City of La Verne

2010 Urban Water Management Plan

Volume 1 - Report

June 2011

Prepared by

CIVILTEC engineering inc.

GENERAL CIVIL, MUNICIPAL, WATER AND WASTEWATER ENGINEERING
PLANNING, CONSTRUCTION MANAGEMENT AND SURVEYING

Providing Professional Engineering Services since 1986

City of La Verne
2010 Urban Water Management Plan
Volume 1 - Report

PREPARED FOR

CITY OF LA VERNE
3660 D STREET
LA VERNE, CA 91750

JUNE 2011

PREPARED BY

CIVILTEC
engineering inc.
CIVIL AND ENVIRONMENTAL ENGINEERING
PLANNING AND CONSTRUCTION MANAGEMENT
118 W. LIME AVENUE, MONROVIA, CA 91016
(626) 357-0588 FAX: (626) 303-7957

City of La Verne
2010 Urban Water Management Plan
Volume 1 - Report

PREPARED FOR

CITY OF LA VERNE
3660 D STREET
LA VERNE, CA 91750

JUNE 2011

Under the Supervision of:

69578

C. SHEM HAWES, P.E. C.E.

TABLE OF CONTENTS

TABLE OF CONTENTS 1

LIST OF TABLES 4

LIST OF FIGURES 5

LIST OF EXHIBITS 5

LIST OF APPENDICES 5

PREPARER AND CITY CONTACT INFORMATION 6

EXECUTIVE SUMMARY 7
- Introduction 7
- Service Area and Population 8
- Water Demand 8
- Application of the California Water Conservation Act 8
- Water Supply 9
- Supply Reliability 9
- Demand Management Measures 10
- Water Use Reduction Plan 10

CHAPTER ONE – INTRODUCTION 12
- 1.1 General Description 12
- 1.2 Purpose 12
- 1.3 Organization 14
- 1.4 Coordination 14
- 1.5 Review 15
- 1.6 Adoption 16
- 1.7 Submittal 16
- 1.8 Online Data Submittal 17
- 1.9 Implementation 17
- 1.10 Judicial Review 17
- 1.11 Acknowledgements 19
- 1.12 Abbreviations 19

CHAPTER TWO – SYSTEM DESCRIPTION 21
- 2.1 General Description 21
- 2.2 Service Area Description 21
- 2.3 Climate 23
- 2.4 Population 23
- 2.5 Demographics 24

CHAPTER THREE – SYSTEM DEMANDS 25
3.1 General Description 25
3.2 Historical Water Demands 25
3.3 Projected Water Demands 26
3.4 Summary of Water Demands 27
3.5 Lower-income Water Demands 27

CHAPTER FOUR – WATER CONSERVATION ACT 29
4.1 Application of the Water Conservation Act 29
4.2 Baseline Per Capita Water Use 29
4.2.1 Distribution System Boundary 29
4.2.2 Calculation Period and Baseline Period 29
4.2.3 Population Relative to the Calculation Period 30
4.2.4 Gross Water Uses 31
4.2.5 Calculation of Baseline 32
4.3 Application of Method 4 32
4.3.1 Metering Savings 33
4.3.2 Indoor Residential Savings 33
4.3.3 CII Savings 33
4.3.4 Landscape and Water Loss Savings 34
4.3.5 Summary of Method 4 35
4.4 Per Capita Water Use Targets 35
4.5 Verification of Minimum Water Use Reduction Requirement 35
4.6 Water Use Reduction Plan 36

CHAPTER FIVE – SYSTEM SUPPLIES 38
5.1 General Description 38
5.2 Water Sources 38
5.3 Imported Water 38
5.4 Groundwater 40
5.4.1 Live Oak Basin 43
5.4.2 Ganesha Basin 43
5.4.3 Pomona Basin 43
5.4.4 Summary of Groundwater Production 43
5.5 Transfer Opportunities 44
5.6 Desalinated Water Opportunities 45
5.7 Recycled Water Opportunities 45
5.7.1 Disposition of Wastewater Collection and Treatment 46
5.7.2 Potential Recycled Water Use and Incentives 46
5.7.3 Future Recycled Water Projects 47
5.8 Other Future Water Projects 48
5.8.1 Live Oak Basin Well 48
5.8.2 Old Baldy Well Restoration 48
5.8.3 Pomona Basin Well 48
5.8.4 Ion Exchange Treatment Plant 49

5.8.5 Summary of Future Projects 49

CHAPTER SIX – WATER SUPPLY RELIABILITY 50
6.1 General Description 50
6.2 Summary of Historical Water Year Data 50
6.2.1 Historical Single Dry Year Variation from Norm 52
6.2.2 Historical Multiple Dry Year Variation from Norm 52
6.2.3 Projected Normal Year Supply and Demand 53
6.2.4 Projected Single Dry Year Supply and Demand 53
6.2.5 Projected Multiple Dry Year Supply and Demand 54
6.3 Potential Supply Issues and Constraints 55
6.3.1 Imported Water Reliability 56
6.3.2 Imported Water Redundancy 58
6.3.3 Groundwater Quality 59
6.3.4 Reliability of Groundwater Production Infrastructure 60
6.4 Water Shortage Contingency Planning 61
6.4.1 Rationing Stages 62
6.4.2 Consumptive Reduction Methods 66
6.4.3 Mandatory Prohibitions 67
6.4.4 Penalties and Charges 69
6.4.5 Determination of Water Shortage Reduction Effectiveness 70
6.5 Drought Planning 70

CHAPTER SEVEN – DEMAND MANAGEMENT MEASURES 72
7.1 General Description 72
7.2 Residential Water Survey Programs 73
7.3 Residential Plumbing Retrofit 73
7.4 Water Audits, Leak Detection and Repair 74
7.5 Metering with Commodity Rates for All New and Retrofit of Existing Connections 74
7.6 Large Landscape Conservation Programs and Incentives 74
7.7 High-efficiency Washing Machine Rebate Programs 75
7.8 Public Information Programs 75
7.9 School Education Programs 75
7.10 Conservation Programs for CII Accounts 76
7.11 Wholesale Agency Programs 76
7.12 Conservation Pricing 80
7.13 Water Conservation Coordinator 80
7.14 Residential Ultra-low-flush Toilet Replacement Programs 80
7.15 DMM Summary 80

REFERENCES 82

LIST OF TABLES

Table 1 – Coordination with Appropriate Agencies 15
Table 2 – Current and Projected Population 23
Table 3 – Demographic Data 24
Table 4 – Actual Water Deliveries and Losses for 2005 and 2010 25
Table 5 – Projected Water Deliveries through 2035 27
Table 6 – Total Water Use 27
Table 7 – Projected Lower-income Population Served 28
Table 8 – Projected Lower-income Water Demands 28
Table 9 – Water Use Baseline and Targets 29
Table 10 – Population for Calculation Period 31
Table 11 – Gross Water Use in Acre-feet for Calculation Period 31
Table 12 – Calculation of Baseline GPCD 32
Table 13 – Baseline CII in GPCD 34
Table 14 – Verification of Minimum Water Use Reduction 36
Table 15 – Water Use Efficiency Trend 36
Table 16 – Current and Projected Water Supplies 38
Table 17 – Projected Wholesale Supplies 40
Table 18 – Groundwater Production Capacity 41
Table 19 – Groundwater Pumped for Last Five Years 44
Table 20 – Groundwater Projected to Be Pumped 44
Table 21 – Local Wastewater Treatment 46
Table 22 – Historical Supply Data 51
Table 23 – Summary of Data for Multiple Dry Year Calculation 53
Table 24 – Normal Year Supply and Demand Comparison 53
Table 25 – Single Dry Year Supply and Demand Comparison 54
Table 26 – Multiple Dry Year Supply and Demand Comparison 55
Table 27 – Water Shortage and Drought Rationing Stages 62
Table 28 – Phase II Levels 63
Table 29 – Phase III Levels 63
Table 30 – Phase IV Levels 64
Table 31 – Phase V Levels 64
Table 32 – Phase VI Levels 65
Table 33 – Phase VII Levels 65
Table 34 – Phase VIII Levels 66
Table 35 – Phase XI Levels 66
Table 36 – Capacity to Withstand an Immediate 3-year Drought 71
Table 37 – Wholesale Agency Programs and Actions 79
Table 38 – DMM Effectiveness 81

LIST OF FIGURES

Figure 1 – Historical and Target Water Use 37
Figure 2 – Normalized Annual Supply 52

LIST OF EXHIBITS

Exhibit 1 – Map of Service Area Boundary..... 22
Exhibit 2 – Map of Area Basins..... 42

LIST OF APPENDICES

Appendix A – California Urban Water Management Planning Act
Appendix B – Stakeholder Notification
Appendix C – Comments and Responses
Appendix D – Notification of Public Review
Appendix E – Resolution of Adoption
Appendix F – Six Basins Judgment
Appendix G – La Verne 2009 Consumer Confidence Report
Appendix H – La Verne Ordinance No. 822
Appendix I – La Verne Ordinance No. 1009
Appendix J – Three Valleys MWD 2010 Urban Water Management Plan
Appendix K – AB 1881, Water Conservation in Landscaping Act

PREPARER AND CITY CONTACT INFORMATION

Date UWMP was adopted by the City La Verne: June 20, 2011

Date UWMP was submitted to DWR: July 19, 2011

Name of Preparer: Civiltec Engineering, Inc.

Contact Person: W David Byrum, P.E., Principal Engineer

Preparer address: 118 W Lime Avenue, Monrovia CA 91016

Preparer phone: (626) 357-0588

Preparer fax: (626) 303-7957

Preparer email: dbyrum@civiltec.com

Name of supplier: City of La Verne

Supplier status: Urban Retail Water Supplier

Contact Person: Dan Keesey, Director of Public Works

Supplier address: 3660 D Street, La Verne CA 91750

Supplier phone: (909) 596-8741

Supplier fax: (909) 596-8737

Supplier email: dkeesey@ci.la-verne.ca.us

EXECUTIVE SUMMARY

Introduction

The Urban Water Management Planning Act (Act) was adopted in 1983 and may be found in the California Water Code, §§10610-10656. The City of La Verne is obligated to prepare and adopt this Urban Water Management Plan (UWMP) in the manner specified in the Act by virtue of meeting the statutory definition of an "urban retail water supplier".

This UWMP has been prepared in fulfillment of the requirements of the Act and in compliance with the *Guidebook to Assist Water Suppliers in the Preparation of a 2010 Urban Water Management Plan* as provided by the California Department of Water Resources (DWR).

In addition to compliance with state mandate, this UWMP is a living document whose contents fulfill a variety of planning, informational and legal requirements. It will serve as a primary source for integrated water and land use planning at the district, city and county levels per compliance with SB 610 and SB 221 related to water assessment and procurement of water supplies prior to construction of new development. The accuracy, clarity, completeness and usefulness of this UWMP is defensible and representative of the City's best understanding of the state of water management at the time of adoption and/or amendment. To that end, all aspects of water management as they pertain to the City have been delineated in order to provide developers, planners, government agencies and its customers with the tools they need to fulfill their individual missions and interests.

The UWMP serves as an important source document for cities and counties as they update their General Plans. Conversely, General Plans are source documents as water suppliers update their UWMPs. These planning documents are linked and their accuracy and usefulness are interdependent. It is crucial that cities, counties and water suppliers work closely when developing and updating these planning documents.

To assist the reader in understanding the legal mandates involved in the various aspects of this UWMP, relevant and applicable excerpts for the California Water Code (CWC) are provided immediately following each section heading. These excerpts are cited by CWC section designation and offset in italic print to differentiate them from other text. In general, the chapters of this UWMP are laid out as presented in the DWR Guidebook along with recommended tables and other content.

La Verne coordinated with local stakeholders and internal City departments to elicit comments relative to producing an accurate and complete UWMP. Stakeholders include Los Angeles County, Metropolitan Water District of Southern California, Three Valleys Municipal Water District, Golden State Water Company, California Department of Water Resources, Los Angeles County Sanitation Districts, Bonita Unified School District, University of La Verne, Hillcrest Retirement Community and the general public.

Individuals consulted representing the various internal City departments include the Director of Community Development, the City Attorney, the Senior Management Analyst and the Director of Public Works.

Service Area and Population

The water service area comprises approximately 5,330 acres within the incorporated boundary and approximately 861 acres considered to be within the sphere of influence of the City of La Verne. The current and projected service area population is shown in table below.

Population	2010	2015	2020	2025	2030	2035
Service Area	28,932	29,788	30,699	31,878	33,010	34,198

This population analysis considers available data provided by the 2010 US Census, the California Department of Finance and the Southern California Association of Governments. Careful attention was paid to the precise boundary of the service area to assure that all residential water customers were accounted for.

Water Demand

La Verne supports a significant residential population which accounts for the bulk of the City's water deliveries. Also significant are institutional and governmental demands of the various institutions which serve the residential population including schools, churches, civic buildings and most notably the University of La Verne. There are modest industrial and commercial demands related to the various business interests within the City.

The table below shows current and projected water use within the service area.

Water Use	2010 (AFY)	2015 (AFY)	2020 (AFY)	2025 (AFY)	2030 (AFY)	2035 (AFY)
Deliveries and Losses	7,381.95	8,127.2	7,527.2	7,815.8	8,093.8	8,384.7

The projections comply with the mandates of the California Water Conservation Act of 2009 which stipulates minimum water use reduction requirements.

Application of the California Water Conservation Act

The California Water Conservation Act of 2009 (aka 20x2020, aka SB7x7) sets a goal for water use efficiency for all urban retail water suppliers equivalent to a 20% reduction in state-wide water use by the year 2020. Methodologies and techniques for the calculation of a supplier's water use target were developed by DWR following the passage of the Act

and published in 2010 under the title *Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use*.

The table below represents the results of the application of the DWR methodologies to La Verne's case in terms of gallons per capita per day (GPCD).

Water Use Calculation	Effective Date	GPCD
Baseline	2010	268.2
Interim Target	2015	243.6
Compliance Target	2020	218.9

Water Supply

Local groundwater had been the City's primary source of water since the late 1800's. In 1972, the City began importing water to meet the demands associated with population growth. Amendments to the federal and State drinking water standards also influenced the City's decision to import water since some of the City's groundwater sources did not meet the new standards without a substantial investment in treatment infrastructure. Today, water production is a closely monitored process including direct introduction of disinfected groundwater and imported water into the distribution system, blending of imported water with groundwater having nitrate concentrations that exceed the MCL[1], and treatment of groundwater to remove VOCs[2], perchlorate and nitrate.

The table below provides an assessment of La Verne's current and projected supplies.

Water Supply	2010[3] (AFY)	2015 (AFY)	2020 (AFY)	2025 (AFY)	2030 (AFY)	2035 (AFY)
TVMWD	4,865	10,860	10,860	10,860	10,860	10,860
Six Basins	2,517	3,061	3,061	3,061	3,061	3,061
Total	7,382	13,921	13,921	13,921	13,921	13,921

Determination of projected supply considers existing contracts with the local wholesaler and adjudicated rights in area groundwater basins.

Supply Reliability

A comparison of projected demand and projected supply demonstrates that the reliability of La Verne's supply will be adequate to meet normal year, single dry year and multiple dry year demand conditions through the planning horizon of this UWMP. This

[1] MCL = maximum contaminant limit
[2] VOC = volatile organic compounds
[3] Supply for 2010 represents actual production

comparison takes into account the reliability of imported water supplies which are predicted to drop by 14% under single dry year and multiple dry year conditions, and the reliability of groundwater supplies whose infrastructure and treatment facilities require constant monitoring and upgrading to meet water quality standards and to overcome normal deterioration as a result of age and use.

In 1991, La Verne enacted Ordinance No. 822: *An Urgency Ordinance of the City Council of the City of La Verne, County of Los Angeles, State of California, Declaring an Emergency Water Shortage* and adding Chapter 13.15 to the La Verne Drought Surcharge, Conservation Measure, and Water Use Regulations and Restrictions. In 2009, various provisions to the La Verne Municipal Code were enacted with the approval and adoption if Ordinance 1009: *An Ordinance of the City Council of the City of La Verne, County of Los Angeles, State of California, Amending Chapter 13.15 of the La Verne Municipal Code, Regarding Water Conservation, Use and Restrictions*. The collective purposes of these ordinances are "to foster water conservation and to assure that wasteful water practices are eliminated throughout the City's service area" by providing a mechanism enabling the City to initiate appropriate reaction in the event that supply reliability is compromised due to a state of emergency or a prolonged drought.

