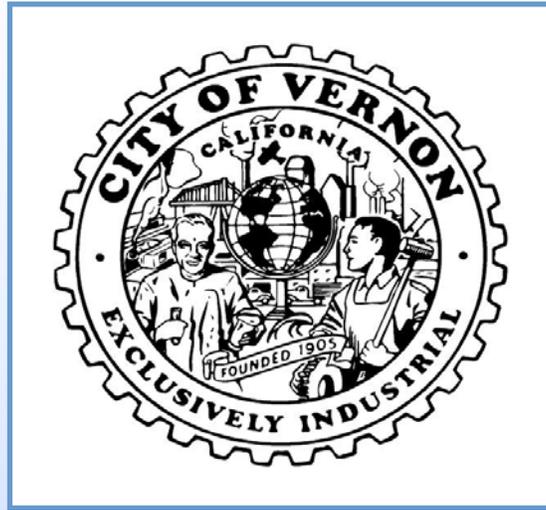


# City of Vernon



## 2010 Urban Water Management Plan

### Volume 1 - Report

June 2011

Prepared by



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

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# City of Vernon 2010 Urban Water Management Plan Volume 1 - Report

PREPARED FOR

CITY OF VERNON  
4305 SANTA FE AVENUE  
VERNON, CA 90058

JUNE 2011

PREPARED BY



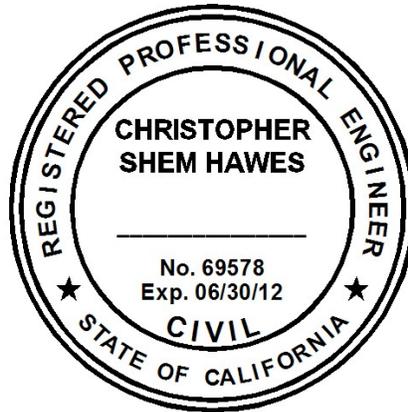
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# City of Vernon 2010 Urban Water Management Plan Volume 1 - Report

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CITY OF VERNON  
4305 SANTA FE AVENUE  
VERNON, CA 90058

JUNE 2011



Under the Supervision of:

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C. SHEM HAWES, P.E.

69578  
C.E.



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## CONTACT INFORMATION

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### PREPARER AND DISTRICT CONTACT INFORMATION

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**Date UWMP was submitted to DWR:** June 15, 2011

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**Supplier status:** Urban Retail Water Supplier

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### EXECUTIVE SUMMARY

This Urban Water Management Plan (UWMP) for the City of Vernon has been prepared in accordance with the California Urban Water Management Planning Act and the California Water Conservation Act as mandated in the California Water Code for urban retail water suppliers.

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. 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 City of Vernon currently has three sources of water: groundwater recycled water and imported water. Groundwater is pumped from the Central Basin. Recycled water and imported water are purchased from the Central Basin Municipal Water District (CBMWD). These sources are available in sufficient quantities to meet Vernon's current and projected water demands. Furthermore, these sources have been determined to be reliable under drought conditions (i.e. single dry year and multiple dry year conditions) throughout the planning horizon of this UWMP.

The business plan for the City of Vernon includes accommodating the commercial and industrial needs of the primary customers within the service area. These commercial and industrial needs are closely linked to the national and global marketplaces. A national and global economic analysis was considered to be beyond to scope and intent of the Urban Water Management Planning Act and the California Water Conservation Act. As a result, the City of Vernon has an obligation to plan for demands associated with peak economic activity which may occur at any time and for any duration. The City desires to have adequate flexibility in its water supplies to attract diverse clients and to serve 100% occupancy of existing properties. The City estimates that a potable water supply of 12,000 AFY provides sufficient flexibility to maintain the business plan.

The City of Vernon is a signatory to the Gateway Regional Alliance, an official Joint Powers Authority formed to steer the combined planning efforts of a number of cities and other interested parties in the Los Angeles Gateway Region. The primary goal of the Gateway Regional Alliance is to provide solid governance for development and implementation of an integrated regional water management plan (IRWMP). A secondary goal is to assist its members in compliance with the various mandates of the California Water Conservation Act with respect to water use efficiency in a collective and collaborative fashion through the calculation of baseline per capita water use and interim and compliance per capita water use targets and the development of a water use reduction plan to meet those targets by the prescribed dates.

Implementation of a water reduction plan for the City of Vernon is made up of the following parts:

- Vernon will implement the Gateway Regional Alliance Water Use Reduction Plan pursuant to its affiliation with the Joint Powers Authority.
- Vernon will continue to honor its commitment to the pursuit of water conservation through the implementation of Best Management Practices pursuant to its signing of the Memorandum of Understanding regarding Urban Water Conservation in California as administered by the California Urban Water Conservation Council.



## EXECUTIVE SUMMARY

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- Vernon is a participant in the development of an update to the Central Basin Municipal Water District Recycled Water Master Plan and will implement the conclusions of that report as they pertain to Vernon pursuant to mutual accord among the stakeholders.
- Vernon is named as a Reviewing Agency in the *2011 Initial Study, Central Basin Groundwater Storage Plan: A Blueprint for Future Reliability*. Pending adoption of this basin management plan, Vernon will implement those portions of the plan identified as its responsibility and participate in those provisions of the plan that are to the deemed to be to the benefit of the City and the other participants.



