testing. Any data errors/gaps are detected and corrected on a daily basis. A data trail exists for the process to protect both the selling (exporting) Utility and the purchasing Utility.	Conditions between 8 and 10	Computerized system (SCADA or similar) automatically records data which is reviewed each business day by the utility selling (exporting) the water. Tight accountability controls ensure that all error/data gaps that occur in the archived flow data are quickly detected and corrected. A reliable data trail exists and contract provisions for meter testing and data management are reviewed by the selling Utility and purchasing Utility at least once every five years.

Grading >>>	n/a	1	2	3	4	5	6	7	8	9	10
Improvements to attain higher data grading for "Water exported master meter and supply error adjustment" component:		to qualify for 2: Develop a plan to restructure recordkeeping system to capture all flow data; set a procedure to review flow data on a daily basis to detect input errors. Obtain more reliable information about existing meters by conducting field inspections of meters and related instrumentation, and obtaining manufacturer literature. Review the written agreement between the utility selling (exporting) the water and the purchasing Utility.	to qualify for 4: Install automatic datalogging equipment on exported supply meters. Set a procedure to review this data on a monthly basis to detect gross anomalies and data gaps. Launch discussions with the purchasing utilities to jointly review terms of the written agreements regarding meter accuracy testing and data management; revise the terms as necessary.		to qualify for 6: Refine computerized data collection and archive to include hourly exported supply metered flow data that is reviewed at least on a weekly basis to detect specific data anomalies and gaps. Make necessary corrections to errors/data errors on a weekly basis.		to qualify for 8: Ensure that all exported metered flow data is collected and archived on at least an hourly basis. All data is reviewed and errors/data gaps are corrected each business day.		to qualify for 10: Conduct accountability checks to confirm that all exported metered flow data is reviewed and corrected each business day by the utility selling the water. Results of all meter accuracy tests and data corrections should be available for sharing between the utility and the purchasing Utility. Establish a schedule for a regular review and updating of the contractual language in the written agreements with the purchasing utilities; at least every five years.		to maintain 10: Monitor meter innovations for development of more accurate and less expensive flowmeters; work with the purchasing utilities to help identify meter replacement needs. Keep communication lines with the purchasing utilities open and maintain productive relations. Keep the written agreement current with clear and explicit language that meets the ongoing needs of all parties.
AUTHORIZED CONSUMPTION											
Billed metered:	n/a (not applicable). Select n/a only if the entire customer population is not metered and is billed for water service on a flat or fixed rate basis. In such a case the volume entered must be zero.	Less than 50% of customers with volume-based billings from meter readings; flat or fixed rate billing exists for the majority of the customer population	At least 50% of customers with volume-based billing from meter reads; flat rate billing for others. Manual meter reading is conducted, with less than 50% meter read success rate, remainding accounts' consumption is estimated. Limited meter records, no regular meter testing or replacement. Billing data maintained on paper records, with no auditing.	Conditions between 2 and 4	At least 75% of customers with volume-based, billing from meter reads; flat or fixed rate billing for remaining accounts. Manual meter reading is conducted with at least 50% meter read success rate; consumption for accounts with failed reads is estimated. Purchase records verify age of customer meters; only very limited meter accuracy testing is conducted. Customer meters are replaced only upon complete failure. Computerized billing records exist, but only sporadic internal auditing conducted.	Conditions between 4 and 6	At least 90% of customers with volume-based billing from meter reads; consumption for remaining accounts is estimated. Manual customer meter reading gives at least 80% customer meter reading success rate; consumption for accounts with failed reads is estimated. Good customer meter records eixst, but only limited meter accuracy testing is conducted. Regular replacement is conducted for the oldest meters. Computerized billing records exist with annual auditing of summary statistics conducting by utility personnel.	Conditions between 6 and 8	At least 97% of customers exist with volume-based billing from meter reads. At least 90% customer meter reading success rate; or at least 80% read success rate with planning and budgeting for trials of Automatic Meter Reading (AMR) or Advanced Metering Infrastructure (AMI) in one or more pilot areas. Good customer meter records. Regular meter accuracy testing guides replacement of statistically significant number of meters each year. Routine auditing of computerized billing records for global and detailed statistics occurs annually by utility personnel, and is verified by third party at least once every five years.	Conditions between 8 and 10	At least 99% of customers exist with volume-based billing from meter reads. At least 95% customer meter reading success rate; or minimum 80% meter reading success rate, with Automatic Meter Reading (AMR) or Advanced Metering Infrastructure (AMI) trials underway. Statistically significant customer meter testing and replacement program in place on a continuous basis. Computerized billing with routine, detailed auditing, including field investigation of representative sample of accounts undertaken annually by utility personnel. Audit is conducted by third party auditors at least once every three years.
Improvements to attain higher data grading for "Billed Metered Consumption" component:	If n/a is selected because the customer meter population is unmetered, consider establishing a new policy to meter the customer population and employ water rates based upon metered volumes.	to qualify for 2: Conduct investigations or trials of customer meters to select appropriate meter models. Budget funding for meter installations. Investigate volume based water rate structures.	to qualify for 4: Purchase and install meters on unmetered accounts. Implement policies to improve meter reading success. Catalog meter information during meter read visits to identify age/model of existing meters. Test a minimal number of meters for accuracy. Install computerized billing system.		to qualify for 6: Purchase and install meters on unmetered accounts. Eliminate flat fee billing and establish appropriate water rate structure based upon measured consumption. Continue to achieve verifiable success in removing manual meter reading barriers. Expand meter accuracy testing. Launch regular meter replacement program. Launch a program of annual auditing of global billing statistics by utility personnel.		to qualify for 8: Purchase and install meters on unmetered accounts. If customer meter reading success rate is less than 97%, assess cost-effectiveness of Automatic Meter Reading (AMR) or Advanced Metering Infrastructure (AMI) system for portion or entire system; or otherwise achieve ongoing improvements in manual meter reading success rate to 97% or higher. Refine meter accuracy testing program. Set meter replacement goals based upon accuracy test results. Implement annual auditing of detailed billing records by utility personnel and implement third party auditing at least once every five years.		to qualify for 10: Purchase and install meters on unmetered accounts. Launch Automatic Meter Reading (AMR) or Advanced Metering Infrastructure (AMI) system trials if manual meter reading success rate of at least 99% is not achieved within a five-year program. Continue meter accuracy testing program. Conduct planning and budgeting for large scale meter replacement based upon meter life cycle analysis using cumulative flow target. Continue annual detailed billing data auditing by utility personnel and conduct third party auditing at least once every three years.		to maintain 10: Continue annual internal billing data auditing, and third party auditing at least every three years. Continue customer meter accuracy testing to ensure that accurate customer meter readings are obtained and entered as the basis for volume based billing. Stay abreast of improvements in Automatic Meter Reading (AMR) and Advanced Metering Infrastructure (AMI) and information management. Plan and budget for justified upgrades in metering, meter reading and billing data management to maintain very high accuracy in customer metering and billing.
Billed unmetered:	Select n/a if it is the policy of the water utility to meter all customer connections and it has been confirmed by detailed auditing that all customers do indeed have a water meter; i.e. no intentionally unmetered accounts exist	Water utility policy does not require customer metering; flat or fixed fee billing is employed. No data is collected on customer consumption. The only estimates of customer population consumption available are derived from data estimation methods using average fixture count multiplied by number of connections, or similar approach.	Water utility policy does not require customer metering; flat or fixed fee billing is employed. Some metered accounts exist in parts of the system (pilot areas or District Metered Areas) with consumption read periodically or recorded on portable dataloggers over one, three, or seven day periods. Data from these sample meters are used to infer consumption for the total customer population. Site specific estimation methods are used for unusual buildings/water uses.	Conditions between 2 and 4	Water utility policy does require metering and volume based billing in general. However, a liberal amount of exemptions and a lack of clearly written and communicated procedures result in up to 20% of billed accounts believed to be unmetered by exemption; or the water utility is in transition to becoming fully metered, and a large number of customers remain unmetered. A rough estimate of the annual consumption for all unmetered accounts is included in the annual water audit, with no inspection of individual unmetered accounts.	Conditions between 4 and 6	Water utility policy does require metering and volume based billing but established exemptions exist for a portion of accounts such as municipal buildings. As many as 15% of billed accounts are unmetered due to this exemption or meter installation difficulties. Only a group estimate of annual consumption for all unmetered accounts is included in the annual water audit, with no inspection of individual unmetered accounts.	Conditions between 6 and 8	Water utility policy does require metering and volume based billing for all customer accounts. However, less than 5% of billed accounts remain unmetered because meter installation is hindered by unusual circumstances. The goal is to minimize the number of unmetered accounts. Reliable estimates of consumption are obtained for these unmetered accounts via site specific estimation methods.	Conditions between 8 and 10	Water utility policy does require metering and volume based billing for all customer accounts. Less than 2% of billed accounts are unmetered and exist because meter installation is hindered by unusual circumstances. The goal exists to minimize the number of unmetered accounts to the extent that is economical. Reliable estimates of consumption are obtained at these accounts via site specific estimation methods.