Demand Management Measures

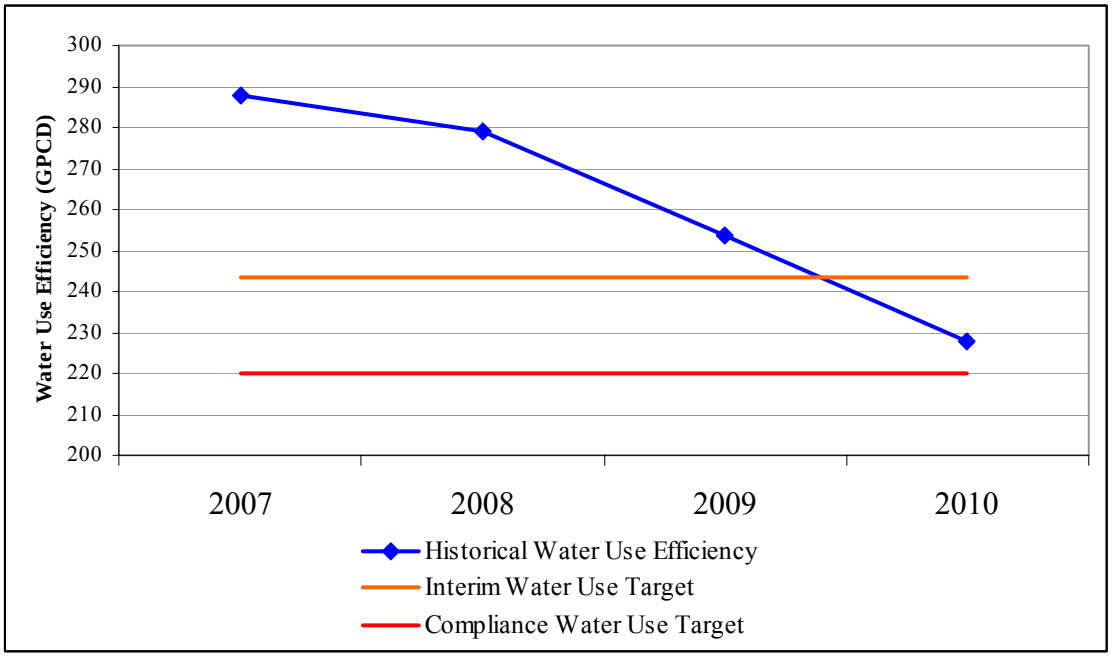
The State requires reporting on the implementation and effectiveness of a series water conservation programs deemed to be feasible for water use reduction at the retail level. These Demand Management Measures (DMM) have been implemented in La Verne at the local and wholesale level in accordance with the California Urban Water Conservation Council (CUWCC). La Verne is an original signatory to CUWCC's *Memorandum of Understanding Regarding Urban Water Conservation Best Management Practices* (MOU) and reports annually its progress toward the reasonable implementation of water conservation Best Management Practices (BMP).

Coordination and reporting with CUWCC has been delayed for FY 2009-10. Technical difficulties with its new automated and interactive website have resulted in the temporary interruption of timely reporting by CUWCC on La Verne's behalf. Consequently, CUWCC's input on DMM effectiveness for FY 2009-10 was not available at the time of the adoption of this UWMP. An estimate of DMM effectiveness has been provided in Section 7.15 in lieu of the CUWCC report. According to this estimate, the continued implementation of all DMMs at their current level will results in an additional water use reduction of approximately 10 GPCD.

Water Use Reduction Plan

Over the past four years, the average annual reduction in per capita water use is 19.9 GPCD thanks in large part to the aggressive implementation of DMMs, specifically conservation pricing. In 2010, the interim water use target of 243.6 GPCD was exceeded by 15.8 GPCD. An additional reduction of 8.9 GPCD is required by 2020 to achieve the compliance water use target of 218.9 GPCD. The figure below provides a graphic

illustration of recent historical water efficiency relative to the interim and compliance water use targets.



Based on the current trend of water use efficiency in La Verne, continued aggressive implementation of water conservation measures is anticipated to achieve the compliance goal years ahead of schedule. The effectiveness of the continued implementation of the DMMs will provide an estimated water use reduction of about 10 GPCD. This estimated water use reduction will result in a water use efficiency of approximately 218 GPCD by 2020 which is anticipated to meet or exceed the compliance water use target of 218.9 GPCD.

No water use reduction planning in addition to the current implementation of DMMs is anticipated to be required at this time in order to comply with the mandates of the California Water Conservation Act.

CHAPTER ONE – INTRODUCTION

1.1 General Description

The Urban Water Management Planning Act (Act) was adopted in 1983 and may be found in the California Water Code, §§10610-10656 (see Appendix A). The City of La Verne is obligated to prepare and adopt this Urban Water Management Plan (UWMP) in the manner specified in the Act by virtue of meeting the statutory definition of an "urban retail water supplier":

> *§10608.12(p) "Urban retail water supplier" means a water supplier, either publicly or privately owned, that directly provides potable municipal water to more than 3,000 end users or that supplies more than 3,000 acre-feet of potable water annually at retail for municipal purposes.*

The Act, and elements of the California Water Conservation Act of 2009, require urban water suppliers to report, describe, and in some cases evaluate:

- water deliveries and uses
- water supply sources
- efficient water uses
- implementation strategy and schedule for demand management measures
- baseline, interim and compliance daily per capita water use
- water supply availability to meet existing and future demands
- water shortage and drought contingency planning

1.2 Purpose

This 2010 Urban Water Management Plan for the City of La Verne (UWMP) has been prepared in fulfillment of the requirements of the California Urban Water Management Planning Act (Act) and in compliance with the *Guidebook to Assist Water Suppliers in the Preparation of a 2010 Urban Water Management Plan* (Guidebook) as provided by the California Department of Water Resources (DWR).

The Guidebook provides guidance respective to the minimum requirements of the California Urban Water Management Planning Act and the recent legislative changes and amendments embodied in the California Water Conservation Act of 2009 and AB 1420 which more narrowly defines eligibility for water management grants and loans.

In addition to compliance with state mandate, this UWMP is a living document whose contents fulfill a variety of planning, informational and legal requirements. It will serve as a primary source for integrated water and land use planning at the district, city and county levels per compliance with SB 610 and SB 221 related to water assessment and procurement of water supplies prior to construction of new development. The accuracy, clarity, completeness and usefulness of this UWMP is defensible and representative of the City's best understanding of the state of water management at the time of adoption and/or amendment. To that end, all aspects of water management as they pertain to the City have been delineated in order to provide developers, planners, government agencies and its customers with the tools they need to fulfill their individual missions and interests.

Substantial growth in the State of California is projected by the State Department of Finance, and there is no end in sight. The challenge facing water agencies, public agencies, planners and project proponents is to identify and secure the sources of water needed for the inevitable increase in population. From a water resources point of view, planning for such growth is addressed by SB 610, SB 221 and related jurisdictional General Plans.

Cities, counties, water districts, property owners, and developers will all be able to utilize the UWMP when planning for and proposing new projects. For certain "projects" meeting the definitions under SB 610 and/or SB 221, a city or county evaluating the environmental effects of that project must request a Water Supply Assessment (WSA) from the water provider or prepare the WSA on its own. A WSA can rely on an adopted and DWR-approved UWMP making the UWMP a foundational document for compliance with both SB 610 and SB 221. Both of these statutes repeatedly identify the UWMP as a planning document that, if properly prepared, can be used by a water supplier to meet the standards set forth in both statutes. A thorough and complete UWMP will allow the City to use the UWMP as a foundation to fulfill the specific requirements of these two statutes.

SB 610 creates a strong link between water supply availability and land use by requiring cities and counties to consider water availability for certain development projects. It promotes collaboration between local water suppliers and cities/counties while recognizing the importance of local control and decision making regarding water availability.

SB 221 requires written verification of sufficient water supply from the water supplier prior to the construction of residential subdivisions of greater than 500 dwelling units. A "sufficient water supply" includes assessment of the water supplier's available projected water supplies for a 20-year period during normal years, single-dry years and multiple-dry years. This assessment must consider the subdivision's water demands in addition to existing and planned future demands.

The UWMP serves as an important source document for cities and counties as they update their General Plans. Conversely, General Plans are source documents as water suppliers update their UWMPs. These planning documents are linked and their accuracy

and usefulness are interdependent. It is crucial that cities, counties and water suppliers work closely when developing and updating these planning documents.

1.3 Organization

To assist the reader in understanding the legal mandates involved in the various aspects of this UWMP, relevant and applicable excerpts for the California Water Code (CWC) are provided immediately following each section heading. These excerpts are cited by CWC section designation and offset in italic print to differentiate them from other text.

In general, the chapters of this UWMP are laid out as presented in the Guidebook along with recommended tables and other content.

1.4 Coordination

> *§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.*
>
> *§10621(b) Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.*
>
> *§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.*

Table 1 provides a brief summary of coordination activities undertaken on La Verne's behalf for the preparation of this UWMP. Proper notification of stakeholders was provided (see Appendix B).

Table 1 – Coordination with Appropriate Agencies

Coordinating Agencies	Participated in developing the plan	Commented on the draft	Attended public meetings	Was contacted for assistance	Was sent a copy of the draft plan	Was sent a notice of intention to adopt	Not involved / No information
City of La Verne	✓	✓	✓	✓	✓	✓	
Los Angeles County						✓	
Metropolitan Water District						✓	
Three Valleys MWD	✓			✓	✓	✓	
Golden State Water Company						✓	
Department of Water Resources				✓		✓	
LA County Sanitation Districts	✓	✓		✓		✓	
Bonita Unified School District						✓	
University of La Verne						✓	
Hillcrest Retirement Community						✓	
General Public						✓	

1.5 Review

§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.

§10642 Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. 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 Section 6066 of the Government Code. 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.

§10645 Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.

La Verne coordinated with local stakeholders, as indicated in Table 1, and with internal City departments to elicit comments relative to producing an accurate and complete UWMP. Individuals consulted representing the various internal City departments include the Director of Community Development, the City Attorney, the Senior Management Analyst and the Director of Public Works. Comments and responses from the review of the Final Draft are included in Appendix C.

The Final Draft was made available for public review, and notification thereof is included in Appendix D.

The adopted UWMP was made available for public review at the time of submittal to DWR and the State Library.

1.6 Adoption

§10621(c) The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).

§10642 After the hearing, the plan shall be adopted as prepared or as modified after the hearing.

Immediately following a public hearing, this UWMP was adopted by the La Verne City Council on June 20, 2011 pursuant to Resolution #11-62 (see Appendix E).

1.7 Submittal

§10644(a) An urban water supplier shall submit to the department, the California State Library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be submitted to the department, the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.

§10608.20 A 6-month extension has been granted for submittal of the 2010 UWMPs to provide additional time for suppliers to address the requirements for a 20% reduction from the "baseline daily per capita water use" by Dec. 31, 2020.

This UWMP was submitted July 19, 2011 to:

- California Department of Water Resources
- California State Library
- Los Angeles County
- Three Valleys Municipal Water District
- City of La Verne

1.8 Online Data Submittal

DWR is establishing an online data submittal portal for urban water suppliers. Suppliers will be able to go online and complete tables and download them into their plans. The portal, referred to as DOST (DWR Online Submittal Tool), will have an audit system to allow suppliers to double check they have submitted all the data. Suppliers who use the online data submittal system and have a state water grant or loan or have submitted a grant proposal will receive priority review. DWR sees on line data submittal as a way to speed up reviews, better manage the data received, standardize data reporting, and enable a direct linkage to the data used to prepare the California Water Plan.

La Verne has opted not to participate in online submittal at this time.

1.9 Implementation

> *§10643 An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan.*

La Verne pledges to implement this UWMP according to the schedules set forth herein regarding the following elements:

- Water Use Reduction Plan
- Future Supply Projects
- Continued coordination with the California Urban Water Conservation Council

1.10 Judicial Review

Any actions or proceedings to invalidate the decisions of an urban water supplier on the grounds of non-compliance with the UWMP Act must be commenced as follows:

- 90-Day Rule: Any action alleging that a plan, or action taken pursuant to the plan, does not comply with the UWMP Act must be commenced within 90 days after filing of the plan or amendment thereto with DWR.

- 18-Month Rule: Any action alleging failure to adopt a plan must be commenced within 18 months after that adoption is required by the UWMP Act.

In challenging the plan's compliance with the UWMP Act, judicial review is limited to whether there was a prejudicial abuse of discretion. These abuses are limited to the supplier not proceeding in a manner required by law or the plan not being supported by substantial evidence (§10651).

The UWMP standard of judicial review was established per *Sonoma County Water Coalition, et al. v. Sonoma County Water Agency,* California Court of Appeal for the Fourth District, Case No. A124556 (October 8, 2010) as:

> *"In technical matters requiring the assistance of experts and the study of marshaled scientific data as reflected herein, courts will permit administrative agencies to work out their problems with as little judicial interferences as possible."*

This means that the court acknowledges the complexities of collecting and interpreting data related to water supply and demand and defers to the knowledge of the water supplier and expertise of consultants providing their services on the supplier's behalf. No additional standards were deemed necessary by the court to validate conclusions related to collection and interpretation of data.

In addition to diligence in data collection and interpretation, care was taken to present this UWMP as a legal document paying particular attention to the following areas of emphasis in order to avoid becoming a target for litigation:

- Expect this UWMP to be a litigation target.

- Disclose all physical and legal regulatory factors affecting projected availability of existing and planned future sources of water supply.

- Clearly describe the basis for each assumption about how those factors will affect supply availability.

- Clearly describe how projected water demand was calculated

- Disclose assumptions about the effect of water conservation measures on projected demand.

- Clearly describe the basis for conservation assumptions.

1.11 Acknowledgements

We, at ***CIVILTEC engineering inc.***, would like to express our appreciation for the cooperation and valuable assistance of the City of La Verne. In particular, the efforts of the following people, proved to be invaluable:

- Dan Keesey, Director of Public Works
- Jeannette Vagnozzi, Administrative Superintendent/City Treasurer
- James Ranells, Senior Management Analyst
- Jerry Mesa, Utilities Manager

1.12 Abbreviations

As a matter of convenience, a number of abbreviations are used in this UWMP. Generally, the first time a term is used in each chapter, abbreviations will follow in parentheses. Following is a list of the most commonly used abbreviations in this UWMP.

AB	Assembly Bill
AF	acre-feet
AFY	acre-feet per year
AMR	automatic meter reading
BMP	best management practice
CBMWD	Central Basin Municipal Water District
cfs	cubic feet per second
CII	commercial, industrial, and institutional
Civiltec	Civiltec Enigneering, Inc.
CUWCC	California Urban Water Conservation Council
CWC	California Water Code
D	demand
DMM	demand management measure
DOF	California Department of Finance
DOST	DWR online submittal tool
DU	dwelling unit
DWR	California Department of Water Resources
DWR	California Department of Water Resources
F	Fahrenheit
FY	fiscal year
GPCD	gallons per capita per day
gpm	gallons per minute
GRIP	Groundwater Reliability Improvement Project
GSWC	Golden State Water Company
HET	high efficiency toilet
IEUA	Inland Empire Utilities Agency
IRWM	Integrated Regional Water Management
IRWMP	Integrated Regional Water Management Plan

JOS	Joint Outfall System
LACSD	Los Angeles County Sanitation Districts
LVH	La Verne Heights
MCL	maximum contaminant level
MGD	million gallons per day
MOU	Memorandum of Understanding
MWD	Metropolitan Water District of Southern California
OSY	Operating Safe Yield
PSA	Photographic Society of America
RFP	request for proposal
RHNA	Regional Housing Needs Allocation
RWD	Rowland Water District
SB	Senate Bill
SCAG	Southern California Association of Governments
SCWCo	Southern California Water Company
SIFE	Students in Free Enterprise
TVMWD	Three Valleys Municipal Water District
ULFT	ultra low flush toilet
UWMP	Urban Water Management Plan
VOC	volatile organic compounds
WBIC	Weather Based Irrigation Controller
WET	Water Efficient Technologies
WEWAC	Water Education Water Awareness Committee
WRP	Water Reclamation Plant
WSA	Water Supply Assessment
WSAP	Water Supply Allocation Plan

CHAPTER TWO – SYSTEM DESCRIPTION

2.1 General Description

Incorporated in 1906, the City of La Verne is located in the eastern portion of Los Angeles County approximately 32 miles east of metropolitan Los Angeles encompassing approximately 9.09 square miles of land area. The City is bounded on the north by the Angeles National Forest and unincorporated Los Angeles County, on the east by the City of Claremont, on the west by the City of San Dimas and on the south by the City of Pomona and Frank G. Bonelli Regional County Park.

Approximately 53% of the City is zoned residential, 6% is zoned commercial/business park, 2% is zoned industrial and 39% is zoned for community facility or open space use per the 1998 General Plan. During the past 40 years, the City of La Verne has experienced a surge of residential development almost tripling the population since 1970, although growth has been relatively stagnant the last ten years.

2.2 Service Area Description

§10631(a) Describe the service area of the supplier.