## 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 Vernon 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 Vernon (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.



## CHAPTER ONE – INTRODUCTION

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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 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.

Vernon provided notification to Los Angeles County of the preparation of this UWMP on March 8, 2011 (see Appendix K). Additional coordination with other entities, agencies and the general public is indicated in Table 1.

**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 Vernon	✓	✓	✓	✓	✓	✓	
Los Angeles County						✓	
Central Basin Municipal Water District				✓	✓	✓	
Gateway Regional Alliance	✓			✓	✓	✓	
Department of Water Resources				✓		✓	
LA County Sanitation Districts		✓		✓			
IRWMP JPA	✓			✓			
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.



## CHAPTER ONE – INTRODUCTION

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*§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.*

This UWMP was reviewed internally by Vernon Community Services and Water Department staff on April 18, 2011. Comments and responses from that review are included in Appendix L.

Vernon provided notification of a public hearing and the availability of a draft for public review on April 25, 2011 (see Appendix M). The public hearing was held May 17, 2011. Comments and responses from that public hearing are included in Appendix N.

### 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.*

This UWMP was adopted on May 17, 2011 pursuant to the resolution provided in Appendix B.

### 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 on June 15, 2011 to the following entities and agencies:

- ◆ California Department of Water Resources
- ◆ California State Library
- ◆ Central Basin Municipal Water District
- ◆ Gateway Regional Alliance Joint Powers Authority

### 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 online 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.



Vernon has opted not to participate in online data 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.*

Implementation of a water reduction plan for the City of Vernon is made up of the following parts:

- ◆ Vernon is a participant in the formation of the Gateway Regional Alliance and member of the Joint Powers Authority. Vernon will implement the Gateway Regional Alliance Water Reduction Plan pursuant to its membership in this body.
- ◆ Vernon will continue to honor its commitment to the pursuit of water conservation through the implementation of Best Management Practices pursuant to its signing of the Memorandum of Understanding regarding Urban Water Conservation in California as administered by the California Urban Water Conservation Council.
- ◆ Vernon is a participant in the development of an update to the Central Basin Municipal Water District Recycled Water Master Plan and will implement the conclusions of that report as they pertain to Vernon pursuant to mutual accord among the stakeholders.
- ◆ Vernon is named as a Reviewing Agency in the 2011 Initial Study, Central Basin Groundwater Storage Plan: A Blueprint for Future Reliability. Pending adoption of this basin management plan, Vernon will implement those portions of the plan identified as its responsibility and participate in those provisions of the plan that are to the deemed to be to the benefit of the City and the other participants.

### 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 Vernon. In particular, the efforts of the following people, proved to be invaluable:

- ◆ S. Kevin Wilson, Director of Community Services & Water
- ◆ Scott Rigg, MPA, Public Works & Water Superintendent
- ◆ Michael DeFrank, Project Engineer

### 1.12 Abbreviations

AB	Assembly Bill
Act	Urban Water Management Planning Act
Baseline	base daily per capita water use
BMP	best management practice
CBDA	California Bay-Delta Authority
CEQA	California Environmental Quality Act
CII	commercial, industrial, and institutional
CUWCC	California Urban Water Conservation Council
CWC	California Water Code
CWSRF	Clean Water State Revolving Fund
DIRWM	Division of Integrated Regional Water Management
DMM	demand management measure



## CHAPTER ONE – INTRODUCTION

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DOST	DWR online submittal tool
DWR	California Department of Water Resources
GHG	greenhouse gas
GPCD	gallons per capita per day
IRWM	Integrated Regional Water Management
IRWMP	Integrated Regional Water Management Plan
Method 4	Urban Water Use Target Method 4
MOU	Memorandum of Understanding
SB	Senate Bill
State Water Board	State Water Resources Control Board
USBR-MP	United States Bureau of Reclamation – Mid-Pacific Region
USC	Urban Stakeholders Committee
UWMP	Urban Water Management Plan
VWS	Verification of Water Supply
WSA	Water Supply Assessment