Grading >>>	n/a	1	2	3	4	5	6	7	8	9	10
Improvements to attain higher data grading for "Billed Unmetered Consumption" component:		to qualify for 2: Conduct research and evaluate cost/benefit of a new water utility policy to require metering of the customer population; thereby greatly reducing or eliminating unmetered accounts. Conduct pilot metering project by installing water meters in small sample of customer accounts and periodically reading the meters or datalogging the water consumption over one, three, or seven day periods.	to qualify for 4: Implement a new water utility policy requiring customer metering. Launch or expand pilot metering study to include several different meter types, which will provide data for economic assessment of full scale metering options. Assess sites with access difficulties to devise means to obtain water consumption volumes. Begin customer meter installation.		to qualify for 6: Refine policy and procedures to improve customer metering participation for all but solidly exempt accounts. Assign staff resources to review billing records to identify errant unmetered properties. Specify metering needs and funding requirements to install sufficient meters to significant reduce the number of unmetered accounts		to qualify for 8: Push to install customer meters on a full scale basis. Refine metering policy and procedures to ensure that all accounts, including municipal properties, are designated for meters. Plan special efforts to address "hard-to-access" accounts. Implement procedures to obtain a reliable consumption estimate for the remaining few unmetered accounts awaiting meter installation.		to qualify for 10: Continue customer meter installation throughout the service area, with a goal to minimize unmetered accounts. Sustain the effort to investigate accounts with access difficulties, and devise means to install water meters or otherwise measure water consumption.		to maintain 10: Continue to refine estimation methods for unmetered consumption and explore means to establish metering, for as many billed remaining unmetered accounts as is economically feasible.
Unbilled metered:	select n/a if all billing-exempt consumption is unmetered.	Billing practices exempt certain accounts, such as municipal buildings, but written policies do not exist; and a reliable count of unbilled metered accounts is unavailable. Meter upkeep and meter reading on these accounts is rare and not considered a priority. Due to poor recordkeeping and lack of auditing, water consumption for all such accounts is purely guesstimated.	Billing practices exempt certain accounts, such as municipal buildings, but only scattered, dated written directives exist to justify this practice. A reliable count of unbilled metered accounts is unavailable. Sporadic meter replacement and meter reading occurs on an as-needed basis. The total annual water consumption for all unbilled, metered accounts is estimated based upon approximating the number of accounts and assigning consumption from actively billed accounts of same meter size.	Conditions between 2 and 4	Dated written procedures permit billing exemption for specific accounts, such as municipal properties, but are unclear regarding certain other types of accounts. Meter reading is given low priority and is sporadic. Consumption is quantified from meter readings where available. The total number of unbilled, unmetered accounts must be estimated along with consumption volumes.	Conditions between 4 and 6	Written policies regarding billing exemptions exist but adherence in practice is questionable. Metering and meter reading for municipal buildings is reliable but sporadic for other unbilled metered accounts. Periodic auditing of such accounts is conducted. Water consumption is quantified directly from meter readings where available, but the majority of the consumption is estimated.	Conditions between 6 and 8	Written policy identifies the types of accounts granted a billing exemption. Customer meter management and meter reading are considered secondary priorities, but meter reading is conducted at least annually to obtain consumption volumes for the annual water audit. High level auditing of billing records ensures that a reliable census of such accounts exists.	Conditions between 8 and 10	Clearly written policy identifies the types of accounts given a billing exemption, with emphasis on keeping such accounts to a minimum. Customer meter management and meter reading for these accounts is given proper priority and is reliably conducted. Regular auditing confirms this. Total water consumption for these accounts is taken from reliable readings from accurate meters.
Improvements to attain higher data grading for "Unbilled Metered Consumption" component:		to qualify for 2: Reassess the water utility's policy allowing certain accounts to be granted a billing exemption. Draft an outline of a new written policy for billing exemptions, with clear justification as to why any accounts should be exempt from billing, and with the intention to keep the number of such accounts to a minimum.	to qualify for 4: Review historic written directives and policy documents allowing certain accounts to be billing-exempt. Draft an outline of a written policy for billing exemptions, identify criteria that grants an exemption, with a goal of keeping this number of accounts to a minimum. Consider increasing the priority of reading meters on unbilled accounts at least annually.		to qualify for 6: Draft a new written policy regarding billing exemptions based upon consensus criteria allowing this occurrence. Assign resources to audit meter records and billing records to obtain census of unbilled metered accounts. Gradually include a greater number of these metered accounts to the routes for regular meter reading.		to qualify for 8: Communicate billing exemption policy throughout the organization and implement procedures that ensure proper account management. Conduct inspections of accounts confirmed in unbilled metered status and verify that accurate meters exist and are scheduled for routine meter readings. Gradually increase the number of unbilled metered accounts that are included in regular meter reading routes.		to qualify for 10: Ensure that meter management (meter accuracy testing, meter replacement) and meter reading activities for unbilled accounts are accorded the same priority as billed accounts. Establish ongoing annual auditing process to ensure that water consumption is reliably collected and provided to the annual water audit process.		to maintain 10: Reassess the utility's philosophy in allowing any water uses to go "unbilled". It is possible to meter and bill all accounts, even if the fee charged for water consumption is discounted or waived. Metering and billing all accounts ensures that water consumption is tracked and water waste from plumbing leaks is detected and minimized.
Unbilled unmetered:		Extent of unbilled, unmetered consumption is unknown due to unclear policies and poor recordkeeping. Total consumption is quantified based upon a purely subjective estimate.	Clear extent of unbilled, unmetered consumption is unknown, but a number of events are randomly documented each year, confirming existence of such consumption, but without sufficient documentation to quantify an accurate estimate of the annual volume consumed.	Conditions between 2 and 4	Extent of unbilled, unmetered consumption is partially known, and procedures exist to document certain events such as miscellaneous fire hydrant uses. Formulae is used to quantify the consumption from such events (time running multiplied by typical flowrate, multiplied by number of events).	Default value of 1.25% of system input volume is employed	Coherent policies exist for some forms of unbilled, unmetered consumption but others await closer evaluation. Reasonable recordkeeping for the managed uses exists and allows for annual volumes to be quantified by inference, but unsupervised uses are guesstimated.	Conditions between 6 and 8	Clear policies and good recordkeeping exist for some uses (ex: water used in periodic testing of unmetered fire connections), but other uses (ex: miscellaneous uses of fire hydrants) have limited oversight. Total consumption is a mix of well quantified use such as from formulae (time running multiplied by typical flow, multiplied by number of events) or temporary meters, and relatively subjective estimates of less regulated use.	Conditions between 8 and 10	Clear policies exist to identify permitted use of water in unbilled, unmetered fashion, with the intention of minimizing this type of consumption. Good records document each occurrence and consumption is quantified via formulae (time running multiplied by typical flow, multiplied by number of events) or use of temporary meters.
Improvements to attain higher data grading for "Unbilled Unmetered Consumption" component:		to qualify for 5: Utilize the accepted default value of 1.25% of the volume of water supplied as an expedient means to gain a reasonable quantification of this use. to qualify for 2: Establish a policy regarding what water uses should be allowed to remain as unbilled and unmetered. Consider tracking a small sample of one such use (ex: fire hydrant flushings).	to qualify for 5: Utilize accepted default value of 1.25% of the volume of water supplied as an expedient means to gain a reasonable quantification of this use. to qualify for 4: Evaluate the documentation of events that have been observed. Meet with user groups (ex: for fire hydrants - fire departments, contractors to ascertain their need and/or volume requirements for water from fire hydrants).		to qualify for 5: Utilize accepted default value of 1.25% of the volume of water supplied as an expedient means to gain a reasonable quantification of all such use. This is particularly appropriate for water utilities who are in the early stages of the water auditing process, and should focus on other components since the volume of unbilled, umetered consumption is usually a relatively small quatity component, and other larger-quantity components should take priority.	to qualify for 6 or greater: Finalize policy and begin to conduct field checks to better establish and quantify such usage. Proceed if top-down audit exists and/or a great volume of such use is suspected.	to qualify for 8: Assess water utility policy and procedures for various unmetered usages. For example, ensure that a policy exists and permits are issued for use of fire hydrants by persons outside of the utility. Create written procedures for use and documentation of fire hydrants by water utility personnel. Use same approach for other types of unbilled, unmetered water usage.		to qualify for 10: Refine written procedures to ensure that all uses of unbilled, unmetered water are overseen by a structured permitting process managed by water utility personnel. Reassess policy to determine if some of these uses have value in being converted to billed and/or metered status.		to maintain 10: Continue to refine policy and procedures with intention of reducing the number of allowable uses of water in unbilled and unmetered fashion. Any uses that can feasibly become billed and metered should be converted eventually.
APPARENT LOSSES											

Grading >>>	n/a	1	2	3	4	5	6	7	8	9	10
Unauthorized consumption:		Extent of unauthorized consumption is unknown due to unclear policies and poor recordkeeping. Total unauthorized consumption is guesstimated.	Unauthorized consumption is a known occurrence, but its extent is a mystery. There are no requirements to document observed events, but periodic field reports capture some of these occurrences. Total unauthorized consumption is approximated from this limited data.	conditions between 2 and 4	Procedures exist to document some unauthorized consumption such as observed unauthorized fire hydrant openings. Use formulae to quantify this consumption (time running multiplied typical flowrate, multiplied by number of events).	Default value of 0.25% of volume of water supplied is employed	Coherent policies exist for some forms of unauthorized consumption (more than simply fire hydrant misuse) but others await closer evaluation. Reasonable surveillance and recordkeeping exist for occurrences that fall under the policy. Volumes quantified by inference from these records.	Conditions between 6 and 8	Clear policies and good auditable recordkeeping exist for certain events (ex: tampering with water meters, illegal bypasses of customer meters); but other occurrences have limited oversight. Total consumption is a combination of volumes from formulae (time x typical flow) and subjective estimates of unconfirmed consumption.	Conditions between 8 and 10	Clear policies exist to identify all known unauthorized uses of water. Staff and procedures exist to provide enforcement of policies and detect violations. Each occurrence is recorded and quantified via formulae (estimated time running multiplied by typical flow) or similar methods. All records and calculations should exist in a form that can be audited by a third party.
Improvements to attain higher data grading for "Unauthorized Consumption" component:		to qualify for 5: Use accepted default of 0.25% of volume of water supplied. to qualify for 2: Review utility policy regarding what water uses are considered unauthorized, and consider tracking a small sample of one such occurrence (ex: unauthorized fire hydrant openings)	to qualify for 5: Use accepted default of 0.25% of system input volume to qualify for 4: Review utility policy regarding what water uses are considered unauthorized, and consider tracking a small sample of one such occurrence (ex: unauthorized fire hydrant openings)		to qualify for 5: Utilize accepted default value of 0.25% of volume of water supplied as an expedient means to gain a reasonable quantification of all such use. This is particularly appropriate for water utilities who are in the early stages of the water auditing process.	to qualify for 6 or greater: Finalize policy updates to clearly identify the types of water consumption that are authorized from those usages that fall outside of this policy and are, therefore, unauthorized. Begin to conduct regular field checks. Proceed if the top-down audit already exists and/or a great volume of such use is suspected.	to qualify for 8: Assess water utility policies to ensure that all known occurrences of unauthorized consumption are outlawed, and that appropriate penalties are prescribed. Create written procedures for detection and documentation of various occurrences of unauthorized consumption as they are uncovered.		to qualify for 10: Refine written procedures and assign staff to seek out likely occurrences of unauthorized consumption. Explore new locking devices, monitors and other technologies designed to detect and thwart unauthorized consumption.		to maintain 10: Continue to refine policy and procedures to eliminate any loopholes that allow or tacitly encourage unauthorized consumption. Continue to be vigilant in detection, documentation and enforcement efforts.
Customer metering inaccuracies:	select n/a only if the entire customer population is unmetered. In such a case the volume entered must be zero.	Customer meters exist, but with unorganized paper records on meters; no meter accuracy testing or meter replacement program for any size of retail meter. Metering workflow is driven chaotically with no proactive management. Loss volume due to aggregate meter inaccuracy is guesstimated.	Poor recordkeeping and meter oversight is recognized by water utility management who has allotted staff and funding resources to organize improved recordkeeping and start meter accuracy testing. Existing paper records gathered and organized to provide cursory disposition of meter population. Customer meters are tested for accuracy only upon customer request.	Conditions between 2 and 4	Reliable recordkeeping exists; meter information is improving as meters are replaced. Meter accuracy testing is conducted annually for a small number of meters (more than just customer requests, but less than 1% of inventory). A limited number of the oldest meters are replaced each year. Inaccuracy volume is largely an estimate, but refined based upon limited testing data.	Conditions between 4 and 6	A reliable electronic recordkeeping system for meters exists. The meter population includes a mix of new high performing meters and dated meters with suspect accuracy. Routine, but limited, meter accuracy testing and meter replacement occur. Inaccuracy volume is quantified using a mix of reliable and less certain data.	Conditions between 6 and 8	Ongoing meter replacement and accuracy testing result in highly accurate customer meter population. Testing is conducted on samples of meters of varying age and accumulated volume of throughput to determine optimum replacement time for various types of meters.	Ongoing meter replacement and accuracy testing result in highly accurate customer meter population. Statistically significant number of meters are tested in audit year. This testing is conducted on samples of meters of varying age and accumulated volume of throughput to determine optimum replacement time for these meters.	Good records of all active customer meters exist and include as a minimum: meter number, account number/location, type, size and manufacturer. Ongoing meter replacement occurs according to a targeted and justified basis. Regular meter accuracy testing gives a reliable measure of composite inaccuracy volume for the customer meter population. New metering technology is embraced to keep overall accuracy improving. Procedures are reviewed by a third party knowledgeable in the M36 methodology.
Improvements to attain higher data grading for "Customer meter inaccuracy volume" component:	If n/a is selected because the customer meter population is unmetered, consider establishing a new policy to meter the customer population and employ water rates based upon metered volumes.	to qualify for 2: Gather available meter purchase records. Conduct testing on a small number of meters believed to be the most inaccurate. Review staffing needs of the metering group and budget for necessary resources to better organize meter management.	to qualify for 4: Implement a reliable record keeping system for customer meter histories, preferably using electronic methods typically linked to, or part of, the Customer Billing System or Customer Information System. Expand meter accuracy testing to a larger group of meters.		to qualify for 6: Standardize the procedures for meter recordkeeping within an electronic information system. Accelerate meter accuracy testing and meter replacements guided by testing results.		to qualify for 8: Expand annual meter accuracy testing to evaluate a statistically significant number of meter makes/models. Expand meter replacement program to replace statistically significant number of poor performing meters each year.		to qualify for 9: Continue efforts to manage meter population with reliable recordkeeping. Test a statistically significant number of meters each year and analyze test results in an ongoing manner to serve as a basis for a target meter replacement strategy based upon accumulated volume throughput.	to qualify for 10: Continue efforts to manage meter population with reliable recordkeeping, meter testing and replacement. Evaluate new meter types and install one or more types in 5-10 customer accounts each year in order to pilot improving metering technology.	to maintain 10: Increase the number of meters tested and replaced as justified by meter accuracy test data. Continually monitor development of new metering technology and Advanced Metering Infrastructure (AMI) to grasp opportunities for greater accuracy in metering of water flow and management of customer consumption data.