The service area boundary, as shown in Exhibit 1, is identical to the City of La Verne incorporated boundary with the following exceptions:

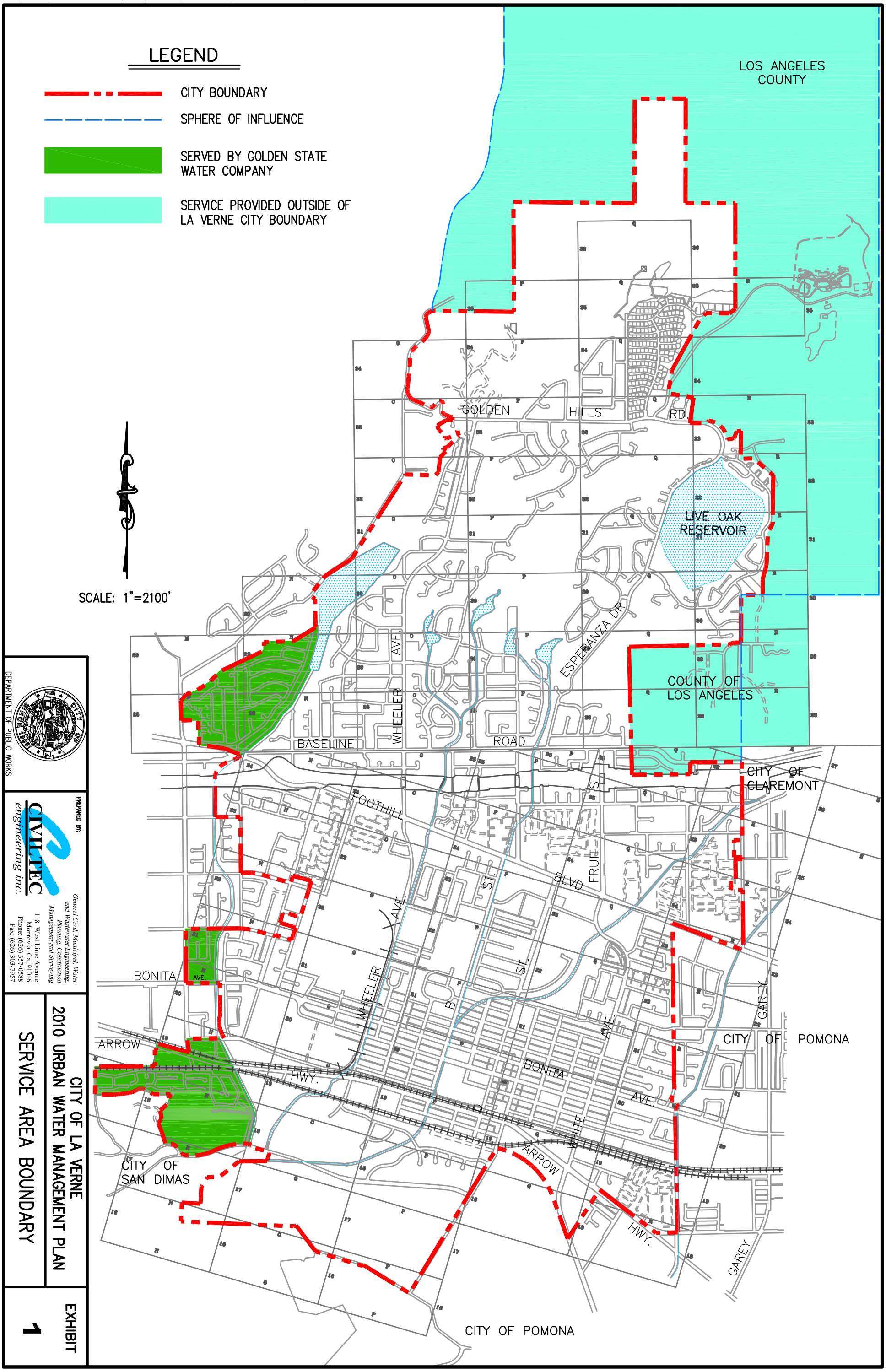
- 819 customers in the southwest corner of the City are serviced by the Golden State Water Company[4] (GSWC). This configuration was put in place due to a division in the development of water supply created following construction of the Puddingstone Channel for flood control purposes.

- Four private water groups located in unincorporated Los Angeles County and within the City's sphere of influence are serviced by the City. These include (1) the Webb Oak Group, (2) the Oakglen Heights Water Group, (3) the Flaten-Heuer Group and (4) the Briney Water Group.

- Water is supplied to Marshall Canyon via a dedicated Los Angeles County master meter. Los Angeles County maintains and manages all water distribution downstream of the master meter including service connections at the Marshall Canyon Golf Course, the Fred M. Palmer Marshall Canyon Equestrian Center, the Marshall Canyon Tree Farm and the Los Angeles County Probation Department Camp Joseph M. Paige Juvenile Detention Facility. Service connections to these facilities are located in unincorporated Los Angeles County and within the City's sphere of influence.

[4] Formerly the Southern California Water Company (SCWCo)

W:\CLIENTS\UWMP GENERIC DOCS\DWGS\LA VERNE\EXHIBIT 1.DWG (06-14-11 11:43:36AM)



DEPARTMENT OF PUBLIC WORKS

PREPARED BY:

CIVILTEC engineering inc.

General Civil, Municipal, Water and Wastewater Engineering, Planning, Construction Management and Surveying

118 West Lime Avenue
Monrovia, Ca. 91016
Phone: (626) 357-0588
Fax: (626) 303-7957

CITY OF LA VERNE
2010 URBAN WATER MANAGEMENT PLAN

SERVICE AREA BOUNDARY

EXHIBIT 1

The service area comprises approximately 5,330 acres within the incorporated boundary and approximately 861 acres considered to be within the sphere of influence of the City of La Verne.

2.3 Climate

§10631(a) (Describe the service area) climate.

The distinctive climate of the region, and the City of La Verne, is determined by its terrain and geographical location. The City can be divided into two physiographic areas: a hillside area in the northern section with an existing ground elevation of 1700 feet and a flatter valley area in the southern section with an elevation of 1000 feet. The climate tends to be mild and is tempered by cool offshore breezes. This usually mild climate is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds. Data from the climatological stations located in the City of Claremont and the City of Pomona show that average temperatures range from a low of 40 degrees Fahrenheit in the winter months and a high of 90 degrees Fahrenheit in the summer months. Average rainfall is approximately 16 inches annually, most of which occurs during the months of November through April.

2.4 Population

§10631(a) (Describe the service area) 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 . . . (population projections) shall be in five-year increments to 20 years or as far as data is available.

§10608.20(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.

The 2010 population for the City of La Verne was provided by the California Department of Finance Demographic Research Unit State Census Data Center based on assimilation of 2010 US Census data. Population growth projections for the City of La Verne were provided by the Southern California Association of Governments Adopted 2008 Regional Transportation Plan Growth Forecast based on data from the 2000 US Census. The population was adjusted to reflect the difference between the City's population and the service area population.

Table 2 – Current and Projected Population

Population	2010	2015	2020	2025	2030	2035
La Verne	31,063	31,982	32,960	34,226	35,441	36,717
Service Area	28,932	29,788	30,699	31,878	33,010	34,198

Per the 1998 General Plan, the estimated population within the City at ultimate build-out is 37,430. By observation of the projected population estimate shown in Table 2, ultimate build-out is anticipated to occur at a date beyond the planning horizon of this UWMP.

2.5 Demographics

§10631(a) Describe . . . other demographic factors affecting the supplier's water management planning.

Water consumption varies with population, occupancy, and other social, economic, political, and environmental factors. Demographic data in Table 3 was provided in the *Profile of the City of La Verne* published by SCAG in 2009. The data are relative to 2007 or 2008 as indicated.

Table 3 – Demographic Data

Category	La Verne	Los Angeles County	La Verne relative to Los Angeles County	SCAG Region
Population (2008)	34,046	10,363,850	0.33%	18,636,934
Median Age (Yrs)	39.7	33.9	5.8	33.5
Number of Households (2008)	11,211	3,260,434	0.34%	5,849,833
Number of Housing Units (2008)	11,428	3,403,480	0.34%	6,224,661
Home Ownership Rate	76.90%	47.50%	0.60%	54.70%
Average Household Size (2008)	3.1	3.1	0	3.1
Median Family Income ($) (2007)	87,673	56,930	30,743	61,901
Median Existing Home Price ($) (2008)	480,000	399,000	81,000	382,300
Number of Jobs (2008)	9,386	4,456,896	0.21%	7,845,378

CHAPTER THREE – SYSTEM DEMANDS

3.1 General Description

La Verne supports a significant residential population which accounts for the bulk of the City's water deliveries. Also significant are institutional and governmental demands of the various institutes which serve the residential population including schools, churches, civic buildings and most notably the University of La Verne. There are modest industrial and commercial demands related to the various business interests within the City.

The sections that follow quantify past, current and projected demands by water use sector taking into account population trends and the impact of water conservation measures.

3.2 Historical Water Demands

> *§10631(e)(1) and (2) Quantify, to the extent records are available, past and current water use, and projected water use (over the same five-year increments described in subdivision (a)), identifying the uses among water use sectors, including, but not necessarily limited to, all of 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.*

Table 4 delineates historical and current water use by water use sector derived from historical water delivery records. The total represent all water supplied for the respective years and system losses represents the difference between actual deliveries and supply.

Table 4 – Actual Water Deliveries and Losses for 2005 and 2010

Water use sectors[5]	2005 (AFY)	2010 (AFY)
Single-family Residential	4564.37	3697.72
Multi-family Residential	803.43	1062.07
Commercial	670.24	633.90
Industrial	204.82	192.91
Institutional and Governmental	1291.64	1232.38
Landscaping	69.08	45.13
System Losses	1,021.35	517.84
Total	8,624.93	7,381.95

[5] La Verne made no deliveries to the following water use sectors: sales to other agencies, saline water intrusion barriers, groundwater recharge, conjunctive use, agriculture

3.3 Projected Water Demands

§10631(k) Urban water suppliers that rely 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).

§10631.1(a) The water use projections required by Section 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households, as defined in Section 50079.5 of the Health and Safety Code, as identified in the housing element of any city, county, or city and county in the service area of the supplier.

Projected demands were calculated based on the following assumptions:

- The distribution of demands among the various water use sectors is proportional to the average of the 2005 and 2010 demands included in Table 4.
- System losses are set at 5% of total deliveries.
- Total deliveries for 2015 represent the interim water use efficiency target of 243.6 gallons per capita per day (GPCD) as shown in Table 9 times the projected service area population of 29,788 as shown in Table 2.
- Total deliveries for 2020 and beyond represent the compliance water use efficiency target of 218.9 GPCD as shown in Table 9 times the corresponding projected service area population as shown in Table 2.
- The use of the interim and compliance water use targets may be conservative since current water use efficiency already exceeds the interim target and the trend for projected water use efficiency is to exceed the compliance water use target; however, accurate assessment of the effectiveness of current water conservation measures was not immediately available from the California Urban Water Conservation Council (CUWCC).

Table 5 – Projected Water Deliveries through 2035

Water use sectors	2015 (AFY)	2020 (AFY)	2025 (AFY)	2030 (AFY)	2035 (AFY)
Single-family Residential	4,420.2	4,093.9	4,250.8	4,402.0	4,560.3
Multi-family Residential	998.0	924.4	959.8	993.9	1,029.7
Commercial	697.7	646.2	671.0	694.8	719.8
Industrial	212.8	197.1	204.6	211.9	219.5
Institutional and Governmental	1,350.4	1,250.7	1,298.6	1,344.8	1,393.1
Landscaping	61.1	56.6	58.8	60.9	63.0
System Losses	387.0	358.4	372.2	385.4	399.3
Total	8,127.2	7,527.2	7,815.8	8,093.8	8,384.7

3.4 Summary of Water Demands

Table 6 provides a summary of past, current and projected total water use.

Table 6 – Total Water Use

Water Use	2005 (AFY)	2010 (AFY)	2015 (AFY)	2020 (AFY)	2025 (AFY)	2030 (AFY)	2035 (AFY)
Deliveries and Losses	8,624.93	7,381.95	8,127.2	7,527.2	7,815.8	8,093.8	8,384.7

3.5 Lower-income Water Demands

The City of La Verne 2008-2014 Housing Element was adopted May 3, 2010 in coordination with the Southern California Association of Governments (SCAG). The City cites SCAG as a primary source for application of the Regional Housing Needs Allocation (RHNA) plan. For this reason, data developed both by the City and by SCAG have been gathered and analyzed for purposes of complying with §10631.1(a).

The approach of this analysis was to estimate existing lower-income population, to estimate the increase in lower-income population associated with completion of the City's commitments to fulfilling its near-term RHNA obligations, to estimate the long-term projected lower-income population growth, and to apply typical per capita water use to those population estimates.

For purposes of this analysis, lower-income is either (1) as identified in the La Verne Housing Element or (2) defined as households earning less than $50,000 in 2007 to be consistent with data disseminated by SCAG in the Profile of the City of La Verne.

SCAG estimated that 30.7% of households are lower-income[6]. Assuming a direct correlation between households and population and based on a service area population of 28,931 in 2010, the lower-income population in 2010 was estimated at 8,882.

Per the La Verne Housing Element, 356 lower-income units are to be constructed within the service area in the near-term. Per SCAG, the average household size for the City is 2.9 persons per household. Therefore, the lower-income population is expected to increase by 1,032 in 2015.

Per the La Verne Housing Element, the percentage of new housing needs in the lower-income category is 41.7%. Applying this trend to projected population within the service area, the projected lower-income population is shown in Table 7.

Table 7 – Projected Lower-income Population Served

Year	2015	2020	2025	2030	2035
Lower-income Population	9,914	10,294	10,786	11,258	11,753

The standard residential demand per person is considered to be the cumulative residential demand in 2010 (see Table 4) divided by the population in 2010 (see Table 2), or 0.1645 AFY per person:

$$\frac{D_{single\ family} + D_{multi\ family}}{population} = \frac{3{,}697.72\ AFY + 1{,}062.07\,AFY}{28{,}931\ persons} = 0.1645\,AFY\ \ per\ \ person$$

Assuming that lower-income residences are distributed among single-family and multi-family units proportionally to the city-wide distribution in 2010, Table 8 provides the projected breakdown of the lower-income water demand.

Table 8 – Projected Lower-income Water Demands

Land Use Type	2015 (AFY)	2020 (AFY)	2025 (AFY)	2030 (AFY)	2035 (AFY)
Single-family Residential	1,267.3	1,315.8	1,378.7	1,439.0	1,502.4
Multi-family Residential	363.8	377.7	395.7	413.1	431.2

[6] Profile of the City of La Verne, SCAG (May 2009)

CHAPTER FOUR – WATER CONSERVATION ACT

4.1 Application of the Water Conservation Act

> *§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, 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.*

There are multiple methodologies in place for determining water use targets and complying with the Water Conservation Act. This chapter is dedicated to specifying chosen methodologies, justifying those choices, quantifying applicable parameters, performing calculations, stating conclusions about those calculations and applying those conclusions commensurate to the requirements of future water conservation goals as embodied in the Act. Table 9 provides a summary of the various water use calculations performed in this chapter.

Table 9 – Water Use Baseline and Targets

Water Use Calculation	Effective Date	GPCD[7]
Baseline	2010	268.2
Interim Target	2015	243.6
Compliance Target	2020	218.9

4.2 Baseline Per Capita Water Use

The baseline per capita water use was determined to be 268.2 GPCD as delineated in the following sections.

4.2.1 Distribution System Boundary

The distribution system boundary includes all customers that receive water service from the City. This includes all customers within the City's sphere of influence except those customers serviced by the Golden State Water Company[8] (GSWC), as detailed in Section 2.2.

4.2.2 Calculation Period and Baseline Period

Detailed continuous consumption records have been maintained by the City since 2002 on a calendar year basis. The State prefers a baseline period of 10 years, however acknowledges that adequate data may not be available. In such a case, the maximum

[7] GPCD = gallons per capita per day
[8] Formerly the Southern California Water Company (SCWCo)

number of years for which adequate data are available shall be the baseline period. For this reason, the period for calculation of the baseline represents nine years of continuous annual data from 2002 to 2010.

4.2.3 Population Relative to the Calculation Period

Population relative to the calculation period was derived from data provided the California Department of Finance (DOF) and the Southern California Association of Governments (SCAG) taking into account variation between the City of La Verne incorporated boundary and the water distribution system boundary.

Per the DOF, the population for the City of La Verne was determined to be 31,638 in 2000 and 31,063 in 2010. This equates to an annual decline in population of approximately 57.5 persons per year.

There are 819 customers serviced by the Golden State Water Company[9] (GSWC).

There are four private water groups within the City's sphere of influence but outside the City boundary:

- Webb Oak Group (55 customers)
- Oakglen Heights Water Group (4 customers)
- Flaten–Heuer Group (6 customers)
- Briney Water Group (19 customers).

The number of customers associated with these five sub-groups has remained constant throughout the calculation period. SCAG estimated the average household size in La Verne to be 2.9 persons per household. This equates to a net difference between the City's population and the distribution system boundary population of minus 2,132 persons:

$$\Delta P = \left(\sum \textit{private water group customers} - \textit{GSWC customers}\right)\left(\textit{occupancy rate}\right)$$
$$= \left(55 + 4 + 6 + 19 - 819 \textit{ customers}\right)\left(2.9 \textit{ persons per household}\right) \cong -2{,}132 \textit{ persons}$$

where: ΔP is the difference in population between the City and the service area

Table 10 provides the population for the City and the distribution system boundary during the calculation period as established by the methodologies describe above.