## CHAPTER TWO – SYSTEM DESCRIPTION

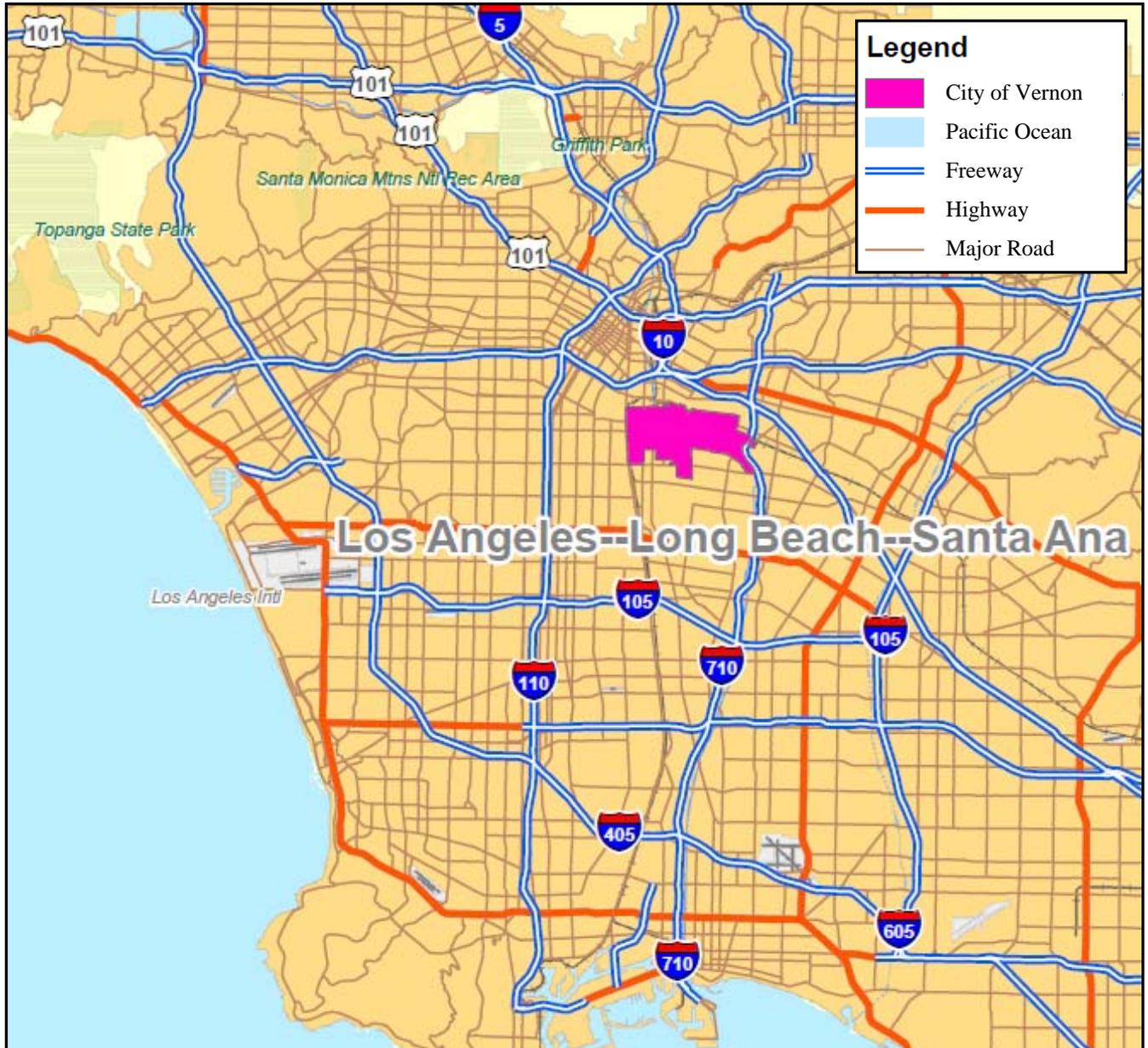
CITY OF VERNON

### CHAPTER TWO – SYSTEM DESCRIPTION

#### 2.1 General Description

The City of Vernon is located in the Los Angeles-Long Beach metro area, approximately 15 miles northeast of the Los Angeles International Airport. The location of the City is shown in Figure 1.

Figure 1 – Vicinity Map<sup>1</sup>



<sup>1</sup> Excerpt from vicinity map developed by Infrastructure Engineering Corporation as part of the 2006 Vernon Water Distribution System Hydraulic Analysis Report



## CHAPTER TWO – SYSTEM DESCRIPTION

CITY OF VERNON

### 2.2 Service Area Description

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

Most of the geographical area of Vernon is supplied by the City's Water Department. The California Water Service Company (East Los Angeles District, Commerce System) serves some of the northeast portion of Vernon, and a small portion of southeast Vernon is serviced by the Maywood Mutual Water Company Number 3. The service areas of the three water suppliers serving Vernon are shown in Figure 2. All analyses with respect to service area refer to activity within the City of Vernon Service Area Boundary.

### 2.3 Climate

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

Information on climate was provided by the IDcide.com website<sup>2</sup> and based on data compiled from the National Climatic Data Center, the National Oceanic and Atmospheric Administration and the National Weather Service per continuous meteorological data collected at the USC Weather Station (approximately 4.4 miles from Vernon). Table 2 provides a breakdown of normal temperatures typical to the vicinity of Vernon.