Grading >>>	n/a	1	2	3	4	5	6	7	8	9	10
Systematic Data Handling Errors:	Note: all water utilities incur some amount of this error. Even in water utilities with unmetered customer populations and fixed rate billing, errors occur in annual billing tabulations. Enter a positive value for the volume and select a grading.	Policies and procedures for activation of new customer water billing accounts are vague and lack accountability. Billing data is maintained on paper records which are not well organized. No auditing is conducted to confirm billing data handling efficiency. An unknown number of customers escape routine billing due to lack of billing process oversight.	Policy and procedures for activation of new customer accounts and oversight of billing records exist but need refinement. Billing data is maintained on paper records or insufficiently capable electronic database. Only periodic unstructured auditing work is conducted to confirm billing data handling efficiency. The volume of unbilled water due to billing lapses is a guess.	Conditions between 2 and 4	Policy and procedures for new account activation and oversight of billing operations exist but needs refinement. Computerized billing system exists, but is dated or lacks needed functionality. Periodic, limited internal audits conducted and confirm with approximate accuracy the consumption volumes lost to billing lapses.	Conditions between 4 and 6	Policy and procedures for new account activation and oversight of billing operations is adequate and reviewed periodically. Computerized billing system is in use with basic reporting available. Any effect of billing adjustments on measured consumption volumes is well understood. Internal checks of billing data error conducted annually. Reasonably accurate quantification of consumption volume lost to billing lapses is obtained.	Conditions between 6 and 8	New account activation and billing operations policy and procedures are reviewed at least biannually. Computerized billing system includes an array of reports to confirm billing data and system functionality. Checks are conducted routinely to flag and explain zero consumption accounts. Annual internal checks conducted with third party audit conducted at least once every five years. Accountability checks flag billing lapses. Consumption lost to billing lapses is well quantified and reducing year-by-year.	Conditions between 8 and 10	Sound written policy and procedures exist for new account activation and oversight of customer billing operations. Robust computerized billing system gives high functionality and reporting capabilities which are utilized, analyzed and the results reported each billing cycle. Assessment of policy and data handling errors are conducted internally and audited by third party at least once every three years, ensuring consumption lost to billing lapses is minimized and detected as it occurs.
Improvements to attain higher data grading for "Systematic Data Handling Error volume" component:		to qualify for 2: Draft written policy and procedures for activating new water billing accounts and oversight of billing operations. Investigate and budget for computerized customer billing system. Conduct initial audit of billing records by flow-charting the basic business processes of the customer account/billing function.	to qualify for 4: Finalize written policy and procedures for activation of new billing accounts and overall billing operations management. Implement a computerized customer billing system. Conduct initial audit of billing records as part of this process.		to qualify for 6: Refine new account activation and billing operations procedures and ensure consistency with the utility policy regarding billing, and minimize opportunity for missed billings. Upgrade or replace customer billing system for needed functionality - ensure that billing adjustments don't corrupt the value of consumption volumes. Procedurize internal annual audit process.		to qualify for 8: Formalize regular review of new account activation process and general billing practices. Enhance reporting capability of computerized billing system. Formalize regular auditing process to reveal scope of data handling error. Plan for periodic third party audit to occur at least once every five years.		to qualify for 10: Close policy/procedure loopholes that allow some customer accounts to go unbilled, or data handling errors to exist. Ensure that billing system reports are utilized, analyzed and reported every billing cycle. Ensure that internal and third party audits are conducted at least once every three years.		to maintain 10: Stay abreast of customer information management developments and innovations. Monitor developments of Advanced Metering Infrastructure (AMI) and integrate technology to ensure that customer endpoint information is well-monitored and errors/lapses are at an economic minimum.
SYSTEM DATA											
Length of mains:		Poorly assembled and maintained paper as-built records of existing water main installations makes accurate determination of system pipe length impossible. Length of mains is guesstimated.	Paper records in poor or uncertain condition (no annual tracking of installations & abandonments). Poor procedures to ensure that new water mains installed by developers are accurately documented.	Conditions between 2 and 4	Sound written policy and procedures exist for documenting new water main installations, but gaps in management result in a uncertain degree of error in tabulation of mains length.	Conditions between 4 and 6	Sound written policy and procedures exist for permitting and commissioning new water mains. Highly accurate paper records with regular field validation; or electronic records and asset management system in good condition. Includes system backup.	Conditions between 6 and 8	Sound written policy and procedures exist for permitting and commissioning new water mains. Electronic recordkeeping such as a Geographical Information System (GIS) and asset management system are used to store and manage data.	Conditions between 8 and 10	Sound written policy exists for managing water mains extensions and replacements. Geographic Information System (GIS) data and asset management database agree and random field validation proves truth of databases. Records of annual field validation should be available for review.
Improvements to attain higher data grading for "Length of Water Mains" component:		to qualify for 2: Assign personnel to inventory current as-built records and compare with customer billing system records and highway plans in order to verify poorly documented pipelines. Assemble policy documents regarding permitting and documentation of water main installations by the utility and building developers; identify gaps in procedures that result in poor documentation of new water main installations.	to qualify for 4: Complete inventory of paper records of water main installations for several years prior to audit year. Review policy and procedures for commissioning and documenting new water main installation.		to qualify for 6: Finalize updates/improvements to written policy and procedures for permitting/commissioning new main installations. Confirm inventory of records for five years prior to audit year; correct any errors or omissions.		to qualify for 8: Launch random field checks of limited number of locations. Convert to electronic database such as a Geographic Information System (GIS) with backup as justified. Develop written policy and procedures.		to qualify for 10: Link Geographic Information System (GIS) and asset management databases, conduct field verification of data. Record field verification information at least annually.		to maintain 10: Continue with standardization and random field validation to improve the completeness and accuracy of the system.
Number of active AND inactive service connections:		Vague permitting (of new service connections) policy and poor paper recordkeeping of customer connections/billings result in suspect determination of the number of service connections, which may be 10-15% in error from actual count.	General permitting policy exists but paper records, procedural gaps, and weak oversight result in questionable total for number of connections, which may vary 5-10% of actual count.	Conditions between 2 and 4	Written account activation policy and procedures exist, but with some gaps in performance and oversight. Computerized information management system is being brought online to replace dated paper recordkeeping system. Reasonably accurate tracking of service connection installations & abandonments; but count can be up to 5% in error from actual total.	Conditions between 4 and 6	Written new account activation and overall billing policies and procedures are adequate and reviewed periodically. Computerized information management system is in use with annual installations & abandonments totaled. Very limited field verifications and audits. Error in count of number of service connections is believed to be no more than 3%.	Conditions between 6 and 8	Policies and procedures for new account activation and overall billing operations are written, well-structured and reviewed at least biannually. Well-managed computerized information management system exists and routine, periodic field checks and internal system audits are conducted. Counts of connections are no more than 2% in error.	Conditions between 8 and 10	Sound written policy and well managed and audited procedures ensure reliable management of service connection population. Computerized information management system, Customer Billing System, and Geographic Information System (GIS) information agree; field validation proves truth of databases. Count of connections recorded as being in error is less than 1% of the entire population.
Improvements to attain higher data grading for "Number of Active and Inactive Service Connections" component:	**Note: The number of Service Connections does not include fire hydrant leads/lines connecting the hydrant to the water main**	to qualify for 2: Draft new policy and procedures for new account activation and overall billing operations. Research and collect paper records of installations & abandonments for several years prior to audit year.	to qualify for 4: Refine policy and procedures for new account activation and overall billing operations. Research computerized recordkeeping system (Customer Information System or Customer Billing System) to improve documentation format for service connections.		to qualify for 6: Refine procedures to ensure consistency with new account activation and overall billing policy to establish new service connections or decommission existing connections. Improve process to include all totals for at least five years prior to audit year.		to qualify for 8: Formalize regular review of new account activation and overall billing operations policies and procedures. Launch random field checks of limited number of locations. Develop reports and auditing mechanisms for computerized information management system.		to qualify for 10: Close any procedural loopholes that allow installations to go undocumented. Link computerized information management system with Geographic Information System (GIS) and formalize field inspection and information system auditing processes. Documentation of new or decommissioned service connections encounters several levels of checks and balances.		to maintain 10: Continue with standardization and random field validation to improve knowledge of system.
	Note: if customer water	Gradings 1-9 apply if customer properties are unmetered, if customer meters exist and are located inside the customer building premises, or if the water utility owns and is responsible for the entire service connection piping from the water main to the customer building. In any of these cases the average distance between the curb stop or boundary separating utility/customer responsibility for service connection piping, and the typical first point of use (ex: faucet) or the customer meter must be quantified. Gradings of 1-9 are used to grade the validity of the means to quantify this value. (See the "Service Connection Diagram" worksheet)									Either of two conditions can be met for a grading of 10:

Grading >>>	n/a	1	2	3	4	5	6	7	8	9	10
Average length of customer service line:	meters are located outside of the customer building next to the curb stop or boundary separating utility/customer responsibility, then the auditor should answer "Yes" to the question on the Reporting Worksheet asking about this. If the answer is Yes, the grading description listed under the Grading of 10(a) will be followed, with a value of zero automatically entered at a Grading of 10. See the Service Connection Diagram worksheet for a visual presentation of this distance.	Vague policy exists to define the delineation of water utility ownership and customer ownership of the service connection piping. Curb stops are perceived as the breakpoint but these have not been well-maintained or documented. Most are buried or obscured. Their location varies widely from site-to-site, and estimating this distance is arbitrary due to the unknown location of many curb stops.	Policy requires that the curb stop serves as the delineation point between water utility ownership and customer ownership of the service connection piping. The piping from the water main to the curb stop is the property of the water utility; and the piping from the curb stop to the customer building is owned by the customer. Curb stop locations are not well documented and the average distance is based upon a limited number of locations measured in the field.	Conditions between 2 and 4	Good policy requires that the curb stop serves as the delineation point between water utility ownership and customer ownership of the service connection piping. Curb stops are generally installed as needed and are reasonably documented. Their location varies widely from site-to-site, and an estimate of this distance is hindered by the availability of paper records of limited accuracy.	Conditions between 4 and 6	Clear written policy exists to define utility/customer responsibility for service connection piping. Accurate, well-maintained paper or basic electronic recordkeeping system exists. Periodic field checks confirm piping lengths for a sample of customer properties.	Conditions between 6 and 8	Clearly worded policy standardizes the location of curb stops and meters, which are inspected upon installation. Accurate and well maintained electronic records exist with periodic field checks to confirm locations of service lines, curb stops and customer meter pits. An accurate number of customer properties from the customer billing system allows for reliable averaging of this length.	Conditions between 8 and 10	a) Customer water meters exist outside of customer buildings next to the curb stop or boundary separating utility/customer responsibility for service connection piping. If so, answer "Yes" to the question on the Reporting Working asking about this condition. A value of zero and a Grading of 10 are automatically entered in the Reporting Worksheet . b). Meters exist inside customer buildings, or properties are unmetered. In either case, answer "No" to the Reporting Worksheet question on meter location, and enter a distance determined by the auditor. For a Grading of 10 this value must be a very reliable number from a Geographic Information System (GIS) and confirmed by a statistically valid number of field checks.
Improvements to attain higher data grading for "Average Length of Customer Service Line" component:		to qualify for 2: Research and collect paper records of service line installations. Inspect several sites in the field using pipe locators to locate curb stops. Obtain the length of this small sample of connections in this manner.	to qualify for 4: Formalize and communicate policy delineating utility/customer responsibilities for service connection piping. Assess accuracy of paper records by field inspection of a small sample of service connections using pipe locators as needed. Research the potential migration to a computerized information management system to store service connection data.		to qualify for 6: Establish coherent procedures to ensure that policy for curb stop, meter installation and documentation is followed. Gain consensus within the water utility for the establishment of a computerized information management system.		to qualify for 8: Implement an electronic means of recordkeeping, typically via a customer information system, customer billing system, or Geographic Information System (GIS). Standardize the process to conduct field checks of a limited number of locations.		to qualify for 10: Link customer information management system and Geographic Information System (GIS), standardize process for field verification of data.		to maintain 10: Continue with standardization and random field validation to improve knowledge of service connection configurations and customer meter locations.
Average operating pressure:		Available records are poorly assembled and maintained paper records of supply pump characteristics and water distribution system operating conditions. Average pressure is guesstimated based upon this information and ground elevations from crude topographical maps. Widely varying distribution system pressures due to undulating terrain, high system head loss and weak/erratic pressure controls further compromise the validity of the average pressure calculation.	Limited telemetry monitoring of scattered pumping station and water storage tank sites provides some static pressure data, which is recorded in handwritten logbooks. Pressure data is gathered at individual sites only when low pressure complaints arise. Average pressure is determined by averaging relatively crude data, and is affected by significant variation in ground elevations, system head loss and gaps in pressure controls in the distribution system.	Conditions between 2 and 4	Effective pressure controls separate different pressure zones; moderate pressure variation across the system, occasional open boundary valves are discovered that breech pressure zones. Basic telemetry monitoring of the distribution system logs pressure data electronically. Pressure data gathered by gauges or dataloggers at fire hydrants or buildings when low pressure complaints arise, and during fire flow tests and system flushing. Reliable topographical data exists. Average pressure is calculated using this mix of data.	Conditions between 4 and 6	Reliable pressure controls separate distinct pressure zones; only very occasional open boundary valves are encountered that breech pressure zones. Well-covered telemetry monitoring of the distribution system (not just pumping at source treatment plants or wells) logs extensive pressure data electronically. Pressure gathered by gauges/dataloggers at fire hydrants and buildings when low pressure complaints arise, and during fire flow tests and system flushing. Average pressure is determined by using this mix of reliable data.	Conditions between 6 and 8	Well-managed, discrete pressure zones exist with generally predictable pressure fluctuations. A current full-scale SCADA System or similar realtime monitoring system exists to monitor the water distribution system and collect data, including real time pressure readings at representative sites across the system. The average system pressure is determined from reliable monitoring system data.	Conditions between 8 and 10	Well-managed pressure districts/zones, SCADA System and hydraulic model exist to give very precise pressure data across the water distribution system. Average system pressure is reliably calculated from extensive, reliable, and cross-checked data. Calculations are reported on an annual basis as a minimum.
Improvements to attain higher data grading for "Average Operating Pressure" component:		to qualify for 2: Employ pressure gauging and/or datalogging equipment to obtain pressure measurements from fire hydrants. Locate accurate topographical maps of service area in order to confirm ground elevations. Research pump data sheets to find pump pressure/flow characteristics	to qualify for 4: Formalize a procedure to use pressure gauging/datalogging equipment to gather pressure data during various system events such as low pressure complaints, or operational testing. Gather pump pressure and flow data at different flow regimes. Identify faulty pressure controls (pressure reducing valves, altitude valves, partially open boundary valves) and plan to properly configure pressure zones. Make all pressure data from these efforts available to generate system-wide average pressure.		to qualify for 6: Expand the use of pressure gauging/datalogging equipment to gather scattered pressure data at a representative set of sites, based upon pressure zones or areas. Utilize pump pressure and flow data to determine supply head entering each pressure zone or district. Correct any faulty pressure controls (pressure reducing valves, altitude valves, partially open boundary valves) to ensure properly configured pressure zones. Use expanded pressure dataset from these activities to generate system-wide average pressure.		to qualify for 8: Install a Supervisory Control and Data Acquisition (SCADA) System, or similar realtime monitoring system, to monitor system parameters and control operations. Set regular calibration schedule for instrumentation to insure data accuracy. Obtain accurate topographical data and utilize pressure data gathered from field surveys to provide extensive, reliable data for pressure averaging.		to qualify for 10: Annually, obtain a system-wide average pressure value from the hydraulic model of the distribution system that has been calibrated via field measurements in the water distribution system and confirmed in comparisons with SCADA System data.		to maintain 10: Continue to refine the hydraulic model of the distribution system and consider linking it with SCADA System for real-time pressure data calibration, and averaging.