[9] Formerly the Southern California Water Company (SCWCo)

Table 10 – Population for Calculation Period

Population	2002	2003	2004	2005	2006	2007	2008	2009	2010
City of La Verne	31,522	31,464	31,406	31,348	31,290	31,232	31,174	31,116	31,063
Service Area	29,390	29,332	29,274	29,216	29,158	29,100	29,042	28,984	28,931

4.2.4 Gross Water Uses

§10608.12(g) "Gross Water Use" is 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 longterm 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

La Verne has no exclusions as defined in §10608.12(g)(1-4); therefore, it's gross water use is the sum of all imported water and groundwater entering the distribution system. Table 11 provides a summary of the gross water use for the calculation period.

Table 11 – Gross Water Use in Acre-feet for Calculation Period

Source	2002	2003	2004	2005	2006	2007	2008	2009	2010
Pomona Basin	1,305.7	1,389.1	1,411.4	1,455.1	1,468.2	1,507.2	1,317.1	1,329.9	1,099.6
Ganesha Basin	125.1	4.7	1.4	1.2	2.3	224.4	377.7	594.4	496.1
Live Oak Basin	140.9	253.8	53.6	220.3	509.0	444.0	619.7	776.8	921.2
TVMWD Import	7,541.6	7,233.6	7,624.2	6,948.4	7,092.7	7,198.1	6,765.9	5,532.5	4,865.0
Total Supply	**9,113.4**	**8,881.2**	**9,090.5**	**8,624.9**	**9,072.1**	**9,373.8**	**9,080.4**	**8,233.6**	**7,382.0**

No accounting for net change in distribution system storage was considered in the calculation of gross water use in Table 11 for the following reasons:

- Records of reservoir surface levels are incomplete for the duration of the calculation period.
- The total volume of distribution system storage is equivalent to 82.9 acre-feet which represents only 0.11% of the total water supply during the calculation period. La Verne maintains fire storage and emergency storage at all times of approximately 50 acre-feet. This means that the largest possible storage fluctuation during the nine-year calculation period is only about 33 acre-feet or 0.04% of the associated total water supplies and was likely much less. This differential volume is statistically insignificant for purposes of calculating gross water use.

4.2.5 Calculation of Baseline

The per capita water use for each of the years in the calculation period and the average per capita water use for the same period are provided in Table 12. The baseline per capita water use is the same as the average per capita water use of 268.2 GPCD.

Table 12 – Calculation of Baseline GPCD

Year	Supply (AF)	Population	GPCD
2002	9,113.4	29,390	276.8
2003	8,881.2	29,332	270.3
2004	9,090.5	29,274	277.2
2005	8,624.9	29,216	263.6
2006	9,072.1	29,158	277.8
2007	9,373.8	29,100	287.6
2008	9,080.4	29,042	279.1
2009	8,233.6	28,984	253.6
2010	7,382.0	28,931	227.8
		Average	**268.2**

4.3 Application of Method 4

La Verne has adopted Provisional Target Method 4 for establishment of its interim and compliance per capita water use targets. Following is a description of the steps taken to calculate the water use targets as delineated in Section M of the Guidebook. For purposes of this method, the same calculation period used to determine baseline water use was applied.

Generally, the amount of water to be conserved by 2020 is called the Total Savings and is broken down into the following four water use sectors:

- Metering Savings
- Indoor Residential Savings
- CII Savings
- Landscape and Water Loss Savings

The following sections describe the calculation of each of the savings associated with its respective water use sector.

4.3.1 Metering Savings

Service areas with unmetered connections must estimate the total amount of water delivered to those connections and reduce that amount by 20%. La Verne has no unmetered connections; therefore, Metered Savings is equal to zero.

4.3.2 Indoor Residential Savings

Indoor Residential Water Savings may be calculated based on a compilation of data related to demographics and the level of saturation of various plumbing and appliance retrofits, or a default savings may be applied. La Verne lacks historical data of adequate detail to accurately calculate Indoor Residential Water Savings, so the default savings of 15 GPCD was applied.

4.3.3 CII Savings

The CII per capita water use for each of the years in the calculation period is presented for each individual sector and the combined CII sector in

Table 13. All data in

Table 13 is presented in terms of GPCD. The baseline CII per capita water use is the same as the average CII per capita water use of 73.0 GPCD.

Table 13 – Baseline CII in GPCD

Year	Commercial	Industrial	Institutional	Total CII
2002	20.4	4.1	44.5	69.1
2003	20.1	5.9	40.4	66.4
2004	23.5	5.5	53.8	82.9
2005	20.5	6.2	39.5	66.1
2006	26.8	7.2	41.4	75.3
2007	32.3	6.5	47.7	86.5
2008	25.9	6.0	45.9	77.8
2009	22.1	5.5	42.2	69.8
2010	19.6	5.9	38.0	63.5
Average CII Per Capita Water Use in GPCD				**73.0**

The CII Savings is 10% of the baseline CII water use, or 7.3 GPCD.

4.3.4 Landscape and Water Loss Savings

Dedicated landscape meters do not necessarily represent all irrigation demand. Water loss is merely an indirect calculation of the difference between supply and demand. For these reasons, an indirect methodology has been developed to estimate the sum of irrigation demand and water loss for purposes of defining this water use sector per the following equation:

$$\begin{aligned} &Landscape\ \&\ Water\ Loss \\ &= Baseline - Standard\ Indoor\ Residential\ Water\ Use - CII\ Water\ Use \end{aligned}$$

- The baseline is 268.2 GPCD as shown in Table 12.
- The standard indoor residential water use has been established as 70 GPCD by DWR.
- The CII water use is 73.0 as shown in
- Table 13.

Landscape and water loss is calculated as 125.2 GPCD per the following equation:

$$Landscape\ \&\ Water\ Loss = 268.2 - 70.0 - 73.0 = 125.2\ GPCD$$

Landscape and Water Loss Savings is 21.6% of Landscape and Water Loss, or 27.0 GPCD.

4.3.5 Summary of Method 4

The Total Savings based on Method 4 is the sum of Metering Savings, Indoor Residential Savings, CII Savings and Landscape and Water Loss Savings per the following equation:

$$Total\ Savings = 0.0 + 15.0 + 7.3 + 27.0 = 49.3\ GPCD$$

4.4 Per Capita Water Use Targets

As defined by Method 4, the compliance water use target is calculated as the Baseline minus the Total Savings:

$$Compliance\ Water\ Use\ Target = Baseline - Total\ Savings = 268.2 - 49.3 = 218.9\ GPCD$$

The interim water use target is calculated as halfway between the Baseline and the compliance water use target:

$$Interim\ Water\ Use\ Target = \frac{Baseline + Compliance\ Water\ Use\ Target}{2}$$

$$= \frac{268.2 + 218.9}{2} = 243.6\ GPCD$$

4.5 Verification of Minimum Water Use Reduction Requirement

> *§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.*

The Baseline was determined to be 268.2 GPCD; therefore, the above verification must be performed since the Baseline exceeds 100 GPCD. Based on data presented in Table 12, verification of meeting the minimum reduction requirement is presented in Table 14.

Table 14 – Verification of Minimum Water Use Reduction

Year	Supply (AF)	Population	GPCD
2003	8,881.2	29,332	270.3
2004	9,090.5	29,274	277.2
2005	8,624.9	29,216	263.6
2006	9,072.1	29,158	277.8
2007	9,373.8	29,100	287.6
		Average	**275.3**
		95% of Average	**261.5**

Since the calculated compliance water use target is lower than 95% of the 5-year average shown in Table 14, the compliance water use target is considered to be valid.

4.6 Water Use Reduction Plan

> *§10608.36 Urban wholesale water suppliers shall include in the urban water management plans . . . an assessment of their present and proposed future measures, programs, and policies to help achieve the water use reductions required by this part.*

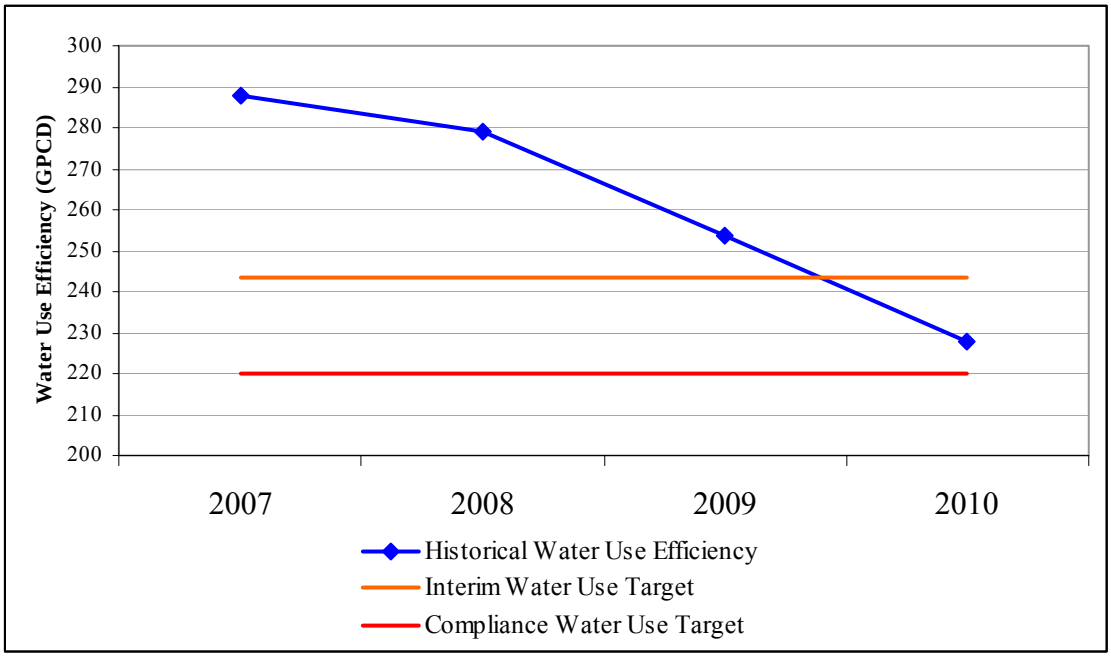
La Verne has recently instituted aggressive water conservation measures the results of which are evident in the downward trend of water use efficiency as detailed in Table 15.

Table 15 – Water Use Efficiency Trend

Year	Supply (AF)	Population	GPCD
2007	9,373.8	29,100	287.6
2008	9,080.4	29,042	279.1
2009	8,233.6	28,984	253.6
2010	7,382.0	28,931	227.8

Over the past four years, the average annual reduction in per capita water use is 19.9 GPCD. In 2010, the interim water use target of 243.6 GPCD was exceeded by 15.8 GPCD. An additional reduction of 8.9 GPCD is required by 2020 to achieve the compliance water use target of 218.9 GPCD. Figure 1 provides a graphic illustration of recent historical water efficiency relative to the interim and compliance water use targets.

Figure 1 – Historical and Target Water Use



Based on the current trend of water use efficiency in La Verne, continued aggressive implementation of water conservation measures is anticipated to achieve the compliance goal years ahead of schedule. Established water conservation measures (aka Demand Management Measures aka Best Management Practices) are described in detail in Chapter 7. The effectiveness of the continued implementation of the Demand Management Measures (DMM) is an estimate water use reduction of 10 GPCD as shown in Table 38. This estimated water use reduction will result in a water use efficiency of approximately 218 GPCD by 2020 which is anticipated to meet or exceed the compliance water use target of 218.9 GPCD.

No water use reduction planning in addition to the current implementation of DMMs is anticipated to be required at this time in order to comply with the mandates of the California Water Conservation Act.

CHAPTER FIVE – SYSTEM SUPPLIES

5.1 General Description

Local groundwater had been the City's primary source of water since the late 1800's. In 1972, the City began importing water to meet the demands associated with population growth. Amendments to the federal and State drinking water standards also influenced the City's decision to import water since some of the City's groundwater sources did not meet the new standards without a substantial investment in treatment infrastructure. Today, water production is a closely monitored process including direct introduction of disinfected groundwater and imported water into the distribution system, blending of groundwater having nitrate concentrations that exceed the MCL[10] with imported water, and treatment of groundwater to remove perchlorate and nitrate.

5.2 Water Sources

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

La Verne's firm water sources include imported water from the Three Valleys Municipal Water District's (TVMWD) Miramar Treatment Plant and groundwater extracted from Six Basins. Table 16 indicates the current and projected supplies available from these sources.

Table 16 – Current and Projected Water Supplies

Water Supply	2010[11] (AFY)	2015 (AFY)	2020 (AFY)	2025 (AFY)	2030 (AFY)	2035 (AFY)
TVMWD	4,865	10,860	10,860	10,860	10,860	10,860
Six Basins	2,517	3,061	3,061	3,061	3,061	3,061
Total	7,382	13,921	13,921	13,921	13,921	13,921

5.3 Imported Water

TVMWD, a municipal water district organized pursuant to Division 20 of the California Water Code, is a water wholesaler and one of 26 public agencies that comprise the Metropolitan Water District of Southern California (MWD). TVMWD has the ability to import water from two sources: the Colorado River (originating at Lake Havasu) and the State Water Project (originating at the Delta of the Sacramento and San Joaquin Rivers). TVMWD treats the imported water at the Miramar Water Treatment Plant (Miramar), located on the northeastern corner of the intersection of Miramar Avenue and Padua

[10] MCL = maximum contaminant limit
[11] Supply for 2010 represents actual production

Avenue in the City of Claremont. The treatment process at Miramar includes chemical mixing, tapered energy flocculation, sedimentation, dual media filtration, and disinfection. Typically, Miramar receives 100% State Project Water from MWD's Foothill Feeder and treats that water for potable use. Water imported from the Colorado River is only utilized by TVMWD in the event of an emergency or other outstanding circumstance. More recently, a groundwater production well was drilled at the Miramar site and now augments the imported water production of the plant. The well provides about 4% of the total output of the plant.

The treatment capacity at Miramar is 25.0 million gallons per day (MGD) or 38.7 cubic feet per second (cfs). The normal design capacity is 19.4 MGD or 30.0 cfs with a capability of being expanded; however, there are no current plans to expand this facility within the planning horizon of this document. Golden State Water Company (GSWC) and La Verne are each entitled to a 50% share of the available flow from Miramar. When the plant and pipeline capacities are not fully subscribed to these main participants, TVMWD may sell the water to non-participant agencies on an interruptible basis. It is understood by the participants, that MWD or other suppliers of water, by reason of drought conditions or other emergency conditions, may require TVMWD to impose water conservation or rationing measures. The imposing operations and measurements are subject to TVMWD rules and regulations.

The City has been one of the three participants of Miramar's construction, operation, and maintenance since 1984. Miramar has supplied water to the City since 1987. The City is executing the First Lease-Purchase Miramar Project Sublease Agreement. It shares capital costs pursuant to a 30-year fixed rate in fully amortizing municipal securities.

TVMWD imposes certain restrictions on rates of flow through each connection to its system. These include the following:

- Changes in flow must usually be made 6 hours prior to the requested change. However, TVMWD staff is generally responsive to making requested changes within 30 minutes.
- Within any 24-hour period, changes in rate of flow shall not vary more than 10% above or below the average of the previous 24 hours.
- Average flow during any one month shall not exceed 132 percent of the annual flow.
- When flow through a connection is reduced below 10 percent of the requested flow or 10 percent of the design capacity of the meter, whichever is less, the agency will be charged for flow at 10 percent of the capacity of the meter.

Table 17 indicates La Verne's projected imported water supply from Miramar assuming that 50% of the current normal design capacity is available.

Table 17 – Projected Wholesale Supplies

Basin Designation	2015 (AFY)	2020 (AFY)	2025 (AFY)	2030 (AFY)	2035 (AFY)
TVMWD	10,860	10,860	10,860	10,860	10,860

5.4 Groundwater

§10631(b) (Is) groundwater . . . identified as an existing or planned source of water available to the supplier . . .

§10631(b)(1) (Provide a) copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.

§10631(b)(2) (Provide a) description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For those basins for which a court or the board has adjudicated the rights to pump groundwater, (provide) a copy of the order or decree adopted by the court or the board. (Provide) a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. For basins that have not been adjudicated, (provide) information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted 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.

§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. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

§10631(b)(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.

La Verne extracts groundwater from Six Basins in accordance with the Six Basins Judgment (Appendix F). Six Basins, as its name implies, is actually six small interrelated basins: (1) Canyon Basin, (2) Upper Claremont Heights Basin, (3) Lower Claremont

Heights Basin, (4) Pomona Basin, (5) Live Oak Basin and (6) Ganesha Basin. The Judgment specifically defines adjudication for the Four Basins (i.e. the first four basins listed above) and generally defines adjudication for the Two Basins (i.e. the last two basins listed above). The Judgment is overseen by the Six Basins Watermaster, whose duties are currently being performed by TVMWD.

La Verne has an adjudicated right in Four Basins to 7.6015% of the Operating Safe Yield (OSY). Per the Six Basins Judgment, La Verne also has "the right to produce as much groundwater as it may reasonably withdraw from the Two Basins Area on an annual basis so long as it does not substantially injure the rights of any other" parties identified in the Six Basins Judgment. The purpose behind such delineation of rights in the Two Basins involves the proximity of La Verne to the Two Basins and the acknowledgement of water quality issues in the Two Basins whose remediation would require substantial investment and management. La Verne has recently completed construction of the Amherst Groundwater Treatment Plant, which is capable of treating local groundwater for perchlorate and nitrate contamination, and is now in a position to further define and develop its rights in the Two Basins.