**Table 2 – Normal Temperatures**

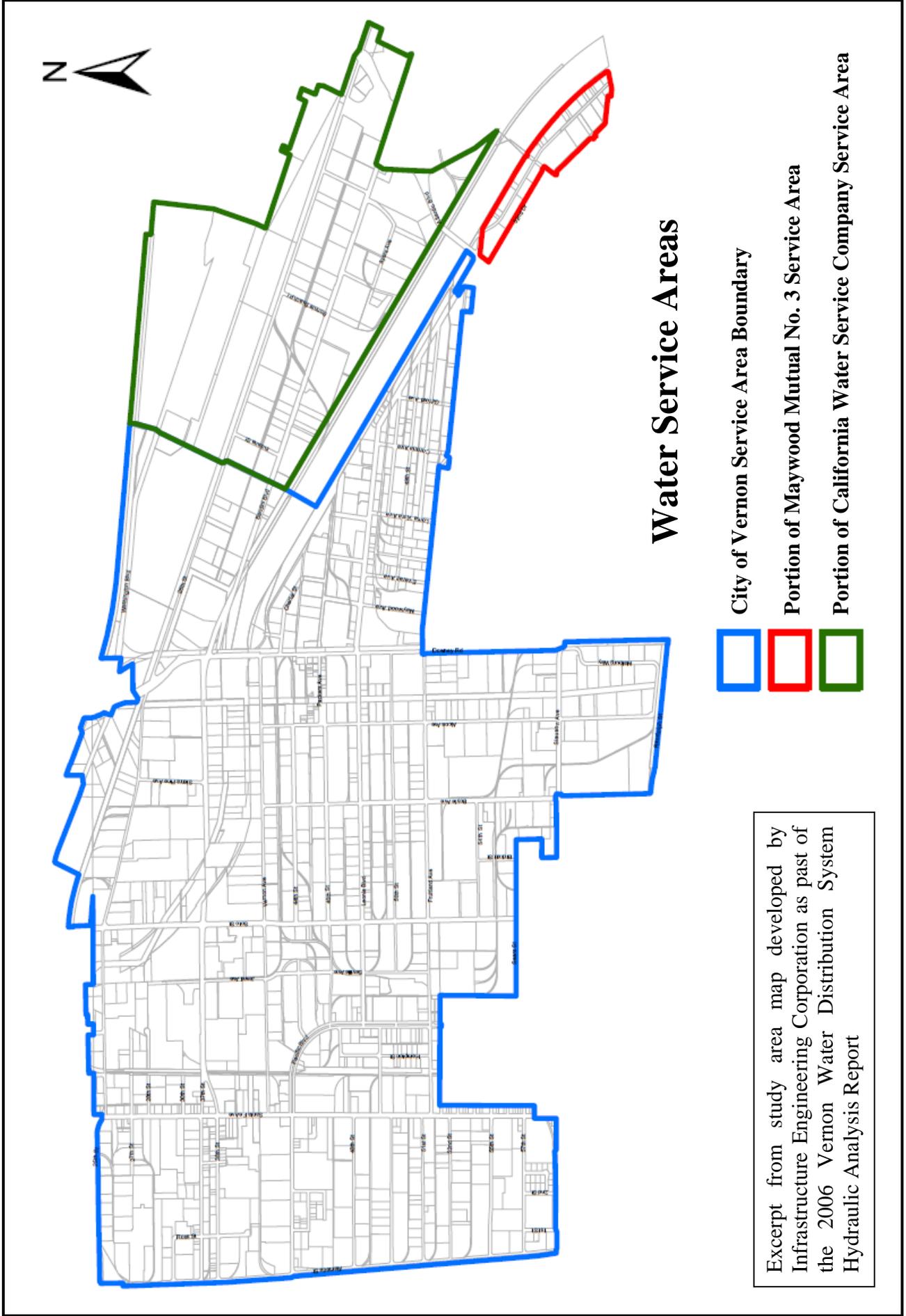
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Max °F	68.1	69.6	69.8	73.1	74.5	79.5	83.8	84.8	83.3	79.0	73.2	68.7	75.6
Mean °F	58.3	60.0	60.7	63.8	66.2	70.5	74.2	75.2	74.0	69.5	62.9	58.5	66.2
Min °F	48.5	50.3	51.6	54.4	57.9	61.4	64.6	65.6	64.6	59.9	52.6	48.3	56.6

The warmest month of the year is August with an average maximum temperature of 84.8 °F, while the coldest month of the year is December with an average minimum temperature of 48.3 °F. Temperature variations between night and day tend to be moderate during both summer and winter with an average difference that can reach 19 °F.

The annual average precipitation is 15.1 inches. Rainfall in is fairly evenly distributed throughout the year. The wettest month of the year is February with an average rainfall of 3.7 inches.

<sup>2</sup> IDcide website: <http://www.idcide.com/weather/ca/vernon.htm> (accessed March 29, 2011)

Figure 2 – Service Area Map





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 2009 Vernon General Plan established the current and projected population of the City as shown Table 3.

Table 3 – Current and Projected Population

Year	2010	2015	2020	2025	2030	2035
Service area population	100	101	102	103	104	105

2.5 Demographics

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

City founders recognized the significance of the three major railroads running through the area. The founders convinced railroad executives to run spur tracks off the main lines and later incorporated the adjacent three miles as an "exclusively industrial" city named after a dirt road, Vernon Avenue, crossing its center.

The first industry in the City dealt with livestock. Two giant stockyards with meat packing facilities became Vernon's signature industry. Twenty-seven slaughterhouses lined Vernon Avenue from Soto Street to Downey Road through the 1960s.

In the 1920s and 1930s, heavy industries proliferated including steel (U.S. and Bethlehem), aluminum (Alcoa), glass (Owens), can-making (American Can) and automobile production (Studebaker). In the 1940s and 1950s, more industries opened for business in Vernon including aerospace contractors (Norris Industries), box and paper manufacturers, drug companies (Brunswick), and food processors (General Mills, Kal Kan). A strong, unionized labor force contributed to excellent middle class incomes for thousands of families in the region.