Grading >>>	n/a	1	2	3	4	5	6	7	8	9	10
COST DATA											
Total annual cost of operating water system:		Incomplete paper records and lack of financial accounting documentation on many operating functions makes calculation of water system operating costs a pure guesstimate	Reasonably maintained, but incomplete, paper or electronic accounting provides data to estimate the major portion of water system operating costs.	Conditions between 2 and 4	Electronic, industry-standard cost accounting system in place. However, gaps in data are known to exist, periodic internal reviews are conducted but not a structured financial audit.	Conditions between 4 and 6	Reliable electronic, industry-standard cost accounting system in place, with all pertinent water system operating costs tracked. Data audited periodically by utility personnel, but not a Certified Public Accountant (CPA).	Conditions between 6 and 8	Reliable electronic, industry-standard cost accounting system in place, with all pertinent water system operating costs tracked. Data audited at least annually by utility personnel, and at least once every three years by third-party CPA.	Conditions between 8 and 10	Reliable electronic, industry-standard cost accounting system in place, with all pertinent water system operating costs tracked. Data audited annually by utility personnel and annually also by third-party CPA.
Improvements to attain higher data grading for "Total Annual Cost of Operating the Water System" component:		to qualify for 2: Gather available records, institute new financial accounting procedures to regularly collect and audit basic cost data of most important operations functions.	to qualify for 4: Implement an electronic cost accounting system, structured according to accounting standards for water utilities		to qualify for 6: Establish process for periodic internal audit of water system operating costs; identify cost data gaps and institute procedures for tracking these outstanding costs.		to qualify for 8: Standardize the process to conduct routine financial audit on an annual basis. Arrange for CPA audit of financial records at least once every three years.		to qualify for 10: Standardize the process to conduct a third-party financial audit by a CPA on an annual basis.		to maintain 10: Maintain program, stay abreast of expenses subject to erratic cost changes and long-term cost trend, and budget/track costs proactively
Customer retail unit cost (applied to Apparent Losses):	Customer population unmetered, and/or only a fixed fee is charged for consumption.	Antiquated, cumbersome water rate structure is used, with periodic historic amendments that were poorly documented and implemented; resulting in classes of customers being billed inconsistent charges. The actual composite billing rate likely differs significantly from the published water rate structure, but a lack of auditing leaves the degree of error indeterminate.	Dated, cumbersome water rate structure, not always employed consistently in actual billing operations. The actual composite billing rate is known to differ from the published water rate structure, and a reasonably accurate estimate of the degree of error is determined, allowing a composite billing rate to be quantified.	Conditions between 2 and 4	Straight-forward water rate structure in use, but not updated in several years. Billing operations reliably employ the rate structure. The composite billing rate is derived from a single customer class such as residential customer accounts, neglecting the effect of different rates from varying customer classes.	Conditions between 4 and 6	Clearly written, up-to-date water rate structure is in force and is applied reliably in billing operations. Composite customer rate is determined using a weighted average residential rate using volumes of water in each rate block.	Conditions between 6 and 8	Effective water rate structure is in force and is applied reliably in billing operations. Composite customer rate is determined using a weighted average composite consumption rate, which includes residential, commercial, industrial, institutional (CII), and any other distinct customer classes within the water rate structure.	Conditions between 8 and 10	Current, effective water rate structure is in force and applied reliably in billing operations. The rate structure and calculations of composite rate - which includes residential, commercial, industrial, institutional (CII), and other distinct customer classes - are reviewed by a third party knowledgeable in the M36 methodology at least once every five years.
Improvements to attain higher data grading for "Customer Retail Unit Cost" component:		to qualify for 2: Formalize the process to implement water rates, including a secure documentation procedure. Create a current, formal water rate document and gain approval from all stakeholders.	to qualify for 4: Review the water rate structure and update/formalize as needed. Assess billing operations to ensure that actual billing operations incorporate the established water rate structure.		to qualify for 6: Evaluate volume of water used in each usage block by residential users. Multiply volumes by full rate structure.	Launch effort to fully meter the customer population and charge rates based upon water volumes	to qualify for 8: Evaluate volume of water used in each usage block by all classifications of users. Multiply volumes by full rate structure.		to qualify for 10: Conduct a periodic third-party audit of water used in each usage block by all classifications of users. Multiply volumes by full rate structure.		to maintain 10: Keep water rate structure current in addressing the water utility's revenue needs. Update the calculation of the customer unit rate as new rate components, customer classes, or other components are modified.
Variable production cost (applied to Real Losses):	Note: if the water utility purchases/imports its entire water supply, then enter the unit purchase cost of the bulk water supply in the Reporting Worksheet with a grading of 10	Incomplete paper records and lack of documentation on primary operating functions (electric power and treatment costs most importantly) makes calculation of variable production costs a pure guesstimate	Reasonably maintained, but incomplete, paper or electronic accounting provides data to roughly estimate the basic operations costs (pumping power costs and treatment costs) and calculate a unit variable production cost.	Conditions between 2 and 4	Electronic, industry-standard cost accounting system in place. Electric power and treatment costs are reliably tracked and allow accurate weighted calculation of unit variable production costs based on these two inputs and water imported purchase costs (if applicable). All costs are audited internally on a periodic basis.	Conditions between 4 and 6	Reliable electronic, industry-standard cost accounting system in place, with all pertinent water system operating costs tracked. Pertinent additional costs beyond power, treatment and water imported purchase costs (if applicable) such as liability, residuals management, wear and tear on equipment, impending expansion of supply, are included in the unit variable production cost, as applicable. The data is audited at least annually by utility personnel.	Conditions between 6 and 8	Reliable electronic, industry-standard cost accounting system in place, with all pertinent primary and secondary variable production and water imported purchase (if applicable) costs tracked. The data is audited at least annually by utility personnel, and at least once every three years by a third-party knowledgeable in the M36 methodology.	Conditions between 8 and 10	Either of two conditions can be met to obtain a grading of 10: 1) Third party CPA audit of all pertinent primary and secondary variable production and water imported purchase (if applicable) costs on an annual basis. or: 2) Water supply is entirely purchased as bulk water imported, and the unit purchase cost - including all applicable marginal supply costs - serves as the variable production cost. If all applicable marginal supply costs are not included in this figure, a grade of 10 should not be selected.
Improvements to attain higher data grading for "Variable Production Cost" component:		to qualify for 2: Gather available records, institute new procedures to regularly collect and audit basic cost data and most important operations functions.	to qualify for 4: Implement an electronic cost accounting system, structured according to accounting standards for water utilities		to qualify for 6: Formalize process for regular internal audits of production costs. Assess whether additional costs (liability, residuals management, equipment wear, impending infrastructure expansion) should be included to calculate a more representative variable production cost.		to qualify for 8: Formalize the accounting process to include direct cost components (power, treatment) as well as indirect cost components (liability, residuals management, etc.) Arrange to conduct audits by a knowledgable third-party at least once every three years.		to qualify for 10: Standardize the process to conduct a third-party financial audit by a CPA on an annual basis.		to maintain 10: Maintain program, stay abreast of expenses subject to erratic cost changes and budget/track costs proactively

Average Length of Customer Service Line

The three figures shown on this worksheet display the assignment of the Average Length of Customer Service Line, Lp, for the three most common piping configurations.

Figure 1 shows the configuration of the water meter outside of the customer building next to the curb stop valve. In this configuration Lp = 0 since the distance between the curb stop and the customer metering point is essentially zero.

Figure 2 shows the configuration of the customer water meter located inside the customer building, where Lp is the distance from the curb stop to the water meter.

Figure 3 shows the configuration of an unmetered customer building , where Lp is the distance from the curb stop to the first point of customer water consumption, or, more simply, the building line.

In any water system the Lp will vary notably in a community of different structures, therefore the average Lp value is used and this should be approximated or calculated if a sample of service line measurements has been gathered.

Click for more information

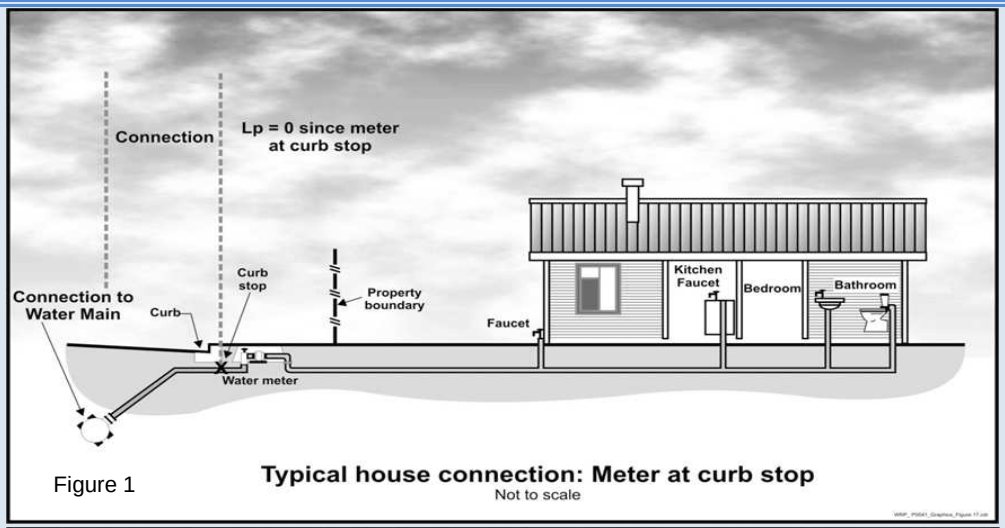


Figure 1 **Typical house connection: Meter at curb stop**
Not to scale

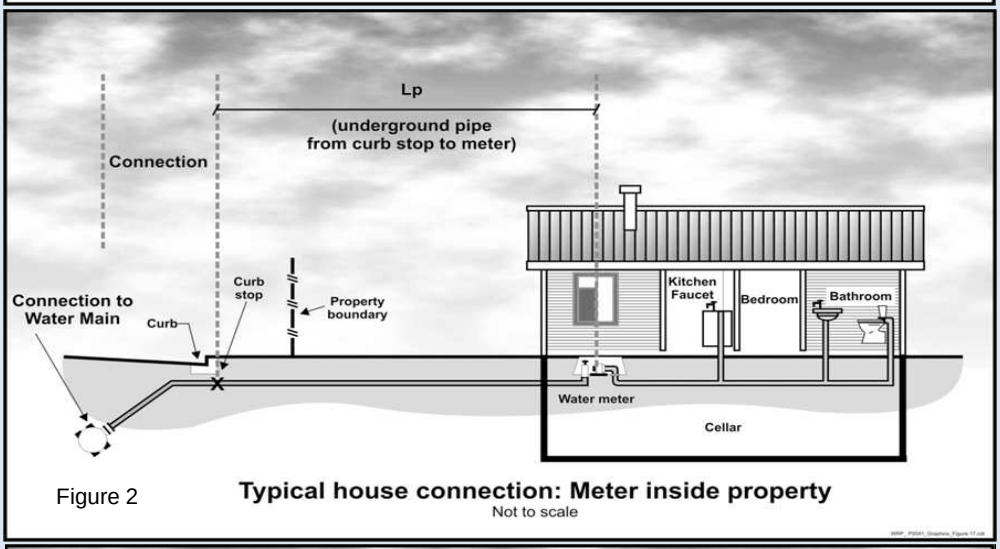


Figure 2 **Typical house connection: Meter inside property**
Not to scale

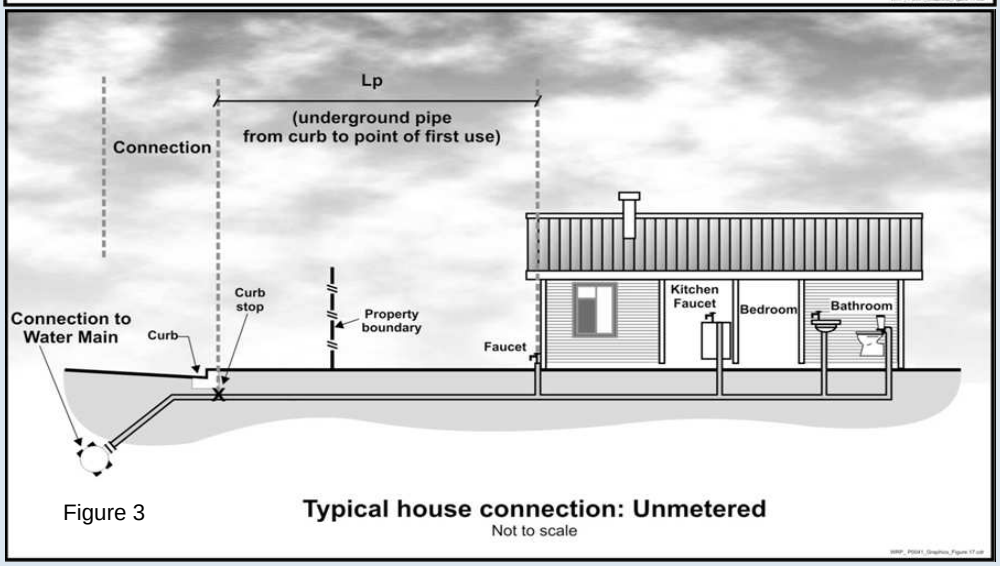
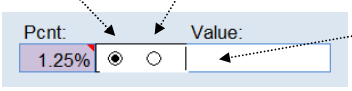