Groundwater is extracted from the various basins by nine wells as indicated in Table 18.

Table 18 – Groundwater Production Capacity

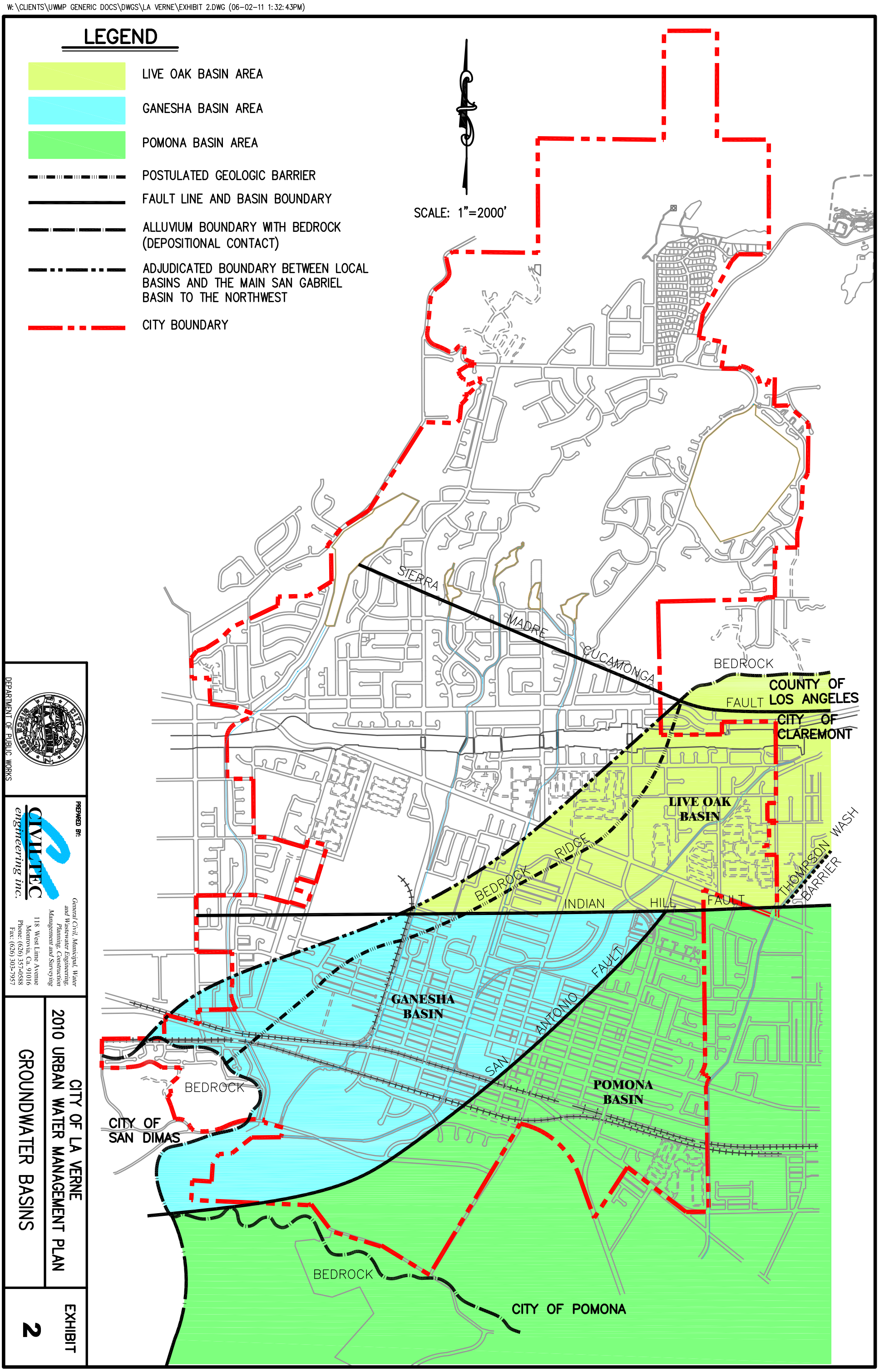
Well Designation	Basin	Nominal Flow (gpm)	Equivalent Capacity (AFY)
Lincoln Well	Pomona	1,008	1,626
Mills Tract Well[12]	Pomona	865	0
Old Baldy Well[13]	Ganesha	594	0
Walnut Well	Ganesha	477	769
Amherst Well	Live Oak	511	824
Beech St. Well	Live Oak	350	565
LVH Well 1	Live Oak	211	340
LVH Well 2	Live Oak	252	406
LVH Well 3	Live Oak	489	789

The following sections provide descriptions of those basins where La Verne extracts groundwater. A map of the basin with respect to the La Verne incorporated boundary is provided in Exhibit 2.

[12] Lincoln Well and Mill Tract Well can not be operated simultaneously for water quality and blending purposes. For planning purposes, Mill Tract Well is considered to be off-line and Lincoln Well is considered to govern extraction capacity in the Pomona Basin.

[13] Old Baldy Well is off-line due to water quality issues.

W:\CLIENTS\UWMP GENERIC DOCS\DWGS\LA VERNE\EXHIBIT 2.DWG (06-02-11 1:32:43PM)



DEPARTMENT OF PUBLIC WORKS

PREPARED BY:

CIVILTEC engineering inc.

General Civil, Municipal, Water and Wastewater Engineering, Planning, Construction Management and Surveying

118 West Lime Avenue
Monrovia, Ca. 91016
Phone: (626) 357-0588
Fax: (626) 303-7957

CITY OF LA VERNE
2010 URBAN WATER MANAGEMENT PLAN

GROUNDWATER BASINS

EXHIBIT 2

5.4.1 Live Oak Basin

The Live Oak Basin is bounded by the Sierra Madre-Cucamonga fault on the north, (which is considered an active fault) and the Indian Hill fault on the south. The Indian Hill fault separates the Live Oak Basin from the Ganesha and Pomona Basins. Subsurface ridges of relatively impermeable bedrock may act as barriers that separate the Live Oak Basin from the Main San Gabriel Basin (the San Dimas Basin) on the west and the Lower Claremont Heights Basin on the east. Total thickness of alluvium in the Live Oak Basin is from about 350 feet to over 500 feet (as described in the drillers' logs of La Verne Heights Well No. 1). The shape of the underlying bedrock controls alluvium thickness, which is a factor of the ancient surface topography and tectonics. As the relative motion along both basin-bounding faults is predominantly north-side up, faulting, folding, and tilting associated with these structures has apparently allowed somewhat thicker accumulations of alluvium to be deposited in the northern and northeastern portions of the Live Oak Basin. Relatively speaking, alluvial thickness in this basin is considered the thinnest with respect to the accumulation of alluvial deposits in the adjoining basins.

5.4.2 Ganesha Basin

The Ganesha Basin is a narrow groundwater basin that lies between the Indian Hill fault on the north, the San Antonio fault on the south, and the Main San Gabriel Basin on the north and west. A depositional contact between the alluvium within the Ganesha Basin and the underlying tertiary bedrock forms the southwest boundary of the basin. Alluvium thickness revealed on the drillers' logs of wells in the Ganesha Basin range from as much as 750 feet in the northeast portion of the basin to near zero at the contact with tertiary bedrock to the southwest. The basin contains a high percentage of clay in the upper 100 feet of alluvium, which partially inhibits deep percolation of direct rainfall.

5.4.3 Pomona Basin

Only the northwestern portion of the Pomona Basin underlies the City of La Verne. The Basin is south of the Live Oak Basin and is bounded on the north by the Indian Hill Fault, on the northwest by the San Antonio fault, on the southeast by the San Jose fault, and on the southwest by a depositional contact with tertiary bedrock. The Pomona Basin has the thickest alluvium compared with the other basins underlying the City. Within the basin, alluvium is thickest in the southeastern portion. The thickness of alluvium at Cartwright Well is approximately 900 feet thick and nearly 800 feet thick at Mills Tract Well.

5.4.4 Summary of Groundwater Production

Table 19 includes the volumes of water pumped for the last five years from the various basins where La Verne maintains groundwater production facilities.

Table 19 – Groundwater Pumped for Last Five Years

Basin Designation	2006 (AFY)	2007 (AFY)	2008 (AFY)	2009 (AFY)	2010 (AFY)
Pomona Basin	1,468.2	1,507.2	1,317.1	1,329.9	1,099.6
Ganesha Basin	2.3	224.4	377.7	594.4	496.1
Live Oak Basin	509.0	444.0	619.7	776.8	921.2
Total	1,979.4	2,175.7	2,314.5	2,701.1	2,517.0

The volume projected to be extracted from the Pomona Basin represents maximization of La Verne's adjudicated rights in the Four Basins assuming an average OSY of 20,000 AFY.

The safe yields for the Ganesha and Live Oak Basins are currently unknown. As La Verne continues to develop these basins for groundwater production, it is anticipated that a greater understanding of the respective safe yields will emerge. In light of this, the maximum historical annual production from these basins is assumed to be the safe yield. These historical production volumes are indicated in Table 19 as 594.4 AFY in 2009 for the Ganesha Basin and 921.2 in 2010 for the Live Oak Basin.

Table 20 includes the volumes of water projected to be pumped through 2035.

Table 20 – Groundwater Projected to Be Pumped

Basin Designation	2015 (AFY)	2020 (AFY)	2025 (AFY)	2030 (AFY)	2035 (AFY)
Pomona Basin	1,546	1,546	1,546	1,546	1,546
Ganesha Basin	594	594	594	594	594
Live Oak Basin	921	921	921	921	921
Total	3,061	3,061	3,061	3,061	3,061

5.5 Transfer Opportunities

§10631(d) Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.

La Verne has no transfer or exchange opportunities at this time.

5.6 Desalinated Water Opportunities

§10631(i) Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

There are no opportunities for the City to develop desalinated water as a long-term supply.

5.7 Recycled Water Opportunities

§10633 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.

§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.

§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.

§10633(c) (Describe) the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.

§10633(d) (Describe and quantify) the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.

§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 pursuant to this subdivision.

§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.

§10633(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 recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

The 2005 La Verne UWMP projected zero recycled water use for 2010, which is consistent with actual recycled water use for 2010. The lack of recycled water development is explained in the following sections.

5.7.1 Disposition of Wastewater Collection and Treatment

Wastewater generated within the City of La Verne is collected in City sewers and discharged to a regional trunk sewer pipeline owned by the Los Angeles County Sanitation Districts (LACSD) where it flows by gravity to either the Pomona Water Reclamation Plant (WRP) or the San Jose Creek WRP. Per LACSD, these facilities have the physical and performance characteristics as shown in Table 21.

Table 21 – Local Wastewater Treatment

WRP	Pomona	San Jose Creek
Distance from La Verne (miles)	3.5	15.6
Nominal Capacity (AFY)	14,570	112,055
Volume meeting Title 22 Standards in FY 2007-08 (AF)	9,839	82,593
Volume Actually Reused in FY 2007-08 (AF)	8,143	34,814
Volume Discharged to the Ocean in FY 2007-08 (AF)	1,696	47,779

5.7.2 Potential Recycled Water Use and Incentives

Development of recycled water use is proceeding rapidly in the City of Pomona and in Walnut Valley Water District. As a result of these activities, it is anticipated that 100% of the recycled produced at the Pomona WRP will be reused locally.

At this time, the development of recycled water distribution infrastructure to transport recycled water from the San Jose Creek WRP, which is more than 15 miles away from La Verne, has been found to be economically infeasible.

As such, there are no plans for the development of recycled water during the 20-year planning horizon of this UWMP because nearby recycled water production at Pomona is unavailable and more distant recycle water production at San Jose Creek is too far away.

A comprehensive analysis of potential recycled water use has not been performed to date largely because the prospect of developing recycled water as a source has been determined to be infeasible. The following summary demonstrates qualitatively the potential recycled water uses in La Verne which will be further refined in the event a more feasible solution is found in the future:

- 10 schools
- 19 parks
- 2 golf courses
- 1 tree farm
- Limited commercial and industrial application
- Extensive irrigation of medians and other public lands

Data on the potential use of recycled water related to wildlife habitat, groundwater recharge and indirect potable reuse are not immediately available and are not considered to be within the purview of the City. These activities have been deferred to Los Angeles County and the various Watermasters responsible for management of area basins. There is no potential use of recycled water for wetlands, seawater barriers or energy.

There is no incentive at this time to promote local recycled water use.

5.7.3 Future Recycled Water Projects

Local purveyors are planning to expand recycled water availability for groundwater replenishment purposes as part of the Groundwater Reliability Improvement Project (GRIP). The project includes the development 25,000 AFY of recycled water at the San Jose Creek Water Reclamation Plant. The project includes improvement to treatment capacity and quality and improvements to recycled water distribution and replenishment infrastructure. Although the project will not directly benefit La Verne, there will be significant improvements to water reliability in the San Gabriel Valley which will in turn improve the potential for reliability of those sources that La Verne depends on. As a result, there may be opportunities to enter into transfer agreements with neighboring suppliers to promote conjunctive use or other management plans contingent upon groundwater reliability.

5.8 Other Future Water Projects

§10631(h) (Describe) all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), 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.

The 2010 Water Master Plan Update cites four supply-related projects to be implemented within a ten-year planning horizon.

5.8.1 Live Oak Basin Well

A new well is planned to be constructed to extract groundwater from the Live Oak Basin as a replacement for the LVH No. 1 Well. The new well is required to compensate for losses in specific capacity of the LVH No. 1 Well and other vicinity wells. This project represents the continuation of a supply enhancement project that included the development of the Beech Street Well. In conjunction with the Beech Street Well whose capacity is 350 gpm, the project goal is to achieve a combined production capacity of between 500 gpm and 1,000 gpm (800 AFY – 1,600 AFY). This project is scheduled to be completed by 2015.

5.8.2 Old Baldy Well Restoration

A study is planned to be conducted regarding the restoration of the Old Baldy Well which has been deactivated intermittently since 1990 for issues related to local water quality, specifically VOC and nitrate contamination. The study will focus on water quality and hydrology and investigate the possibility of restoring production through treatment, blending or replacement. This study is scheduled to be completed and recommendations implemented by 2015.

5.8.3 Pomona Basin Well

A new well is planned to be constructed to extract groundwater from the Pomona Basin as a replacement for the Cartwright Well which is at the end of its service life. The capacity of the new well is anticipated to be approximately 1,000 gpm (1,600 AFY). This project is scheduled to be completed by 2020.

5.8.4 Ion Exchange Treatment Plant

An ion exchange treatment plant is being evaluated for construction at the City's White Avenue Plant location. The plant is intended to treat groundwater extracted from the Pomona and Ganesha Basins at a capacity of 2,000 gpm (3,200 AFY). The purpose of the plant is to provide greater flexibility in maximizing groundwater production which is currently limited by blending requirements. This project is scheduled to be completed by 2020.

5.8.5 Summary of Future Projects

La Verne has exclusive rights to groundwater extracted from the Live Oak Basin and the Ganesha Basin. The safe yield from these basins is unknown at this time. Improvements to water treatment capacity will increase the City's ability to further develop these exclusive rights; however, the amount of increased production is complicated to predict. For purposes of this UWMP, the safe yield of the respective basins is considered to be equivalent to the maximum historical annual production from each basin.

As a result, none of the four projects described above is expected to increase supply. Rather, they are intended to replace aging infrastructure, improve supply reliability and provide flexibility of system operations. As a result, the net increase in supply is anticipated to be zero, pending continued development of the Live Oak Basin and the Ganesha Basin.

CHAPTER SIX – WATER SUPPLY RELIABILITY

6.1 General Description

§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.

§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.

The sections that follow provide detailed information regarding the reliability of La Verne's supplies and how those supplies compare to projected demand.

6.2 Summary of Historical Water Year Data

§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.

Table 22 provides historical data for La Verne's annual supply and for annual precipitation measured at San Antonio Dam for the 19-year period from the 1992 through 2010. Runoff in the vicinity of the San Antonio Dam directly influences the Six Basins; therefore, this data source was considered the most pertinent to La Verne's water reliability under varying supply conditions. In the sections that follow, normal, dry and multiple dry years have been identified, and the demands associated with La Verne's response to those supply conditions have been quantified.