In 1932, a Vernon bond authorized the construction of the City's own Light & Power plant, which is still operational today. Low-cost power and water, along with low taxes, attracted businesses to Vernon. Today, smaller industrial and commercial establishments are characteristic of the business community in Vernon including fashion design, garment-making, film production, electronics, and waste recycling.

Current statistical demographic data are presented in Table 4. These data were collected and disseminated by the Southern California Association of Governments (SCAG) in its 2009 Profile of the City of Vernon and verified for accuracy by Vernon Community Services and Water Department staff. The most striking discrepancy is the ratio of employees to residents at more than 400 to one. This exemplifies the nature of the City as a center for commercial and industrial activity which is consistent with the City's mission of



## CHAPTER TWO – SYSTEM DESCRIPTION

CITY OF VERNON

“maintaining Vernon as an ideal location for industry in Southern California” per the 2009 Vernon General Plan.

**Table 4 – Demographic Statistics**

<b>Demographic</b>	<b>Quantity</b>	<b>Unit</b>
<b>Population (2008)</b>	95	persons
<b>Median Age</b>	27.8	years
<b>Number of Housing Units</b>	31	units
<b>Home Ownership Rate</b>	16.1	percent
<b>Average Household Size</b>	3.1	persons per unit
<b>Median Family Income (2007)</b>	79,167	dollars
<b>Number of Jobs (2008)</b>	38,255	employees



**CHAPTER THREE – SYSTEM DEMANDS**

**3.1 General Description**

All of the City’s service area, which is comprised predominately of commercial and industrial land uses, is built-out with almost no new accounts anticipated in the future. Currently, 90.7% the City’s water supply is delivered to the commercial and industrial sectors, and 8.7% is dedicated to power generation. The remaining fraction of 1% of supply is delivered to the residential and institutional sectors. The City has no agricultural or landscaping users.

Due to the nature of Vernon as a center of commercial and industrial activity, water demand within the city is linked to the impacts of the marketplace on the region and beyond. For this reason, there is still potential for increases in water demand despite being built-out. Water demand in the commercial and industrial sectors is linked more directly to intensity and productivity than to the size or needs of the local population. Furthermore, Vernon’s infrastructure is designed to meet the needs of the commercial and industrial sectors in general whatever they may be, rather than being limited to the specific needs of its current customers. As such, the infrastructure is very robust and adaptable making it capable of meeting the changing requirements necessary to fulfill its mission of being an “ideal location for industry”.

Therefore, Vernon has an obligation to have a system in place capable of meeting the demands associated with high intensity and productivity in the commercial and industrial sectors whenever those demands arise as dictated by economic factors that are largely outside of the city’s control.

**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.*

The availability of data related to consumption by end users for complete calendar years of the detail requested above is limited to the period of 2007 through 2010 which coincides with the implementation of new billing software. For this reason, Table 5 deviates from the typical and preferred 5-year increment.

**Table 5 – Actual Water Deliveries and System Losses from 2007 to 2010**

Water use sectors	2007 (AFY)	2008 (AFY)	2009 (AFY)	2010 (AFY)
Single-family Residential	5.1	7.9	8.2	7.4
Multi-family Residential	3.4	4.3	1.0	0.9
Commercial	7,060.3	6,674.9	5,384.9	5,092.6
Industrial	2,832.2	2,695.3	2,049.1	2,154.5
Institutional and Governmental	45.6	38.6	27.5	30.6
Recycled Water (Energy)	737.8	892.1	837.6	743.3
System Losses	1,025.9	1,082.5	1,204.6	869.1
<b>Total</b>	<b>11,710.2</b>	<b>11,395.6</b>	<b>9,513.1</b>	<b>8,898.3</b>



### 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.*

The business plan for the City of Vernon includes accommodating the commercial and industrial needs of the primary customers within the service area. These commercial and industrial needs are closely linked to the national and global marketplaces. A national and global economic analysis was considered to be beyond to scope and intent of the Urban Water Management Planning Act and the California Water Conservation Act. As a result, the City of Vernon has an obligation to plan for demands associated with peak economic activity which may occur at any time and for any duration. The City desires to have adequate flexibility in its water supplies to attract diverse clients and to serve 100% occupancy of existing properties. The City estimates that a potable water supply of 12,000 AFY provides sufficient flexibility to maintain the business plan.

Projected water use, as shown in Table 6, is based on the following assumptions:

- ◆ Potable water demand (i.e. residential, commercial, industrial, institutional and government and losses) is static and set at 12,000 AFY. Note that portions of this demand associated with irrigation, and industrial process water may be converted to recycled water.
- ◆ Residential and institutional and governmental water use is very low and static.
- ◆ Based on historical demand, commercial and industrial water use are approximately 63% and 26%, respectively.
- ◆ Recycled water demand (for energy) of the Malburg Generation Station is static at 800 AFY.
- ◆ For planning purposes, recycled water demand (for energy) will increase by 1,000 AFY beginning in 2015 to provide process water for a new power plant.
- ◆ System losses are set at 5% of total demand. This projection assumes the completion of Demand Management Measure 3 (Water Audits, Leak Detection and Repair).