Figure 3 **Typical house connection: Unmetered**
Not to scale

Item Name	Description
Apparent Losses Find	= unauthorized consumption + customer metering inaccuracies + systematic data handling errors Apparent Losses include all types of inaccuracies associated with customer metering (worn meters as well as improperly sized meters or wrong type of meter for the water usage profile) as well as systematic data handling errors (meter reading, billing, archiving and reporting), plus unauthorized consumption (theft or illegal use). NOTE: Over-estimation of Apparent Losses results in under-estimation of Real Losses. Under-estimation of Apparent Losses results in over-estimation of Real Losses.
AUTHORIZED CONSUMPTION Find	= billed water exported + billed metered + billed unmetered + unbilled metered + unbilled unmetered consumption The volume of metered and/or unmetered water taken by registered customers, the water utility's own uses, and uses of others who are implicitly or explicitly authorized to do so by the water utility; for residential, commercial, industrial and public-minded purposes. Typical retail customers' consumption is tabulated usually from established customer accounts as billed metered consumption, or - for unmetered customers - billed unmetered consumption. These types of consumption, along with billed water exported, provide revenue potential for the water utility. **Be certain to tabulate the water exported volume as a separate component and do not "double-count" it by including in the billed metered consumption component as well as the water exported component.** Unbilled authorized consumption occurs typically in non-account uses, including water for fire fighting and training, flushing of water mains and sewers, street cleaning, watering of municipal gardens, public fountains, or similar public-minded uses. Occasionally these uses may be metered and billed (or charged a flat fee), but usually they are unmetered and unbilled. In the latter case, the water auditor may use a default value to estimate this quantity, or implement procedures for the reliable quantification of these uses. This starts with documenting usage events as they occur and estimating the amount of water used in each event. (See Unbilled unmetered consumption)
View Service Connection Diagram **Average length of customer service line** Find	This is the average length of customer service line, Lp, that is owned and maintained by the customer; from the point of ownership transfer to the customer water meter, or building line (if unmetered). The quantity is one of the data inputs for the calculation of Unavoidable Annual Real Losses (UARL), which serves as the denominator of the performance indicator: Infrastructure Leakage Index (ILI). The value of Lp is multiplied by the number of customer service connections to obtain a total length of customer owned piping in the system. The purpose of this parameter is to account for the unmetered service line infrastructure that is the responsibility of the customer for arranging repairs of leaks that occur on their lines. In many cases leak repairs arranged by customers take longer to be executed than leak repairs arranged by the water utility on utility-maintained piping. Leaks run longer - and lose more water - on customer-owned service piping, than utility owned piping. If the customer water meter exists near the ownership transfer point (usually the curb stop located between the water main and the customer premises) this distance is zero because the meter and transfer point are the same. This is the often encountered configuration of customer water meters located in an underground meter box or "pit" outside of the customer's building. The Free Water Audit Software asks a "Yes/No" question about the meter at this location. If the auditor selects "Yes" then this distance is set to zero and the data grading score for this component is set to 10. If water meters are typically located inside the customer premise/building, or properties are unmetered, it is up to the water auditor to estimate a system-wide average Lp length based upon the various customer land parcel sizes and building locations in the service area. Lp will be a shorter length in areas of high density housing, and a longer length in areas of low density housing and varied commercial and industrial buildings. General parcel demographics should be employed to obtain a composite average Lp length for the entire system. Refer to the "Service Connection Diagram" worksheet for a depiction of the service line/metering configurations that typically exist in water utilities. This worksheet gives guidance on the determination of the Average Length, Lp, for each configuration.
Average operating pressure Find	This is the average pressure in the distribution system that is the subject of the water audit. Many water utilities have a calibrated hydraulic model of their water distribution system. For these utilities, the hydraulic model can be utilized to obtain a very accurate quantity of average pressure. In the absence of a hydraulic model, the average pressure may be approximated by obtaining readings of static water pressure from a representative sample of fire hydrants or other system access points evenly located across the system. A weighted average of the pressure can be assembled; but be sure to take into account the elevation of the fire hydrants, which typically exist several feet higher than the level of buried water pipelines. If the water utility is compiling the water audit for the first time, the average pressure can be approximated, but with a low data grading. In subsequent years of auditing, effort should be made to improve the accuracy of the average pressure quantity. This will then qualify the value for a higher data grading.
Billed Authorized Consumption	All consumption that is billed and authorized by the utility. This may include both metered and unmetered consumption. See "Authorized Consumption" for more information.
Billed metered consumption Find	All metered consumption which is billed to retail customers, including all groups of customers such as domestic, commercial, industrial or institutional. **It does NOT include water supplied to neighboring utilities (water exported) which is metered and billed. Be sure to subtract any consumption for exported water sales that may be included in these billing roles. Water supplied as exports to neighboring water utilities should be included only in the Water Exported component.** The metered consumption data can be taken directly from billing records for the water audit period. The accuracy of yearly metered consumption data can be refined by including an adjustment to account for customer meter reading lag time since not all customer meters are read on the same day of the meter reading period. However additional analysis is necessary to determine the lag time adjustment value, which may or may not be significant.
Billed unmetered consumption Find	All billed consumption which is calculated based on estimates or norms from water usage sites that have been determined by utility policy to be left unmetered. This is typically a very small component in systems that maintain a policy to meter their customer population. However, this quantity can be the key consumption component in utilities that have not adopted a universal metering policy. **This component should NOT include any water that is supplied to neighboring utilities (water exported) which is unmetered but billed. Water supplied as exports to neighboring water utilities should be included only in the Water Exported component.**

Item Name	Description
Customer metering inaccuracies Find	Apparent water losses caused by the collective under-registration of customer water meters. Many customer water meters gradually wear as large cumulative volumes of water are passed through them over time. This causes the meters to under-register the flow of water. This occurrence is common with smaller residential meters of sizes 5/8-inch and 3/4 inch after they have registered very large cumulative volumes of water, which generally occurs only after periods of years. For meters sized 1-inch and larger - typical of multi-unit residential, commercial and industrial accounts - meter under-registration can occur from wear or from the improper application of the meter; i.e. installing the wrong type of meter or the wrong size of meter, for the flow pattern (profile) of the consumer. For instance, many larger meters have reduced accuracy at low flows. If an oversized meter is installed, most of the time the routine flow will occur in the low flow range of the meter, and a significant portion of it may not be registered. It is important to properly select and install all meters, but particularly large customer meters, size 1-inch and larger. The auditor has two options for entering data for this component of the audit. The auditor can enter a percentage under-registration (typically an estimated value), this will apply the selected percentage to the two categories of metered consumption to determine the volume of water not recorded due to customer meter inaccuracy. Note that this percentage is a composite average inaccuracy for all customer meters in the entire meter population. The percentage will be multiplied by the sum of the volumes in the Billed Metered and Unbilled Metered components. Alternatively, if the auditor has substantial data from meter testing activities, he or she can calculate their own loss volumes, and this volume may be entered directly. Note that a value of zero will be accepted but an alert will appear asking if the customer population is unmetered. Since all metered systems have some degree of inaccuracy, a positive value should be entered. A value of zero in this component is valid only if the water utility does not meter its customer population.
Customer retail unit cost Find	The Customer Retail Unit Cost represents the charge that customers pay for water service. This unit cost is applied routinely to the components of Apparent Loss, since these losses represent water reaching customers but not (fully) paid for. Since most water utilities have a rate structure that includes a variety of different costs based upon class of customer, a weighted average of individual costs and number of customer accounts in each class can be calculated to determine a single composite cost that should be entered into this cell. Finally, the weighted average cost should also include additional charges for sewer, storm water or biosolids processing, but only if these charges are based upon the volume of potable water consumed. For water utilities in regions with limited water resources and a questionable ability to meet the drinking water demands in the future, the Customer Retail Unit Cost might also be applied to value the Real Losses; instead of applying the Variable Production Cost to Real Losses. In this way, it is assumed that every unit volume of leakage reduced by leakage management activities will be sold to a customer. Note: the Free Water Audit Software allows the user to select the units that are charged to customers (either $/1,000 gallons, $/hundred cubic feet, or $/1,000 litres) and automatically converts these units to the units that appear in the "WATER SUPPLIED" box. The monetary units are United States dollars, $.
Infrastructure Leakage Index (ILI) Find	The ratio of the Current Annual Real Losses (Real Losses) to the Unavoidable Annual Real Losses (UARL). The ILI is a highly effective performance indicator for comparing (benchmarking) the performance of utilities in operational management of real losses.
Length of mains Find	Length of all pipelines (except service connections) in the system starting from the point of system input metering (for example at the outlet of the treatment plant). It is also recommended to include in this measure the total length of fire hydrant lead pipe. Hydrant lead pipe is the pipe branching from the water main to the fire hydrant. Fire hydrant leads are typically of a sufficiently large size that is more representative of a pipeline than a service connection. The average length of hydrant leads across the entire system can be assumed if not known, and multiplied by the number of fire hydrants in the system, which can also be assumed if not known. This value can then be added to the total pipeline length. Total length of mains can therefore be calculated as: Length of Mains, miles = (total pipeline length, miles) + [{(average fire hydrant lead length, ft) x (number of fire hydrants)} / 5,280 ft/mile] or Length of Mains, kilometres = (total pipeline length, kilometres) + [{(average fire hydrant lead length, metres) x (number of fire hydrants)} / 1,000 metres/kilometre]
NON-REVENUE WATER Find	= Apparent Losses + Real Losses + Unbilled Metered Consumption + Unbilled Unmetered Consumption. This is water which does not provide revenue potential to the utility.
Number of active AND inactive service connections Find	Number of customer service connections, extending from the water main to supply water to a customer. Please note that this includes the actual number of distinct piping connections, including fire connections, whether active or inactive. This may differ substantially from the number of customers (or number of accounts). **Note: this number does not include the pipeline leads to fire hydrants - the total length of piping supplying fire hyrants should be included in the "Length of mains" parameter.**
Real Losses Find	Physical water losses from the pressurized system (water mains and customer service connections) and the utility's storage tanks, up to the point of customer consumption. In metered systems this is the customer meter, in unmetered situations this is the first point of consumption (stop tap/tap) within the property. The annual volume lost through all types of leaks, breaks and overflows depends on frequencies, flow rates, and average duration of individual leaks, breaks and overflows.
Revenue Water	Those components of System Input Volume that are billed and have the potential to produce revenue.
Service Connection Density Find	=number of customer service connections / length of mains