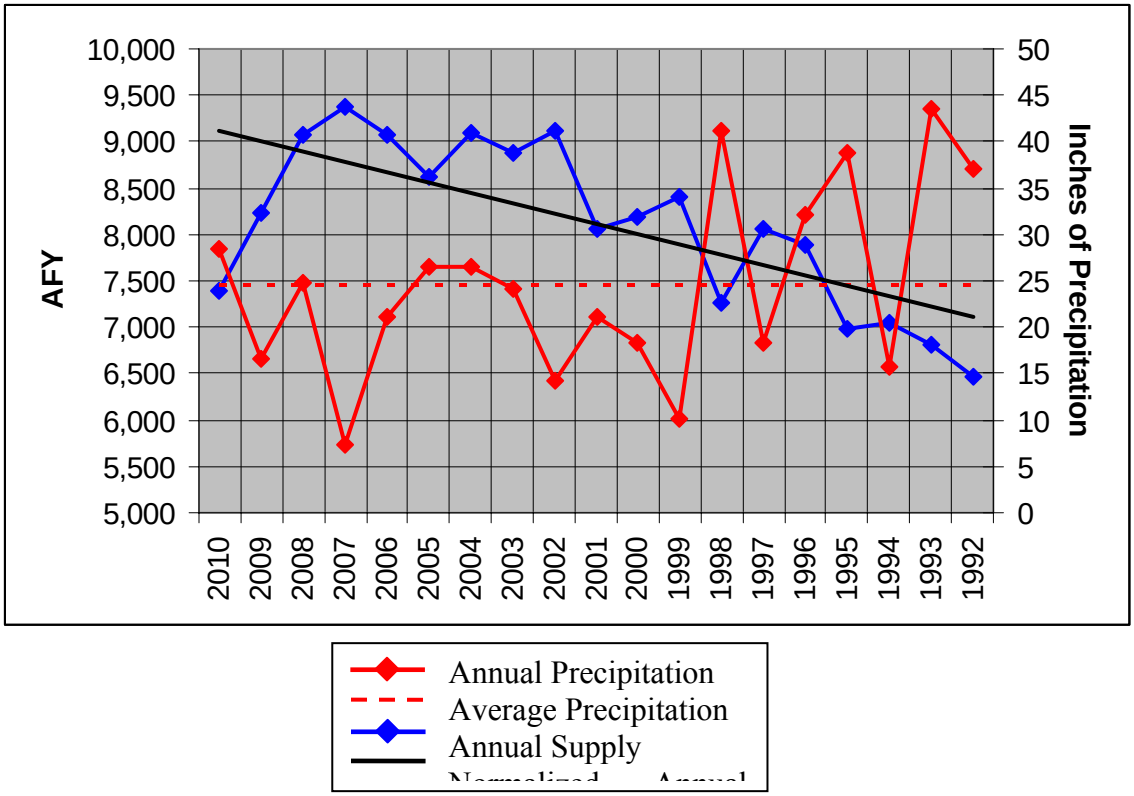
Table 22 – Historical Supply Data

Year	Supply (AFY)	Precipitation (in.)
2010	7,382	28.48
2009	8,234	16.53
2008	9,080	24.71
2007	9,374	7.36
2006	9,072	21.12
2005	8,625	26.53
2004	9,091	26.53
2003	8,881	24.18
2002	9,113	14.19
2001	8,054	21.17
2000	8,198	18.30
1999	8,412	10.07
1998	7,271	41.13
1997	8,071	18.26
1996	7,898	32.11
1995	6,991	38.71
1994	7,043	15.69
1993	6,807	43.52
1992	6,464	37.06

The normal year is considered the average of this 19-year period, or 8,108 AFY.

Figure 2 shows how supply has escalated in order to meet demand since 1992.

Figure 2 – Normalized Annual Supply



6.2.1 Historical Single Dry Year Variation from Norm

2007 was selected for calculation of variation between the normal dry year and the single dry year. As shown in Table 22, at 7.36 inches of annual precipitation, 2007 is the driest year on record.

The variation of the single dry year is considered as the percent difference of the supply in 2007 compared to the normalized supply in 2007, or 6.75%:

$$\left(\frac{9{,}374\ AFY}{8{,}781\ AFY} - 1\right)(100\%) = 6.75\%$$

6.2.2 Historical Multiple Dry Year Variation from Norm

By observation, 1999 through 2003 are the driest continuous years on record per Table 22; therefore, this 5-year period was selected for calculation of variation between the normal year and the multiple dry year.

The variation of a multiple dry year is considered as the percent difference of the cumulative supply from 1996 to 2000 compared to the cumulative normalized supply for the same period. These data are shown in Table 23.

Table 23 – Summary of Data for Multiple Dry Year Calculation

Year	Actual Supply (AFY)	Normalized Supply (AFY)	Variation
2003	8,881	8,335	6.6%
2002	9,113	8,223	10.8%
2001	8,054	8,112	-0.7%
2000	8,198	8,000	2.5%
1999	8,412	7,888	6.6%

6.2.3 Projected Normal Year Supply and Demand

Table 24 provides a summary of projected normal year supply and demand. Projected normal year supply is delineated in Table 16 and projected normal year demand is estimated in Table 5.

Table 24 – Normal Year Supply and Demand Comparison

Item	2015 (AFY)	2020 (AFY)	2025 (AFY)	2030 (AFY)	2035 (AFY)
Supply	13,921	13,921	13,921	13,921	13,921
Demand	8,127	7,527	7,816	8,094	8,385
Difference	5,794	6,394	6,105	5,827	5,536
Difference as % of Supply	41.6%	45.9%	43.9%	41.9%	39.8%
Difference as % of Demand	71.3%	84.9%	78.1%	72.0%	66.0%

6.2.4 Projected Single Dry Year Supply and Demand

Table 25 provides a summary of projected single dry year supply and demand.

Projected single dry year supply assumes the following:

- Implementation of TVMWD's Water Supply Allocation Plan (WSAP) Shortage Level 2 (6,299 AF)
- A 20% temporary overdraft of the Ganesha and Live Oaks Basins (1,818 AF)
- Adjudicated rights of 7.6015% of the OSY in 2007 of 18,500 AF (1,406 AF)

Projected single dry year demand is equivalent to the estimated normal year demand plus an increase of 6.75% to account for typical variation from norm as discussed in §6.2.1.

Table 25 – Single Dry Year Supply and Demand Comparison

Item	2015 (AFY)	2020 (AFY)	2025 (AFY)	2030 (AFY)	2035 (AFY)
Supply	9,523	9,523	9,523	9,523	9,523
Demand	8,676	8,035	8,343	8,640	8,951
Difference	847	1,488	1,180	883	572
Difference as % of Supply	8.9%	15.6%	12.4%	9.3%	6.0%
Difference as % of Demand	9.8%	18.5%	14.1%	10.2%	6.4%

6.2.5 Projected Multiple Dry Year Supply and Demand

Table 26 provides a summary of projected multiple dry year supply and demand.

Projected multiple dry year supply assumes the following:

- Implementation of TVMWD's Water Supply Allocation Plan (WSAP) Shortage Level 2 (6,299 AF)
- Typical production from the of the Ganesha and Live Oaks Basins (1,515 AF)
- Adjudicated rights of 7.6015% of the OSY in 1999 through 2003
    - 1999 – OSY 24,000 AF (1,824 AF)
    - 2000 – OSY 22,000 AF (1,672 AF)
    - 2001 – OSY 22,000 AF (1,672 AF)
    - 2002 – OSY 19,500 AF (1,482 AF)
    - 2003 – OSY 18,000 AF (1,368 AF)

Projected multiple dry year demand is equivalent to the estimated normal year demand plus an increase of the percentage shown in Table 23 to account for typical variation from norm as discussed in §6.2.2.

Table 26 – Multiple Dry Year Supply and Demand Comparison

Year	Item	2015 (AFY)	2020 (AFY)	2025 (AFY)	2030 (AFY)	2035 (AFY)
1	Supply	9,638	9,638	9,638	9,638	9,638
	Demand	8,664	8,024	8,332	8,628	8,938
	Difference	974	1,614	1,306	1,010	700
	Difference as % of Supply	10.1%	16.7%	13.6%	10.5%	7.3%
	Difference as % of Demand	11.2%	20.1%	15.7%	11.7%	7.8%
2	Supply	9,486	9,486	9,486	9,486	9,486
	Demand	8,330	7,715	8,011	8,296	8,594
	Difference	1,156	1,771	1,475	1,190	892
	Difference as % of Supply	12.2%	18.7%	15.5%	12.5%	9.4%
	Difference as % of Demand	13.9%	23.0%	18.4%	14.3%	10.4%
3	Supply	9,486	9,486	9,486	9,486	9,486
	Demand	8,070	7,474	7,761	8,037	8,326
	Difference	1,416	2,012	1,725	1,449	1,160
	Difference as % of Supply	14.9%	21.2%	18.2%	15.3%	12.2%
	Difference as % of Demand	17.5%	26.9%	22.2%	18.0%	13.9%
4	Supply	9,296	9,296	9,296	9,296	9,296
	Demand	9,005	8,340	8,660	8,968	9,290
	Difference	291	956	636	328	6
	Difference as % of Supply	3.1%	10.3%	6.8%	3.5%	0.1%
	Difference as % of Demand	3.2%	11.5%	7.3%	3.7%	0.1%
5	Supply	9,182	9,182	9,182	9,182	9,182
	Demand	8,664	8,024	8,332	8,628	8,938
	Difference	518	1,158	850	554	244
	Difference as % of Supply	5.6%	12.6%	9.3%	6.0%	2.7%
	Difference as % of Demand	6.0%	14.4%	10.2%	6.4%	2.7%

6.3 Potential Supply Issues and Constraints

§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.

Planning documents inherently deal with uncertainties about the future. Uncertainty cannot be avoided; however, adequate documentation and applied reason ensures defensibility against legal challenges, completeness and comprehensiveness. The

following steps have been employed, documented as necessary, to satisfy issues surrounding supply uncertainty as they pertain to development of this UWMP:

- Acknowledge the uncertainty
- Specify the conclusion and how the conclusion was reached
- Reference supporting evidence
- Evaluate the likelihood that the conclusion is incorrect
- Provide an alternative in case the conclusion is proved incorrect
- Respond to comments regarding the conclusion
- Pay attention to the wholesaler's plans
- Use the latest and best data available

6.3.1 Imported Water Reliability

As a retail member agency, La Verne receives imported water from TVMWD. As a wholesale member agency of MWD and per the TVMWD 2010 UWMP, TVMWD relies primarily on the availability of MWD supplies to gauge reliability. To a lesser degree, TVMWD has access to local supplies, but it is its member retail agencies that have greater access and demand greater use of those local resources. To that end, TVMWD encourages the development and use of local supplies by the member retail agencies when it is available. TVMWD's overall water resource management scheme focuses on maximizing local resource development recognizing that the availability of imported water can be highly variable and overall import supply may dwindle in the future due to competing statewide interests.

Meanwhile, MWD's import supply reliability is dependent on the State Water Project and the Colorado River Aqueduct. These two primary sources are subject to a whole host of legal, environmental, water quality, and climatic factors that affect available deliveries on almost an annual basis. MWD has developed its 2010 Regional Urban Water Management Plan wherein MWD explains the measures it has taken to try to guard against shortages in import supplies coming from the two primary sources. Such measures include groundwater banking/storage agreements within and outside of the MWD service area, surface water storage at its terminal reservoirs, and conservation/water resource programs that promote water efficiency. Likewise, TVMWD has sought similar measures within its own service area to improve overall reliability. TVMWD seeks to maximize available local groundwater storage for conjunctive use purposes, promotes conservation efforts, and coordinates with its retail member agencies in developing local resource projects that will offset the need to import water.

Groundwater Storage/Conjunctive Use

TVMWD's service area overlies five groundwater basins (Chino Basin, Main San Gabriel Basin, Puente Basin, Six Basins, and Spadra Basin). Within three of these basins, TVMWD is involved in the following storage/conjunctive use programs:

- The Chino Basin Dry-Year Yield Program is a cooperative agreement between MWD and Chino Basin stakeholders, of which TVMWD is one. The program included a potential storage capability of 100,000 AF, withdrawal of which is limited to a third of that amount per year. On a practical basis, TVMWD and its member retail agency can account for about 6,000 AF of that amount or a quantity on the order of 2,000 AFY.

- In the Main San Gabriel Basin, TVMWD maintains a cyclic storage account that allows up to 40,000 AF of storage. Import water is typically delivered to storage when it is available and then extracted from the groundwater basin by TVMWD's member retail agencies during periods of shortage or drought. Annual extraction limits are not limited but are capped by the practical pumping capacity of the retail member agencies. This provides another hedge against dwindling import supplies and short-term emergencies.

- The Live Oak Basin and Upper Claremont Heights Basin conjunctive use projects utilize two of the sub-basins within Six Basins. Combined, the projects allow for a maximum storage amount of 6,000 AF with annual withdrawal limits of 2,000 AF.

Groundwater storage programs/projects help to relieve pressures on the import water systems during periods when those sources are less plentiful. The ability to effectively coordinate the conjunctive use of import supplies and the local groundwater basins remains a challenge but is the key to effective management of the water resources of the region.

Groundwater Recovery

In addition to improving the ability to put water into the local groundwater basins, TVMWD is also working with its retail member agencies to develop or recover the capability to use groundwater with marginal water quality issues. Years ago, many groundwater producers deactivated wells after seeing high concentrations of contaminants such as nitrate, volatile organic compounds (VOCs), perchlorate, and others. When faced with the added expense treatment before putting groundwater into a potable system, many instead chose the alternative of replacing that supply with imported water.

As the future of imported water supplies has become more tentative over the past few years, TVMWD and its retail member agencies are reassessing those earlier decisions regarding the use of slightly impaired groundwater supplies. With the advent of reliable

treatment technology to address water quality problems and experience gained by those who have installed such facilities, past analyses showing groundwater treatment to be too costly may no longer be valid.

For those retail member agencies that have access to recycled water, expansion of dedicated systems and conversion of appropriate demands from potable water to recycled water is the key to reducing future imported water use and managing resources for growing populations within the service area.

The noteworthy idea behind groundwater recovery is that for every acre-foot of water produced, a like amount of potable supply – typically imported water – can be replaced. The displaced amount then manifests itself as a reduced demand and a potential resource for future growth in the region.

Conclusions

In response to the challenges that TVMWD faces with respect to the reliability of its MWD sources and its efforts to develop local programs and sources, La Verne has developed the following approach:

- Under normal year and wet year conditions, imported water is assumed to be available at a rate equivalent to 50% of the normal production capacity of the Miramar Water Treatment Plant, per La Verne current entitlement.

- Under dry year and multiple dry year conditions, imported water is assumed to be available at a rate equivalent Shortage Level 2 of the TVMWD Water Supply Allocation Plan (WSAP) or 6,299 AFY. The implementation of Shortage Level 2 represents a 14% reduction in typical imported water supply. Per TVMWD, Shortage Level 2 allocations were implemented in FY 2009-10 (a recent single dry year occurrence) and from 2004 to 2006 (a recent multiple dry year occurrence).

These assumptions have been applied in supply and demand comparison through this UWMP.

6.3.2 Imported Water Redundancy

In order to bolster imported water redundancy, La Verne has acquired access to water production from MWD's Weymouth Water Treatment Plant. This source is presently used only to supplement peak demand and in emergencies, and is therefore not considered a long-term supply.

In 1956, the Joint Feeder Commission was established between the City of Pomona, Walnut Valley Water District (WVWD) and Rowland Water District (RWD). A result of this commission was an agreement, which states that the three public agencies are to jointly participate in the construction of a segment of water line (Joint Feeder) for the

purpose of receiving delivery of imported water from the Weymouth Water Treatment Plant. The original agreement continued for 50 years through 2006 when it was extended an additional 50 through 2056 with no additional changes. The new agreement will continue through 2056, unless earlier terminated in accordance with the provisions of the agreement, and may be extended, as the contracting public agencies so desire.

In 1960, La Verne signed an agreement with RWD regarding a portion of RWD's capacity from the Joint Feeder. The City leases 2.128% of the capacity of the Joint Feeder, which is a portion of 19.858% owned by RWD, estimated at 4 cfs. The lease started July 1, 1960, and has been extended through 2056. The City pays a sum equal to 2.97% of the amount that RWD is required to pay to the Joint Feeder Commission as its share of administrative expenses.

In 1962, La Verne signed an agreement with the City of Pomona regarding a portion of its capacity from the Joint Feeder. La Verne is leasing 2.128% of the capacity of the Joint Feeder, which is a portion of 51.77% owned by Pomona, estimated at 3 cfs. The lease started February 1, 1962, and has been extended through 2056. The City pays to Pomona a sum equal to 2.9% of the amount that Pomona is required to pay to the Joint Feeder Commission as its share of administrative expenses.

The City built the Hillcrest Booster Station in the early 1980s to exercise its lease agreements with RWD and Pomona. The station has a nominal capacity of 2,400 gpm.

6.3.3 Groundwater Quality

> *§10634The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.*

La Verne maintains a system of blending and treatment facilities to mitigate the impacts of various water quality issues on its groundwater supply. Deteriorating groundwater quality and progressively stricter water quality standards necessitate the close monitoring of all groundwater sources and appropriate mitigation measures.

La Verne recently completed construction of the Amherst Groundwater Treatment Facility with a capacity to treat local groundwater at a rate of up to 2,750 gpm (4,430 AFY) for nitrate and perchlorate contamination. Groundwater from five wells (LVH 1, LVH 2, LVH 3, Amherst and Beech) is collected and treated at this facility.

Production from the Lincoln and Mills Tract Wells pass through an air stripper to remove VOCs[14] prior to being blending with imported water via a static mixer located in the City's White Avenue Plant. The blending process lowers the nitrate concentration below

[14] VOC = volatile organic compounds

80% of the MCL[15] for nitrate. The configuration and capacity of the air stripper and static mixer allow only one of the two wells to be in operation at a time.