## CHAPTER THREE – SYSTEM DEMANDS

CITY OF VERNON

**Table 6 – Projected Water Deliveries and System Losses through 2035**

Water use sectors	2015 (AFY)	2020 (AFY)	2025 (AFY)	2030 (AFY)	2035 (AFY)
<b>Single-family Residential</b>	10	10	10	10	10
<b>Multi-family Residential</b>	5	5	5	5	5
<b>Commercial</b>	8,000	8,000	8,000	8,000	8,000
<b>Industrial</b>	3,300	3,300	3,300	3,300	3,300
<b>Institutional and Governmental</b>	35	35	35	35	35
<b>Recycled Water (Energy)</b>	1,800	1,800	1,800	1,800	1,800
<b>System Losses</b>	650	650	650	650	650
<b>Total</b>	13,800	13,800	13,800	13,800	13,800

### 3.4 Regional Housing Needs Assessment

In July 2007, the Southern California Association of Governments adopted the final 2006-2014 Regional Housing Needs Assessment which included a future housing allocation of zero in the City of Vernon, which is consistent with previous allocations for the City. Per the Vernon General Plan, future housing growth has been deemed inappropriate due to the City’s pervasive industrial environment and land use incompatibilities related to hazardous materials, background contamination, noxious odors, noise pollution, and truck and railroad traffic.

### 3.6 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.*

In 2009, a number of cities in the Los Angeles Gateway Region (Gateway Region) and other interested parties formed an official Joint Powers Authority (JPA) to steer their planning efforts and provide solid governance for development and implementation of an integrated regional water management plan (IRWMP) in accordance with DWR’s Regional Acceptance Process (RAP). The RAP policy is in place to provide pertinent information on the IRWMP region boundaries, make-up, and culture so that DWR can confirm that participating members can operate as a region as defined by the California Water Code.

The City of Vernon is a signatory to the Gateway Regional Alliance as noted in the Letter Agreement included in Appendix C. All references to compliance with the California Water Conservation Act of 2009 have been made in coordination with the Regional Alliance.



## CHAPTER THREE – SYSTEM DEMANDS

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### 3.6.1 Reporting as an Individual Retail Supplier

In coordination with the Gateway Regional Alliance, initial calculations for determining baseline per capita water use and targets for interim and compliance per capita water use with respect to reporting as an individual retail water supplier are provided in Table 7 for Method 1 and Table 8 for Method 4 (all units are in terms of gallons per capita per day).

**Table 7 – Reporting as an Individual Using Method 1**

Method 1						
Calculation				Check		
Baseline Period	*10-Year Baseline	Target: 80% of *10-Year Baseline	2015 Interim Target	5-Year Base	95% of 5-Year Base	Is Target > 95% of 5-Year Base
1996-2005	94111	75289	84700			
1997-2006	97225	77780	87503			
1998-2007	100037	80029	90033			
1999-2008	101764	81411	91587	102369	97251	No
2000-2009	100511	80409	90460	99291	94327	No
2001-2010	97759	78208	87983	97124	92268	No
*Since RW is 8.46% of Total water; Used 10-Year Baseline 5yr Base: (Dec '07<Base End<Dec '10)						

**Table 8 – Reporting as an Individual Using Method 4**

Method 4					
Calculation			Check		
Hyd Region Target for South Coast	Target: 95% of Hyd Region Target	2015 Interim Target	5-Year Base	95% of 5-Year Base	Is Target > 95% of 5-Year Base
149	142	47127			
149	142	48684			
149	142	50089			
149	142	50953	102369	97251	No
149	142	50327	99291	94327	No
149	142	48951	97124	92268	No
*Since RW is 8.46% of Total water; Used 10-Year Baseline 5yr Base: (Dec '07<Base End<Dec '10)					



## CHAPTER THREE – SYSTEM DEMANDS

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### 3.6.2 Reporting as a Member of the Gateway Regional Alliance

All justifications, calculations and conclusions regarding reporting as a member of the Gateway Regional Alliance are included in Appendix R. In coordination with the Gateway Regional Alliance, the following information represents Vernon's involvement and obligations in the Alliance:

- ◆ Vernon is member of the Gateway Regional Alliance
- ◆ The 2010 population of the Gateway Regional Alliance is 1,236,775
- ◆ The baseline per capita water use of the Gateway Regional Alliance is 113.2 GPCD
- ◆ The interim per capita water use target of the Gateway Regional Alliance is 108.2 GPCD
- ◆ The compliance per capita water use target of the Gateway Regional Alliance is 103.1 GPCD

### 3.7 Water Use Reduction Plan

At the time of submittal of this UWMP, a water use reduction plan for the Gateway Regional Alliance was in development but incomplete. As a member of the Gateway Regional Alliance, Vernon is actively participating in the development of the water use reduction plan and will implement those elements of the plan upon completion.



CHAPTER FOUR – SYSTEM SUPPLIES

4.1 General Description

This chapter provides quantification and descriptions of the water supplies at Vernon’s disposal.

4.2 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).