Item Name	Description
Systematic data handling errors Find	Apparent losses caused by accounting omissions, errant computer programming, gaps in policy, procedure, and permitting/activation of new accounts; and any type of data lapse that results in under-stated customer water consumption in summary billing reports. **Systematic Data Handling Errors result in a direct loss of revenue potential. Water utilities can find "lost" revenue by keying on this component.** Utilities typically measure water consumption registered by water meters at customer premises. The meter should be read routinely (ex: monthly) and the data transferred to the Customer Billing System, which generates and sends a bill to the customer. Data Transfer Errors result in the consumption value being less than the actual consumption, creating an apparent loss. Such error might occur from illegible and mis-recorded hand-written readings compiled by meter readers, inputting an incorrect meter register unit conversion factor in the automatic meter reading equipment, or a variety of similar errors. Apparent losses also occur from Data Analysis Errors in the archival and data reporting processes of the Customer Billing System. Inaccurate estimates used for accounts that fail to produce a meter reading are a common source of error. Billing adjustments may award customers a rightful monetary credit, but do so by creating a negative value of consumption, thus under-stating the actual consumption. Account activation lapses may allow new buildings to use water for months without meter readings and billing. Poor permitting and construction inspection practices can result in a new building lacking a billing account, a water meter and meter reading; i.e., the customer is unknown to the utility's billing system. Close auditing of the permitting, metering, meter reading, billing and reporting processes of the water consumption data trail can uncover data management gaps that create volumes of systematic data handling error. Utilities should routinely analyze customer billing records to detect data anomalies and quantify these losses. For example, a billing account that registers zero consumption for two or more billing cycles should be checked to explain why usage has seemingly halted. Given the revenue loss impacts of these losses, water utilities are well-justified in providing continuous oversight and timely correction of data transfer errors & data handling errors. If the water auditor has not yet gathered detailed data or assessment of systematic data handling error, it is recommended that the auditor apply the default value of 0.25% of the the Billed Authorized Consumption volume. However, if the auditor has investigated the billing system and its controls, and has well validated data that indicates the volume from systematic data handling error is substantially higher or lower than that generated by the default value, then the auditor should enter a quantity that was derived from the utility investigations and select an appropriate grading. Note: negative values are not allowed for this audit component. If the auditor enters zero for this component then a grading of 1 will be automatically assigned.
Total annual cost of operating the water system Find	These costs include those for operations, maintenance and any annually incurred costs for long-term upkeep of the drinking water supply and distribution system. It should include the costs of day-to-day upkeep and long-term financing such as repayment of capital bonds for infrastructure expansion or improvement. Typical costs include employee salaries and benefits, materials, equipment, insurance, fees, administrative costs and all other costs that exist to sustain the drinking water supply. Depending upon water utility accounting procedures or regulatory agency requirements, it may be appropriate to include depreciation in the total of this cost. This cost should not include any costs to operate wastewater, biosolids or other systems outside of drinking water.
Unauthorized consumption Find	Includes water illegally withdrawn from fire hydrants, illegal connections, bypasses to customer consumption meters, or tampering with metering or meter reading equipment; as well as any other ways to receive water while thwarting the water utility's ability to collect revenue for the water. Unauthorized consumption results in uncaptured revenue and creates an error that understates customer consumption. In most water utilities this volume is low and, if the water auditor has not yet gathered detailed data for these loss occurrences, it is recommended that the auditor apply a default value of 0.25% of the volume of water supplied. However, if the auditor has investigated unauthorized occurrences, and has well validated data that indicates the volume from unauthorized consumption is substantially higher or lower than that generated by the default value, then the auditor should enter a quantity that was derived from the utility investigations. Note that a value of zero will not be accepted since all water utilities have some volume of unauthorized consumption occurring in their system. Note: if the auditor selects the default value for unauthorized consumption, a data grading of 5 is automatically assigned, but not displayed on the Reporting Worksheet.
Unavoidable Annual Real Losses (UARL) Find	UARL (gallons)=(5.41Lm + 0.15Nc + 7.5Lc) xP, or UARL (litres)=(18.0Lm + 0.8Nc + 25.0Lc) xP where: Lm = length of mains (miles or kilometres) Nc = number of customer service connections Lp = the average distance of customer service connection piping (feet or metres) (see the Worksheet "Service Connection Diagram" for guidance on deterring the value of Lp) Lc = total length of customer service connection piping (miles or km) Lc = Nc X Lp (miles or kilometres) P = Pressure (psi or metres) The UARL is a theoretical reference value representing the technical low limit of leakage that could be achieved if all of today's best technology could be successfully applied. It is a key variable in the calculation of the Infrastructure Leakage Index (ILI). Striving to reduce system leakage to a level close to the UARL is usually not needed unless the water supply is unusually expensive, scarce or both. NOTE: The UARL calculation has not yet been proven as fully valid for very small, or low pressure water distribution systems. If, in gallons: (Lm x 32) + Nc < 3000 or P <35psi in litres: (Lm x 20) + Nc < 3000 or P < 25m then the calculated UARL value may not be valid. The software does not display a value of UARL or ILI if either of these conditions is true.

Item Name	Description
Unbilled Authorized Consumption	All consumption that is unbilled, but still authorized by the utility. This includes Unbilled Metered Consumption + Unbilled Unmetered Consumption. See "Authorized Consumption" for more information. For Unbilled Unmetered Consumption, the Free Water Audit Software provides the auditor the option to select a default value if they have not audited unmetered activities in detail. The default calculates a volume that is 1.25% of the Water Supplied volume. If the auditor has carefully audited the various unbilled, unmetered, authorized uses of water, and has established reliable estimates of this collective volume, then he or she may enter the volume directly for this component, and not use the default value.
Unbilled metered consumption Find	Metered consumption which is authorized by the water utility, but, for any reason, is deemed by utility policy to be unbilled. This might for example include metered water consumed by the utility itself in treatment or distribution operations, or metered water provided to civic institutions free of charge. **It does not include water supplied to neighboring utilities (water exported) which may be metered but not billed.**
Unbilled unmetered consumption Find	Any kind of Authorized Consumption which is neither billed or metered. This component typically includes water used in activities such as fire fighting, flushing of water mains and sewers, street cleaning, fire flow tests conducted by the water utility, etc. In most water utilities it is a small component which is very often substantially overestimated. **It does NOT include water supplied to neighboring utilities (water exported) which is unmetered and unbilled – an unlikely case.** This component has many sub-components of water use which are often tedious to identify and quantify. Because of this, and the fact that it is usually a small portion of the water supplied, it is recommended that the auditor apply the default value, which is 1.25% of the Water Supplied volume. Select the default percentage to enter this value. If the water utility has carefully audited the unbilled, unmetered activities occurring in the system, and has well validated data that gives a value substantially higher or lower than the default volume, then the auditor should enter their own volume. However the default approach is recommended for most water utilities. Note that a value of zero is not permitted, since all water utilities have some volume of water in this component occurring in their system.
Units and Conversions	The user may develop an audit based on one of three unit selections: 1) Million Gallons (US) 2) Megalitres (Thousand Cubic Metres) 3) Acre-feet Once this selection has been made in the instructions sheet, all calculations are made on the basis of the chosen units. Should the user wish to make additional conversions, a unit converter is provided below (use drop down menus to select units from the yellow unit boxes): Enter Units: 1 | Convert From… Million Gallons (US) = **Converts to…..** 3.06888329 Acre-feet (conversion factor = 3.06888328973723)
Use of Option Buttons	To use the default percent value choose this button To enter a value choose this button and enter the value in the cell to the right  **NOTE:** For Unbilled Unmetered Consumption, Unauthorized Consumption and Systematic Data Handling Errors, a recommended default value can be applied by selecting the Percent option. The default values are based on fixed percentages of Water Supplied or Billed Authorized Consumption and are recommended for use in this audit unless the auditor has well validated data for their system. Default values are shown by purple cells, as shown in the example above. If a default value is selected, the user does not need to grade the item; a grading value of 5 is automatically applied (however, this grade will not be displayed).
Variable production cost (applied to Real Losses) Find	The cost to produce and supply the next unit of water (e.g., $/million gallons). This cost is determined by calculating the summed unit costs for ground and surface water treatment and all power used for pumping from the source to the customer. It may also include other miscellaneous unit costs that apply to the production of drinking water. It should also include the unit cost of bulk water purchased as an import if applicable. It is common to apply this unit cost to the volume of Real Losses. However, if water resources are strained and the ability to meet future drinking water demands is in question, then the water auditor can be justified in applying the Customer Retail Rate to the Real Loss volume, rather than applying the Variable Production Cost. The Free Water Audit Software applies the Variable Production costs to Real Losses by default. However, the auditor has the option on the Reporting Worksheet to select the Customer Retail Cost as the basis for the Real Loss cost evaluation if the auditor determines that this is warranted.
Volume from own sources Find	The volume of water withdrawn (abstracted) from water resources (rivers, lakes, streams, wells, etc) controlled by the water utility, and then treated for potable water distribution. Most water audits are compiled for utility retail water distribution systems, so this volume should reflect the amount of treated drinking water that entered the distribution system. Often the volume of water measured at the effluent of the treatment works is slightly less than the volume measured at the raw water source, since some of the water is used in the treatment process. Thus, it is useful if flows are metered at the effluent of the treatment works. If metering exists only at the raw water source, an adjustment for water used in the treatment process should be included to account for water consumed in treatment operations such as filter backwashing, basin flushing and cleaning, etc. If the audit is conducted for a wholesale water agency that sells untreated water, then this quantity reflects the measure of the raw water, typically metered at the source.