The City is also planning to install a new Ion Exchange Treatment Plant in the near future at the White Avenue Plant. This facility will eliminate dependence on imported water as a blending source and will allow simultaneous operation of the Lincoln and Mills Tract Wells. The plant will have a capacity of 2,000 gpm (3,200 AFY) and is scheduled to be on line by 2020.

As indicated in the City of La Verne Water Quality Report 2010 (see Appendix G), proper and vigilant management of local groundwater sources have resulted in no MCL violations.

La Verne prides itself on staying one step ahead of water quality issues that may impact supply. The Amherst Groundwater Treatment Facility was constructed even though blending was a viable solution. As a result, La Verne is now able to maximize its groundwater resources, especially in the Live Oak Basin where it enjoys unlimited groundwater rights, while decreasing its dependence on imported water. Through these efforts, La Verne groundwater reliability includes 100% reliability of its adjudicated rights in the Pomona Basin, and ever-increasing reliability of its unlimited rights in the Live Oak and Ganesha Basins. Quantification of the potential yield of the Live Oak and Ganesha Basin is unknown at this time and has been assumed as equivalent to recent extractions; however, a conjunctive use agreement with TVMWD to develop long-term storage in those basins is expected to provide a more reliable estimate in the future.

6.3.4 Reliability of Groundwater Production Infrastructure

La Verne closely monitors the condition of its groundwater production infrastructure and has continuous programs in place for inspection, repair and replacement of such infrastructure. The following projects are scheduled to be completed within the next ten years to address various issues related to observed deterioration of infrastructure (see Section 5.8 for additional information):

- Live Oak Basin Well replacement
- Old Baldy Well Restoration feasibility study
- Pomona Basin Well replacement
- Ion Exchange Treatment Plant

Continued vigilance in maintaining groundwater production infrastructure results in a high degree of reliability of local resources.

[15] MCL = maximum contaminant level

6.4 Water Shortage Contingency Planning

§10632(a) 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 which are applicable to each stage.

§10632(c) 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.

§10632(d) 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.

§10632(e) 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.

§10632(f) Penalties or charges for excessive use, where applicable.

§10632(g) An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), 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.

§10632(h) A draft water shortage contingency resolution or ordinance.

§10632(i) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.

In 1991, La Verne enacted Ordinance No. 822: An Urgency Ordinance of the City Council of the City of La Verne, County of Los Angeles, State of California, Declaring an Emergency Water Shortage and Adding Chapter 13.15 to the La Verne Drought Surcharge, Conservation Measure, and Water Use Regulations and Restrictions (see Appendix H). In 2009, various provisions to the La Verne Municipal Code were enacted with the approval and adoption if Ordinance 1009: An Ordinance of the City Council of the City of La Verne, County of Los Angeles, State of California, Amending Chapter 13.15 of the La Verne Municipal Code, Regarding Water Conservation, Use and Restrictions (see Appendix I). The following sections summarize the implementation of these two ordinances, the collective purposes of which are "to foster water conservation

and to assure that wasteful water practices are eliminated throughout the City's service area."

6.4.1 Rationing Stages

The rationing stages, including the reduction objective and level of participation, for La Verne's water shortage and drought contingency planning are shown in Table 27.

Table 27 – Water Shortage and Drought Rationing Stages

Rationing Stage	Reduction Objective	Participation
Phase I	10%	Voluntary
Phase II	5%	Mandatory
Phase III	10%	Mandatory
Phase IV	15%	Mandatory
Phase V	20%	Mandatory
Phase VI	25%	Mandatory
Phase VII	30%	Mandatory
Phase VIII	40%	Mandatory
Phase IX	50%	Mandatory

Phase I is entirely voluntary and as such there is no associated enforcement. All other phases include the implementation of conservation or drought pricing to be applied to the following service designation levels:

- Single-family Residential levels A through E
- Multi-family Residential levels A through C
- Irrigation and Other Accounts levels A through C
- All Remaining Accounts levels A through C

The following tables delineate the thresholds for each level as they relate to Phases II through IX. A surcharge shall be levied for exceeding the established baseline allowance. That surcharge shall be established by the City Council for each level indicated above, as needed. For purposes of establishing the various levels, the base year is defined as *"the average amount of water delivered to each non-residential customer's property during the corresponding bimonthly billing period during calendar years 2004-2006"* (§13.15.015(A) of the La Verne Municipal Code) provided that no customer shall be deemed to *"reduce their water consumption to an amount less than ten thousand gallons per bimonthly billing period"* (§13.15.025 of the La Verne Municipal Code).

Table 28 – Phase II Levels

Category	Level	Description of Level
Single-family Residential	A	0-37,000 gallons
	B	37,001-47,000 gallons
	C	47,001-67,000 gallons
	D	67,001-97,000 gallons
	E	97,001 gallons or greater
Multi-family Residential	A	≤95% of base year
	B	>95% of base year and <100% of base year
	C	≥100% of base year
Irrigation and Other Accounts	A	≤90% of base year
	B	>90% of base year and <100% of base year
	C	≥100% of base year
All Remaining Accounts	A	≤95% of base year
	B	>95% of base year and <100% of base year
	C	≥100% of base year

Table 29 – Phase III Levels

Category	Level	Description of Level
Single-family Residential	A	0-34,000 gallons
	B	34,001-44,000 gallons
	C	44,001-64,000 gallons
	D	64,001-94,000 gallons
	E	94,001 gallons or greater
Multi-family Residential	A	≤90% of base year
	B	>90% of base year and <100% of base year
	C	≥100% of base year
Irrigation and Other Accounts	A	≤80% of base year
	B	>80% of base year and <100% of base year
	C	≥100% of base year
All Remaining Accounts	A	≤90% of base year
	B	>90% of base year and <100% of base year
	C	≥100% of base year

Table 30 – Phase IV Levels

Category	Level	Description of Level
Single-family Residential	A	0-31,000 gallons
	B	31,001-41,000 gallons
	C	41,001-61,000 gallons
	D	61,001-91,000 gallons
	E	91,001 gallons or greater
Multi-family Residential	A	≤85% of base year
	B	>85% of base year and <100% of base year
	C	≥100% of base year
Irrigation and Other Accounts	A	≤70% of base year
	B	>70% of base year and <100% of base year
	C	≥100% of base year
All Remaining Accounts	A	≤85% of base year
	B	>85% of base year and <100% of base year
	C	≥100% of base year

Table 31 – Phase V Levels

Category	Level	Description of Level
Single-family Residential	A	0-28,000 gallons
	B	28,001-38,000 gallons
	C	38,001-58,000 gallons
	D	58,001-88,000 gallons
	E	88,001 gallons or greater
Multi-family Residential	A	≤80% of base year
	B	>80% of base year and <100% of base year
	C	≥100% of base year
Irrigation and Other Accounts	A	≤60% of base year
	B	>60% of base year and <100% of base year
	C	≥100% of base year
All Remaining Accounts	A	≤80% of base year
	B	>80% of base year and <100% of base year
	C	≥100% of base year

Table 32 – Phase VI Levels

Category	Level	Description of Level
Single-family Residential	A	0-25,000 gallons
	B	25,001-35,000 gallons
	C	35,001-55,000 gallons
	D	55,001-85,000 gallons
	E	85,001 gallons or greater
Multi-family Residential	A	≤75% of base year
	B	>75% of base year and <100% of base year
	C	≥100% of base year
Irrigation and Other Accounts	A	≤50% of base year
	B	>50% of base year and <100% of base year
	C	≥100% of base year
All Remaining Accounts	A	≤75% of base year
	B	>75% of base year and <100% of base year
	C	≥100% of base year

Table 33 – Phase VII Levels

Category	Level	Description of Level
Single-family Residential	A	0-22,000 gallons
	B	22,001-32,000 gallons
	C	32,001-52,000 gallons
	D	52,001-82,000 gallons
	E	82,001 gallons or greater
Multi-family Residential	A	≤70% of base year
	B	>70% of base year and <100% of base year
	C	≥100% of base year
Irrigation and Other Accounts	A	≤40% of base year
	B	>40% of base year and <100% of base year
	C	≥100% of base year
All Remaining Accounts	A	≤70% of base year
	B	>70% of base year and <100% of base year
	C	≥100% of base year

Table 34 – Phase VIII Levels

Category	Level	Description of Level
Single-family Residential	A	0-18,000 gallons
	B	18,001-28,000 gallons
	C	28,001-48,000 gallons
	D	48,001-78,000 gallons
	E	78,001 gallons or greater
Multi-family Residential	A	≤60% of base year
	B	>60% of base year and <100% of base year
	C	≥100% of base year
Irrigation and Other Accounts	A	≤30% of base year
	B	>30% of base year and <100% of base year
	C	≥100% of base year
All Remaining Accounts	A	≤60% of base year
	B	>60% of base year and <100% of base year
	C	≥100% of base year

Table 35 – Phase XI Levels

Category	Level	Description of Level
Single-family Residential	A	0-16,000 gallons
	B	16,001-23,000 gallons
	C	23,001-43,000 gallons
	D	43,001-73,000 gallons
	E	73,001 gallons or greater
Multi-family Residential	A	≤50% of base year
	B	>50% of base year and <100% of base year
	C	≥100% of base year
Irrigation and Other Accounts	A	≤25% of base year
	B	>25% of base year and <100% of base year
	C	≥100% of base year
All Remaining Accounts	A	≤50% of base year
	B	>50% of base year and <100% of base year
	C	≥100% of base year

6.4.2 Consumptive Reduction Methods

Consumptive reduction methods consist of voluntary measures encouraged under a Phase I rationing stage.

6.4.3 Mandatory Prohibitions

Mandatory prohibitions under the various rationing stages are listed below:

Phase II

1. Hose washing of sidewalks, walkways, driveways, parking areas, or other paved surfaces shall be prohibited.

2. Washing of motor vehicles, trailers, boats, and other types of mobile equipment shall be done only with a hand-held water container or a hose equipped with a positive shut off nozzle for quick rinses, except that washing may be done on the immediate premises of a commercial car wash or with reclaimed water.

3. No water shall be used to clean, fill or maintain levels in decorative fountains, or other similar aesthetic structures unless such water is part of a recycling system.

4. No restaurant, hotel, café, cafeteria, or other public place where food is sold, served, or offered for sale, shall serve drinking water to any customer unless expressly requested.

5. All leaks from indoor and outdoor plumbing fixtures shall be repaired within forty-eight hours of discovery or notification.

6. Watering of landscape or other turf area shall only be permitted between the hours of one hour before sunset and ten a.m. except that this provision shall not apply to commercial nurseries, golf courses, and other water dependant industries; except that there shall be no restriction on watering with reclaimed water, provided that signs are posted that identify reclaimed water is being used. The use of properly operating drip irrigation systems or hand held buckets shall be permitted at any time.

7. Water runoff from landscaped areas in adjoining streets, sidewalks, or other paved areas shall be prohibited.

8. Construction water for grading and other purposes shall be limited to ground produced water at the discretion of the City.

9. Installation of single-pass cooling systems shall be prohibited in buildings requesting new water service.

10. Installation of non-recirculating water systems shall be prohibited in new commercial conveyor car wash and new commercial laundry systems.

11. Food preparation establishments, such as restaurants or cafes, shall be prohibited from using non-water conserving dish wash spray valves.

Phase III

1. The same restrictions identified for Phase II apply.

Phase IV

1. The same restrictions identified for Phase II apply with the exception of irrigation restrictions (see below).

2. Watering of landscape or other turf area, including that of commercial nurseries, golf courses, and other water dependant industries shall only be permitted between the hours of one hour before sunset and ten a.m. for no more than five minutes per station or area, and not to exceed more than twenty minutes per week; except that there shall be no restriction on watering with reclaimed water, provided that signs are posted that identify reclaimed water is being used. The use of properly operating drip irrigation systems or hand held buckets shall be permitted at any time.

Phase V

1. The same restrictions identified for Phase II apply with the exception of irrigation restrictions (see below).

2. Watering of landscape or other turf area, including that of commercial nurseries, golf courses, and other water dependant industries shall only be permitted between the hours of one hour before sunset and ten a.m. for no more than five minutes per station or area, and not to exceed more than twenty minutes per week; except that there shall be no restriction on watering with reclaimed water, provided that signs are posted that identify reclaimed water is being used. The use of properly operating drip irrigation systems or hand held buckets shall be permitted at any time.

Phase VI

1. The same restrictions identified for Phase II apply with the exception of irrigation restrictions (see below).

2. Watering of landscape or other turf area, including that of commercial nurseries, golf courses, and other water dependant industries shall only be permitted between the hours of one hour before sunset and ten a.m. for no more than five minutes per station or area, and not to exceed more than twenty minutes per week; except that there shall be no restriction on watering with reclaimed water, provided that signs are posted that identify reclaimed water is being used. The use of properly operating drip irrigation systems or hand held buckets shall be permitted at any time.

Phase VII

1. The same restrictions identified for Phase II apply with the exception of irrigation restrictions and pool and spa permitting (see below).

2. Watering of landscape or other turf area, including that of commercial nurseries, golf courses, and other water dependant industries shall only be permitted between the hours of one hour before sunset and ten a.m. for no more than five minutes per station or area, and not to exceed more than twenty minutes per week; except that there shall be no restriction on watering with reclaimed water, provided that signs are posted that identify reclaimed water is being used. The use of properly operating drip irrigation systems or hand held buckets shall be permitted at any time.

3. New swimming pool and spa permits shall be issued at the discretion of the public works director based upon the availability of water.

Phase VIII

1. The same restrictions identified for Phase II apply with the exception of Item II-6, Item VIII-3 and Item VIII-4.

2. All outdoor irrigation is prohibited except for hand held watering or use of properly operating drip irrigation systems to water mature trees and mature shrubs. Commercial nurseries and other water dependant industries shall only water landscape stock by use of properly operating drip irrigation systems of hand held buckets. Watering of all outdoor turf areas is prohibited, excepting golf course greens.

3. Issuance of new swimming pool and spa permits shall be prohibited.

4. No new water service connections will be permitted nor will an increase in the size of an already existing water service connection be permitted, nor will there be any net increase in plumbing fixtures to an already existing water service connection.

6.4.4 Penalties and Charges

It is unlawful for any customer to fail to comply with the provisions of mandatory prohibitions. It is unlawful for customers in the categories of Multi-family Residential, Irrigation and Other Accounts and All Remaining Accounts for Level C to consume water in excess of the base year. The City reserves the right to install a flow restricting device on the service line at the customer's expense for continued violation of mandatory prohibitions or excess consumption.

Exceptions include the maintenance of active parks, routinely used athletic fields or essential governmental or emergency services.

6.4.5 Determination of Water Shortage Reduction Effectiveness

The City of La Verne's water distribution system is highly automated and production data is reviewed daily. The global impact of imposed mandatory restrictions will be evident as a result of this routine overview of system performance.

6.5 Drought Planning

> *§10632(b) 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.*

Table 36 provides a summary of La Verne's capacity to withstand an immediate multiple dry year condition based on historical conditions from 1999 to 2001.

Multiple dry year supply assumes the following:

- Implementation of TVMWD's Water Supply Allocation Plan (WSAP) Shortage Level 2 (6,299 AF)
- Typical production from the of the Ganesha and Live Oaks Basins (1,515 AF)
- Adjudicated rights of 7.6015% of the OSY in 1999 through 2001
    - 1999 – OSY 24,000 AF (1,824 AF)
    - 2000 – OSY 22,000 AF (1,672 AF)
    - 2001 – OSY 22,000 AF (1,672 AF)

Multiple dry year demand is equivalent to the normal year demand of 8,108 AFY plus an increase of the percentage shown in Table 23 to account for typical variation from norm as discussed in §6.2.2.

Table 36 – Capacity to Withstand an Immediate 3-year Drought

Year	Item	(AFY)
1	Supply	9,638
	Demand	8,643
	Difference	995
	Difference as % of Supply	10.3%
	Difference as % of Demand	11.5%
2	Supply	9,486
	Demand	8,311
	Difference	1,175
	Difference as % of Supply	12.4%
	Difference as % of Demand	14.1%
3	Supply	9,486
	Demand	8,109
	Difference	1,377
	Difference as % of Supply	14.5%
	Difference as % of Demand	17.0%

Per Table 36, La Verne has adequate reliable sources to withstand an immediate 3-year drought.

CHAPTER SEVEN – DEMAND MANAGEMENT MEASURES

7.1 General Description

§10631(f)(1) and (2) (Describe and provide a schedule of implementation for) each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following: (A) water survey programs for single-family residential and multifamily residential customers; (B) residential plumbing retrofit; (C) system water audits, leak detection, and repair; (D) metering with commodity rates for all new connections and retrofit of existing connections; (E) large landscape conservation programs and incentives; (F) high-efficiency washing machine rebate programs; (G) public information programs; (H) school education programs; (I) conservation programs for commercial, industrial, and institutional accounts; (J) wholesale agency programs; (K) conservation pricing;(L) water conservation coordinator; (M) water waste prohibition; (N) residential ultra-lowflush toilet replacement programs.

§10631(f)(3) A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.

§10631(f)(4) An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand.

§10631(g) An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following: (1) Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors; (2) Include a cost-benefit analysis, identifying total benefits and total costs; (3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost; (4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.