The City of Vernon currently has three sources of water: groundwater recycled water and imported water. Groundwater is pumped from the Central Basin. Recycled water and imported water are purchased from the Central Basin Municipal Water District (CBMWD). No additional sources are anticipated to be developed over the planning horizon of this document. Table 9 provides current and projected supplies from these three sources.

Table 9 – Current and Projected Water Supplies

Table with 7 columns: Water Supply, 2010 (AFY), 2015 (AFY), 2020 (AFY), 2025 (AFY), 2030 (AFY), 2035 (AFY). Rows include CBMWD, Groundwater, Recycled Water, and Total.

4.2.1 Imported Water

The City currently purchases treated water from the Central Basin Municipal Water District (CBMWD). According to the 2010 Amendment to Purchase Agreement for Imported Water to Be Provided by Central Basin Municipal Water District (Appendix O), beginning in 2010 the City has a base allocation of 1,112 AFY of which 90% (1,000 AF) is supplied at the Tier 1 rate. Additional water can be purchased from CBMWD at the Tier 2 rate. While Tier 2 imported water is available in unlimited quantities during normal years, Tier 2 water supply could be reduced in the event of a drought situation or other water shortage.

Per the CBMWD 2010 UWMP Draft, reliability of supply under drought conditions will be improved through continued development of recycled water at the local level and through implementation of the Metropolitan Water District’s Water Supply Allocation Plan (WSAP) at the regional level. As a result of these efforts and through the vigilant implementation of water conservation programs at all levels,

3 Per projections provided in CBMWD 2010 UWMP Draft, March 2011, assumed not to include “unlimited” supply at Tier 2 rates

4 Assumes maximization of Vernon’s allowed pumping allocation in the Central Basin per the Central Basin Watermaster. Does not include 20% over-pumping allocation during a single dry year.

5 2010 supply based on current maximum monthly rate. 2015 based 1,800 AFY for two power plants times a peaking factor of 1.65 as indicated in the CBMWD design criteria for the recycled water distribution system. Future supply for 2020 and beyond assumes completion of Phase 2 of the Southeast Water Reliability Project and is based on future demand in Vernon per the CBMWD 2008 Recycled Water Master Plan times a peaking factor of 1.65. As a rule, recycled water supply is always higher than recycled water demand.



CBMWD has projected supply surpluses under all drought conditions specified in the UWMP Act. Due to CBMWD’s confidence in their ability to provide a reliable supply, Vernon believes that the precept of water being “available in unlimited qualities” applies to normal years, single dry years and multiple dry years as those designations apply to this UWMP. Additional discussion of imported water reliability is provided in §5.2.1, §5.2.2 and §5.2.3 as it pertains to water purchased at Tier 2 rates.

### 4.2.2 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.*

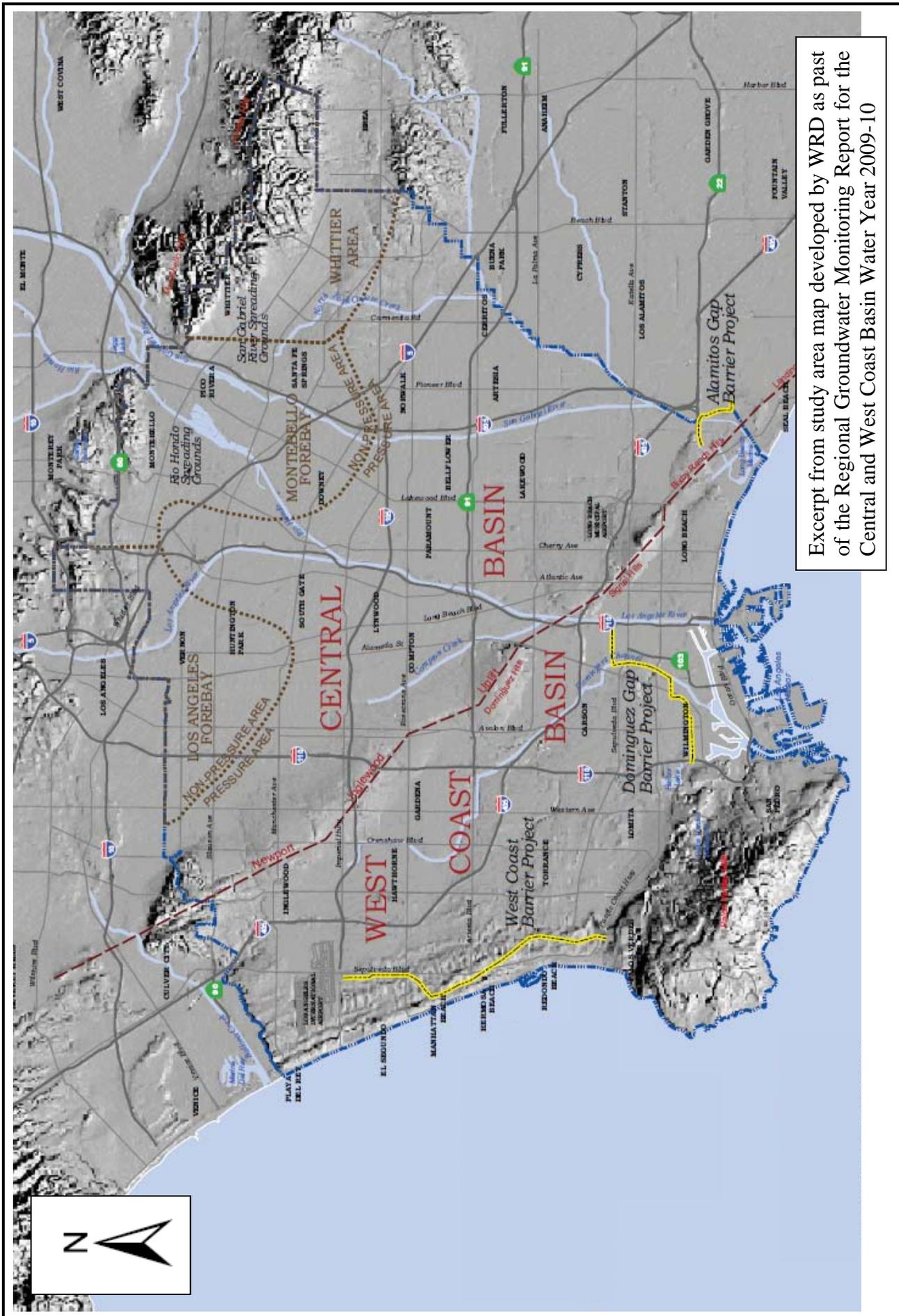
*§10631(b)(2) (Provide a) description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For those basins for which a court or the board has adjudicated the rights to pump groundwater, (provide) a copy of the order or decree adopted by the court or the board. (Provide) 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.*