Item Name	Description
Volume from own sources: Master meter and supply error adjustment Find	An estimate or measure of the degree of inaccuracy that exists in the master (production) meters measuring the annual Volume from own Sources, and any error in the data trail that exists to collect, store and report the summary production data. This adjustment is a weighted average number that represents the collective error for all master meters for all days of the audit year and any errors identified in the data trail. Meter error can occur in different ways. A meter or meters may be inaccurate by under-registering flow (did not capture all the flow), or by over-registering flow (overstated the actual flow). Data error can occur due to data gaps caused by temporary outages of the meter or related instrumentation. All water utilities encounter some degree of inaccuracy in master meters and data errors in archival systems are common; thus a value of zero should not be entered. Enter a negative percentage or value for metered data under-registration; or, enter a positive percentage or value for metered data over-registration.
Water exported Find	The Water Exported volume is the bulk water conveyed and sold by the water utility to neighboring water systems that exists outside of their service area. Typically this water is metered at the custody transfer point of interconnection between the two water utilities. Usually the meter(s) are owned by the water utility that is selling the water: i.e. the exporter. If the water utility who is compiling the annual water audit sells bulk water in this manner, they are an exporter of water. Note: The Water Exported volume is sold to wholesale customers who are typically charged a wholesale rate that is different than retail rates charged to the retail customers existing within the service area. Many state regulatory agencies require that the Water Exported volume be reported to them as a quantity separate and distinct from the retail customer billed consumption. For these reasons - and others - the Water Exported volume is always quantified separately from Billed Authorized Consumption in the standard water audit. **Be certain not to "double-count" this quantity by including it in both the Water Exported box and the Billed Metered Consumption box of the water audit Reporting Worksheet. This volume should be included only in the Water Exported box.**
Water exported: Master meter and supply error adjustment Find	An estimate or measure of the volume in which the Water Exported volume is incorrect. This adjustment is a weighted average that represents the collective error for all of the metered and archived exported flow for all days of the audit year. Meter error can occur in different ways. A meter may be inaccurate by under-registering flow (did not capture all the flow), or by over-registering flow (overstated the actual flow). Error in the metered, archived data can also occur due to data gaps caused by temporary outages of the meter or related instrumentation. All water utilities encounter some degree of error in their metered data, particularly if meters are aged and infrequently tested. Occasional errors also occur in the archived data. Thus, a value of zero should not be entered. Enter a negative percentage or value for metered data under-registration; or enter a positive percentage or value for metered data over-registration. If regular meter accuracy testing is conducted on the meter(s) - which is usually conducted by the water utility selling the water - then the results of this testing can be used to help quantify the meter error adjustment. Corrections to data gaps or other errors found in the archived data should also be included as a portion of this meter error adjustment.
Water imported Find	The Water Imported volume is the bulk water purchased to become part of the Water Supplied volume. Typically this is water purchased from a neighboring water utility or regional water authority, and is metered at the custody transfer point of interconnection between the two water utilities. Usually the meter(s) are owned by the water supplier selling the water to the utility conducting the water audit. The water supplier selling the bulk water usually charges the receiving utility based upon a wholesale water rate.
Water imported: Master meter and supply error adjustment Find	An estimate or measure of the volume in which the Water Imported volume is incorrect. This adjustment is a weighted average that represents the collective error for all of the metered and archived imported flow for all days of the audit year. Meter error can occur in different ways. A meter may be inaccurate by under-registering flow (did not capture all the flow), or by over-registering flow (overstated the actual flow). Error in the metered, archived data can also occur due to data gaps caused by temporary outages of the meter or related instrumentation. All water utilities encounter some level of meter inaccuracy, particularly if meters are aged and infrequently tested. Occasional errors also occur in the archived metered data. Thus, a value of zero should not be entered. Enter a negative percentage or value for metered data under-registration; or, enter a positive percentage or value for metered data over-registration. If regular meter accuracy testing is conducted on the meter(s) - which is usually conducted by the water utility selling the water - then the results of this testing can be used to help quantify the meter error adjustment.
WATER LOSSES Find	= apparent losses + real losses Water Losses are the difference between Water Supplied and Authorized Consumption. Water losses can be considered as a total volume for the whole system, or for partial systems such as transmission systems, pressure zones or district metered areas (DMA); if one of these configurations are the basis of the water audit.

Water Audit Report for: Myoma Dunes Mutual Water Company (3310051)
Reporting Year: 2015 | 1/2015 - 12/2015
Data Validity Score: 49

Water Loss Control Planning Guide

	Water Audit Data Validity Level / Score				
Functional Focus Area	**Level I** (0-25)	**Level II** (26-50)	**Level III** (51-70)	**Level IV** (71-90)	**Level V** (91-100)
Audit Data Collection	Launch auditing and loss control team; address production metering deficiencies	Analyze business process for customer metering and billing functions and water supply operations. Identify data gaps.	Establish/revise policies and procedures for data collection	Refine data collection practices and establish as routine business process	Annual water audit is a reliable gauge of year-to-year water efficiency standing
Short-term loss control	Research information on leak detection programs. Begin flowcharting analysis of customer billing system	Conduct loss assessment investigations on a sample portion of the system: customer meter testing, leak survey, unauthorized consumption, etc.	Establish ongoing mechanisms for customer meter accuracy testing, active leakage control and infrastructure monitoring	Refine, enhance or expand ongoing programs based upon economic justification	Stay abreast of improvements in metering, meter reading, billing, leakage management and infrastructure rehabilitation
Long-term loss control		Begin to assess long-term needs requiring large expenditure: customer meter replacement, water main replacement program, new customer billing system or Automatic Meter Reading (AMR) system.	Begin to assemble economic business case for long-term needs based upon improved data becoming available through the water audit process.	Conduct detailed planning, budgeting and launch of comprehensive improvements for metering, billing or infrastructure management	Continue incremental improvements in short-term and long-term loss control interventions
Target-setting			Establish long-term apparent and real loss reduction goals (+10 year horizon)	Establish mid-range (5 year horizon) apparent and real loss reduction goals	Evaluate and refine loss control goals on a yearly basis
Benchmarking			Preliminary Comparisons - can begin to rely upon the Infrastructure Leakage Index (ILI) for performance comparisons for real losses (see below table)	Performance Benchmarking - ILI is meaningful in comparing real loss standing	Identify Best Practices/ Best in class - the ILI is very reliable as a real loss performance indicator for best in class service

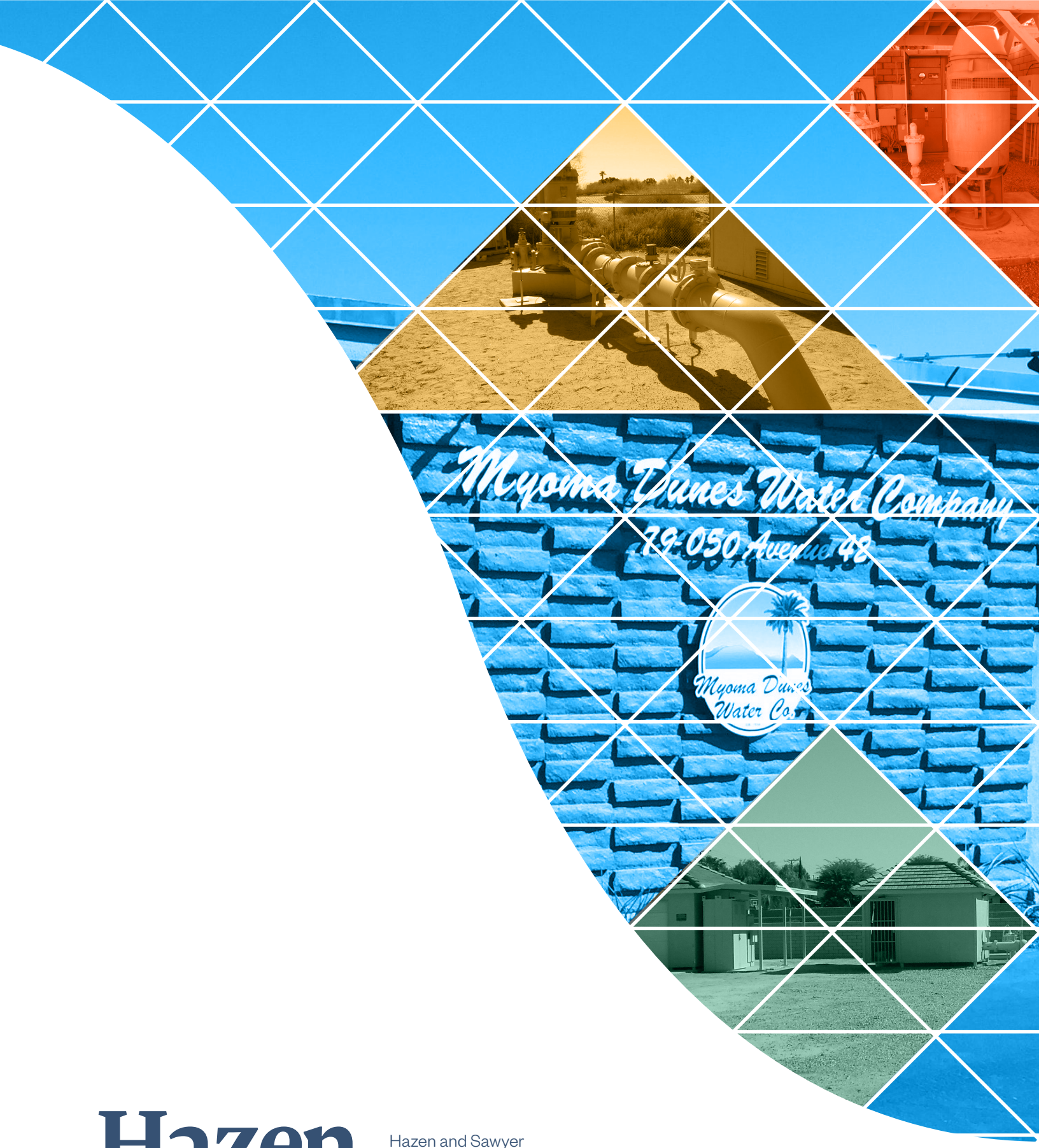
For validity scores of 50 or below, the shaded blocks should not be focus areas until better data validity is achieved.

Once data have been entered into the Reporting Worksheet, the performance indicators are automatically calculated. How does a water utility operator know how well his or her system is performing? The AWWA Water Loss Control Committee provided the following table to assist water utilities is gauging an approximate Infrastructure Leakage Index (ILI) that is appropriate for their water system and local conditions. The lower the amount of leakage and real losses that exist in the system, then the lower the ILI value will be.

Note: this table offers an approximate guideline for leakage reduction target-setting. The best means of setting such targets include performing an economic assessment of various loss control methods. However, this table is useful if such an assessment is not possible.

General Guidelines for Setting a Target ILI (without doing a full economic analysis of leakage control options)

Target ILI Range	Financial Considerations	Operational Considerations	Water Resources Considerations
1.0 - 3.0	Water resources are costly to develop or purchase; ability to increase revenues via water rates is greatly limited because of regulation or low ratepayer affordability.	Operating with system leakage above this level would require expansion of existing infrastructure and/or additional water resources to meet the demand.	Available resources are greatly limited and are very difficult and/or environmentally unsound to develop.
>3.0 -5.0	Water resources can be developed or purchased at reasonable expense; periodic water rate increases can be feasibly imposed and are tolerated by the customer population.	Existing water supply infrastructure capability is sufficient to meet long-term demand as long as reasonable leakage management controls are in place.	
>5.0 - 8.0	Cost to purchase or obtain/treat water is low, as are rates charged to customers.	Superior reliability, capacity and integrity of the water supply infrastructure make it relatively immune to supply shortages.	Water resources are plentiful, reliable, and easily extracted.
Greater than 8.0	Although operational and financial considerations may allow a long-term ILI greater than 8.0, such a level of leakage is not an effective utilization of water as a resource. Setting a target level greater than 8.0 - other than as an incremental goal to a smaller long-term target - is discouraged.		
Less than 1.0	If the calculated Infrastructure Leakage Index (ILI) value for your system is 1.0 or less, two possibilities exist. a) you are maintaining your leakage at low levels in a class with the top worldwide performers in leakage control. b) A portion of your data may be flawed, causing your losses to be greatly understated. This is likely if you calculate a low ILI value but do not employ extensive leakage control practices in your operations. In such cases it is beneficial to validate the data by performing field measurements to confirm the accuracy of production and customer meters, or to identify any other potential sources of error in the data.		



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