Demand Management Measures (DMMs) have been implemented at the local and wholesale level in accordance with the California Urban Water Conservation Council (CUWCC). La Verne is an original signatory to CUWCC's Memorandum of Understanding Regarding Urban Water Conservation Best Management Practices (MOU) and reports annually its progress toward the reasonable implementation of water conservation Best Management Practices (BMP). The following sections provide detail on implementation and effectiveness of each MDD. There is a degree of duplication between the efforts of La Verne and TVMWD. As a matter of convention, all information regarding MDD implementation at the wholesale level has been included in Section 7.11 (Wholesale Agency Programs).

Coordination and reporting with CUWCC has been delayed for FY 2009-10. Technical difficulties with its new automated and interactive website have resulted in the temporary interruption of timely reporting by CUWCC on La Verne's behalf. Consequently, CUWCC's input on BMP effectiveness for FY 2009-10 was not available at the time of the adoption of this UWMP. An estimate of BMP effectiveness has been provided in Section 7.15 in lieu of the CUWCC report. La Verne will compare this estimate to the conclusions of CUWCC upon availability of the report.

7.2 Residential Water Survey Programs

Previously, the City had offered residential water audits on a request-only basis. Additionally, during the mid 90's the City assisted and participated in the development and implementation of a pilot program offered by MWD. The top 40% of the City's customers were offered a complete indoor/outdoor water use survey. Approximately 500 customers participated in the program.

The City has recently completed a survey and retrofit program. Surveys were offered to 100 customers and provided to over 50.

The City is in the process of implementing another survey and retrofit program. This program targets the top 1% of residential users and provides a detailed outdoor audit. Installation of a Weather Based Irrigation Controller (WBIC) and water conserving rotating sprinkler nozzles will be provided.

7.3 Residential Plumbing Retrofit

The City has integrated this program through other DMMs by providing hundreds of retrofit items to local residents during special events and programs. Retrofit items include low-flow showerheads, tank displacements tools, leak detecting dyes, shower timers and faucet aerators. The City continues to distribute retrofit items at special events and upon request.

7.4 Water Audits, Leak Detection and Repair

Each year there is a review of water purchases and production versus the sale of water to measure total water losses. The City has divided the service area into three sectors and performs a water audit for each sector in successive years; therefore, a comprehensive system-wide water audit is completed every three years.

There are programs in place for the inspection, repair and replacement of aging distribution and supply infrastructure as well as the inspection, calibration and replacement of service meters including the installation of Automatic Meter Reading (AMR) devices. The City has invested more than $500,000 in meter replacement greatly improving accuracy. The City continually monitors meter telemetry for anomalies, which may be caused by a sudden change in water use behavior, unauthorized use, an inaccurate meter or a leak. Any identified leaks are immediately repaired.

The City has hired a contractor to perform leak detection and water loss audits. Results have been very effective in reducing water losses.

7.5 Metering with Commodity Rates for All New and Retrofit of Existing Connections

The City is fully metered for all customer sectors. There are no unmetered services within the customer base.

7.6 Large Landscape Conservation Programs and Incentives

The City identified the top ten large water users and completed water audits that identified ways that these customers could improve water efficiency outdoors as well as adding a component to identify savings and efficiencies indoors. Consumption is periodically reviewed for these customers and initial water savings recorded after the audit appear to have remained constant.

Incentives for irrigation retrofit include the following:

- $100 to participants of outdoor audit and retrofit program
- Free Weather Based Irrigation Controller (WBIC)
- Free sprinkler retrofit

The City conducts approximately 30 audits per year and installed 19 WBICs in 2010. The City recently hosted an event called the California Friendly Landscape Training Class for 30 participants.

The City is currently developing an ordinance addressing water efficient landscaping. Until adoption of this ordinance, the City is regulated by the State of California's Landscape Ordinance (see Appendix K).

The City coordinates its landscaping conservation efforts with the following groups:

- Executive Advisory Committee
- San Gabriel River Watershed Management Group
- MWD as a participant in the IRWMP process
- Community groups

7.7 High-efficiency Washing Machine Rebate Programs

In cooperation with TVMWD, the City has offered a rebate of $100 to any resident that wants to purchase a high-efficiency washing machine that meets program qualifications.

The City has exhausted this program after offering it for ten years.

7.8 Public Information Programs

The City works in coordination with MWD, TVMWD, Southern California Edison and Southern California Gas Company to develop and disseminate public outreach information. There are several informational outreach strategies that are provided to the public by the City. Information on efficient water use is posted on the City's website, broadcast on local cable access channel, published in newsletters, and distributed directly in customer water bills.

The City has provided Protector Del Agua classes that teach water efficient landscaping and irrigation techniques. City representatives have also presented at local home expos about water conservation, and assisted in the creation of demonstration gardens that promote water saving native plants. Locations of recent demonstration gardens include La Verne City Hall and the Fairplex at the Los Angeles County Fairgrounds.

7.9 School Education Programs

La Verne has been actively involved with providing water education programs in local schools. Foremost, the City is involved in the Water Education Water Awareness Committee (WEWAC), which provides several water related educational opportunities. This regional committee provides grants to teachers who present water curriculum to students and curriculum training for teachers, and sponsors a high school contest for videos on water related issues.

Specific educational programs include:

- PSA contest
- Project WET programs
- In class presentations to 5th graders
- SIFE program for 8th graders

The City contributes to such water educational organizations as the Water Education Foundation, whose mission is to create a better understanding of water issues and help resolve water resource problems through educational programs.

The City has formed a partnership with the University of La Verne in distributing take home water audits that students complete with parents and bring back results.

7.10 Conservation Programs for CII Accounts

In collaboration with TVMWD, the City has worked to improve water use efficiency in institutionalized settings, such as restaurants, schools, laundromats, and group residential communities such as retirement homes. The recent efforts have included distribution of equipment such as pre-rinse spray nozzles, efficient toilets and urinals, cooling tower conductivity controllers, commercial high-efficiency clothes washers, and Waterbrooms. A number of these tools have been installed or distributed within area schools, restaurants, group residential communities, and various public agencies.

The City has previously implemented a program that replaced older toilets and urinals with low-flow versions.

CII type businesses in La Verne are relatively new. At the time of construction of these facilities, legislation was in place that required low-flow fixtures and toilets.

Additional programs that provide rebate opportunities are offered through an MWD program. The City and TVMWD advertise this MWD CII rebate program directly to all local businesses.

The City has performed 47 water audits in the health care, office, restaurant and retail/wholesale sectors.

7.11 Wholesale Agency Programs

Per the TVMWD 2010 UWMP (see Appendix J), TVMWD is one of the charter signatories to the 1992 Memorandum of Understanding Regarding Urban Water Conservation Best Management Practices (MOU), a document which established the California Urban Water Conservation Council (CUWCC) – a self-regulating body

composed of signatories to the MOU. That process also resulted in the initial list of conservation Best Management Practices (BMPs). Since that time, TVMWD encouraged its retail member agencies to sign the MOU to expedite implementation of reasonable urban conservation measures. A number of the TVMWD member agencies are signatories to the MOU including the Cities of Covina, Glendora, La Verne, and Pomona, Covina Irrigating Company, Rowland Water District, Golden State Water Company, and Walnut Valley Water District.

In its role as a wholesale water agency, TVMWD does not have the responsibility for direct implementation of some BMPs. Rather, TVMWD is responsible to provide financial and technical support, and when mutually agreeable and beneficial, direct management of conservation projects on behalf of a retail supplier. Nevertheless, wholesalers like TVMWD have a direct responsibility to help implement all of the BMPs. TVMWD fulfills these responsibilities as follows:

- Provide financial incentives (or equivalent resources) to retail water agency customers on all cost-effective BMPs;
- Offer workshops for retail agency personnel on CUWCC procedures and reporting requirements, and the technical, programmatic, strategic or other pertinent issues in water conservation; and
- Have the necessary staff or other resources available to respond to retail agencies' needs for assistance.

TVMWD meets the first requirement by passing through financial incentives offered by MWD through its Conservation Credits Program. TVMWD offers additional incentives directly to the retail member agencies by covering program implementation costs and outreach costs for many programs, including:

- recycling costs for HET distribution events (old toilets MUST be recycled)
- outreach costs for the targeted outdoor/retrofit/survey program
- application costs for the regional rebate provider to run the Turf Removal program
- substitute teacher costs for Project WET workshops

These costs assist the retail member agencies while preserving the distinct relationship between retail water suppliers and their customers. TVMWD provides some in-kind services such as managing contracts for all of its retail member agencies participating in HET distribution events. In this way, a single vendor may be selected for several agencies' projects. Thus, a better per unit price may be negotiated due to economies of scale. By managing the contracts centrally it is hoped that (1) the transaction costs to the

retail member agencies are minimized and (2) administrative oversight and assistance to the retail member agencies that have limited staff for conservation activities is provided.

TVMWD participates by running programs and serving as the financial administrator for the Water Education Water Awareness Committee (WEWAC). WEWAC is a consortium of water agencies begun back in the early 1980s and today still exists with 14 water agencies covering the service areas of TVMWD and Inland Empire Utilities Agency (IEUA), the wholesale water agency directly east of the TVMWD service area boundary. The mission of WEWAC is to promote the efficient use of water and to increase public awareness of the importance of water in Southern California.

To take advantage of location, increase efficiency and increase public outreach and awareness, TVMWD has partnered with neighboring agencies to benefit a larger population and to assist our retail member agencies in keeping costs down and achieving larger outreach goals. In recent years, numerous programs, classes and events have been held in partnership with IEUA and the Chino Basin Water Conservation District, a groundwater protection and education agency that serves portions of San Bernardino County. California Friendly Landscape Training classes have been held at and in conjunction with the Rancho Santa Ana Botanic Garden to take advantage of their expertise and reputation for being the local authorities on California native plants.

TVMWD periodically hosts a water conservation meeting with staff from the retail member agencies. These meetings serve as a forum to discuss general developments in the water conservation field, or more specific programs/news from the California Urban Water Conservation Council or MWD.

Table 37 indicates TVMWD's activities and involvement in all the BMPs. TVMWD believes that it serves an important function assisting its retail member agencies to achieve 100% implementation of the CUWCC's goals. Accordingly, TVMWD assists at all levels where retail member agencies request such assistance.

Table 37 – Wholesale Agency Programs and Actions

BMP #	BMP Title	Actions Taken by TVMWD
BMP-1	Residential Water Survey Programs	Encourages the implementation of Residential Surveys through administrative activities, such as contacting consultants on behalf of member agencies, seeking RFPs and coordinating multiple agencies located in close proximity to one another to create a better value. To date, City of La Verne and City of Pomona are considering implementing Residential Surveys upcoming fiscal year.
BMP-2	Residential Plumbing Retrofit	To date, distributed, and provided for distribution by its member agencies, 60,088 low flow shower heads and 2,400 residential retrofit kits (showerhead, faucet aerators, toilet tummies, rain/sprinkler gauges) during ULFT distribution events, educational programs and other events and activities.
BMP-3	Water Audits, Leak Detection and Repair	Performs monthly evaluations of water sales, purchases and losses. TVMWD has averaged less than 1.3% unaccounted for water on an annual basis.
BMP-5	Large Landscape Conservation Programs and Incentives	Encourages its member agencies to complete and/or offer these types of audits by contacting possible consultants for group pricing and implementation. Paid for large landscape audits in cases where the need is extreme and the member agency has proven uninterested. The information is passed directly on to the customer for implementation of the water-saving corrections/activities.
BMP-6	High-efficiency Washing Machine Rebate Programs	Administers and run the efficiency clothes washer rebate program for its member agencies for the last three years. TVMWD passes the BMP credit on to the member agencies for inclusion in their CUWCC reports. All rebates, correspondence and administration are done in-house by TVMWD. Public notice is done in conjunction with member agencies this.
BMP-7	Public Information Programs	Publishes water conservation information (Think Environment, Living Here) Produces cable public information series (Straight from the Tap) Hosts quarterly community outreach and networking events (Leadership Breakfast)
BMP-8	School Education Programs	Visits classroom and give presentation whenever invited by schools or member agencies. Provides tours of TVMWD facilities to kindergarten through college students. Provides educational materials for school libraries and in-classroom use. Hosts and participates in Project WET Workshops. Provides guidance and sponsorship for MWD Solar Cup program. Works with MWD to distribute and inform teachers about available materials.
BMP-9	Conservation Programs for CII Accounts	Co-hosted CII workshop with IEUA. Signed MWD CII Conservation Agreement. Provides devices (waterbrooms, ULFTs, urinals) to member agencies for distribution to CII locations.
BMP-11	Conservation Pricing	Implemented rates reflecting Tier 1 and Tier 2 pricing. Member agencies are give a water sales allocation based on historical purchases. If they exceed that allocation, the will be charged the Tier 2 rate for water. This method directly reflects the new MWD pricing methodologies.
BMP-12	Water Conservation Coordinator	TVMWD has a position which assists the member agencies with all the BMPs, conservation activities, outreach activities and fund raising. Additional TVMWD staff is provided when necessary to assist with large programs and outreach events.
BMP-14	Residential ULFT Replacement Programs	Negotiated consultant contract for standardized reporting, programs and low per-unit price for member agencies. Provided direct replacement with ULFT in cases where need was identified but member agency was unable to assist.

7.12 Conservation Pricing

The City of La Verne implements an increasing block pricing structure for all water connections. The price per unit is constant; therefore, the greater the consumption, the greater the cost to the customer. Sewer fees are charged at a flat rate for residential customers; however, CII customers are charged a rate that is based on a percentage of water consumption.

The City recently implemented water conservation surcharge penalties for excessive use which is credited for reducing overall water use by 15%.

7.13 Water Conservation Coordinator

The City maintains an active equivalent conservation coordinator position to manage conservation programs.

7.14 Residential Ultra-low-flush Toilet Replacement Programs

The City initiated a highly visible Ultra Low Flush Toilet (ULFT) rebate program in July 1991 which is still available to customers.

In 1998, the City implemented a program which distributed over 7,000 ULFTs direct and free to customers.

In May 2009, the City provided an event where 200 ULFTs were distributed.

To date, the City has distributed approximately 20,000 ULFTs achieving a market saturation of at least 75%.

7.15 DMM Summary

Based on guidance provided by DWR in the *Final 20x2020 Water Conservation Plan* (2010), an estimate of the effectiveness of La Verne's implementation of DMMs is provided in Table 38. The estimate takes into account the degree of saturation of the various DMMs already achieved by La Verne, recognizing that additional savings will be small, negligible or zero. By convention, TVMWD's role in supporting La Verne's water conservation efforts has been considered and incorporated into the appropriate DMM effectiveness estimate.

Table 38 – DMM Effectiveness

BMP #	DMM Title	Estimated Reduction (GPCD)
1	Residential Water Survey Programs	2
2	Residential Plumbing Retrofit	0
3	Water Audits, Leak Detection and Repair	2
4	Metering with Commodity Rates for All New and Retrofit of Existing Connections	0
5	Large Landscape Conservation Programs and Incentives	2
6	High-efficiency Washing Machine Rebate Programs	0
7	Public Information Programs	0
8	School Education Programs	0
9	Conservation Programs for CII Accounts	3
10	Wholesale Agency Programs	0
11	Conservation Pricing	0
12	Water Conservation Coordinator	0
13	Residential Ultra-low-flush Toilet Replacement Programs	1
Total Savings		10

REFERENCES

California Department of Finance (March 2011)
Census 2010 Redistricting Data (Public Law 94-171)
Table 1, Total Population: 2000 and 2010, Incorporated Cities by County in California
Demographic Research Unit, State Census Data Center

California Department of Water Resources (December 2010)
Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan Draft

California Department of Water Resources (October 2010)
Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use

California Department of Water Resources (August 2010)
California Drought Contingency Plan

California Department of Water Resources (February 2010)
20x2020 Water Conservation Plan

California Department of Water Resources (October 2008)
Managing an Uncertain Future – Climate Change Adaption Strategies for California's Water

California Department of Water Resources (2008)
Urban Drought Guidebook 2008 Updated Edition

California Department of Water Resources (October 2003)
Guidebook for Implementation of Senate Bill 610 and Senate Bill 221 of 2001

City of La Verne (February 2010)
City of La Verne 2010 Water Master Plan Update Draft

City of La Verne (May 3, 2010)
City of La Verne 2008-2014 Housing Element

City of La Verne (November 2005)
City of La Verne 2005 Urban Water Management Plan

Los Angeles County Sanitation Districts (July 1, 2008)
Joint Outfall System and Santa Clarita Valley Sanitation District Recycled Water User's Handbook

Southern California Association of Governments (May 2009)
Profile of the City of La Verne

Western Regional Climate Center Website. Reno, Nevada
Station #047050 Pomona Fairplex, California – Monthly Precipitation
(http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca7050)
Accessed March 16, 2011

PREPARED BY

CIVILTEC
engineering inc.

GENERAL CIVIL, MUNICIPAL, WATER AND WASTEWATER ENGINEERING
PLANNING, CONSTRUCTION MANAGEMENT AND SURVEYING
Providing Professional Engineering Services since 1986