Per DWR (Bulletin 118), the Central Basin occupies a large portion of the southeastern part of the Coastal Plain of Los Angeles Groundwater Basin (Figure 3). The Central Basin is bounded on the north by a surface divide called the La Brea high, and on the northeast and east by emergent less permeable Tertiary rocks of the Elysian, Repetto, Merced and Puente Hills. The southeast boundary between Central Basin and Orange County Groundwater Basin roughly follows Coyote Creek, which is a regional drainage province boundary. The southwest boundary is formed by the Newport Inglewood fault system and the associated folded rocks of the Newport Inglewood uplift. The Los Angeles and San Gabriel Rivers drain inland basins and pass across the surface of the Central Basin on their way to the Pacific Ocean.

Figure 3 – Map of Central Basin





## CHAPTER FOUR – SYSTEM SUPPLIES

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Throughout the Central Basin, groundwater occurs in Holocene and Pleistocene age sediments at relatively shallow depths. The Central Basin is historically divided into forebay and pressure areas. The Los Angeles forebay is located in the northern part of the Central Basin where the Los Angeles River enters the Central Basin through the Los Angeles Narrows from the San Fernando Groundwater Basin. The Montebello forebay extends southward from the Whittier Narrows where the San Gabriel River encounters the Central Basin and is the most important area of recharge. Both forebays have unconfined groundwater conditions and relatively interconnected aquifers that extend up to 1,600 feet deep to provide recharge to the aquifer system. The Whittier area extends from the Puente Hills south and southwest to the axis of the Santa Fe Springs-Coyote Hills uplift and contains up to 1,000 feet of freshwater-bearing sediments. The Central Basin pressure area is the largest of the four divisions, and contains many aquifers of permeable sands and gravels separated by semi-permeable to impermeable sandy clay to clay, that extend to about 2,200 feet below the surface. Throughout much of the Central Basin, the aquifers are confined, but areas with semipermeable aquicludes allow some interaction between the aquifers.

The main productive freshwater-bearing sediments are contained within Holocene alluvium and the Pleistocene Lakewood and San Pedro Formations. Throughout most of the Central Basin, the near surface Bellflower aquiclude restricts vertical percolation into the Holocene age Gaspar aquifer and other underlying aquifers, and creates local semi-perched groundwater conditions. The main additional productive aquifers in the Central Basin are the Gardena and Gage aquifers within the Lakewood Formation and the Silverado, Lynwood and Sunnyside aquifers within the San Pedro Formation. Historically, groundwater flow in the Central Basin has been from recharge areas in the northeast, toward the Pacific Ocean on the southwest. However, pumping has lowered the water level in the Central Basin and water levels in some aquifers are about equal on both sides of the Newport-Inglewood uplift, decreasing subsurface outflow to the West Coast Basin.

Many faults, folds and uplifted basement areas affect the water-bearing rocks in the Central Basin. Most of these structures form minor restrictions to groundwater flow. The strongest effect on groundwater occurs along the southwest boundary to the Central Basin. The faults and folds of the Newport – Inglewood uplift are partial barriers to movement of groundwater from the Central Basin to the West Coast Basin. The La Brea high is a system of folded, uplifted and eroded Tertiary basement rocks. Because the San Pedro Formation is eroded from this area, subsurface flow southward from the Hollywood Basin is restricted to the Lakewood formation. The Whittier Narrows is an eroded gap through the Merced and Puente Hills that provides both surface and subsurface inflow to the Central Basin. The Rio Hondo, Pico, and Cemetery faults are northeast-trending faults that project into the gap and displace aquifers. The trend of these faults parallels the local groundwater flow and does not act as a significant barrier to groundwater flow.

The City draws its groundwater supply from the Central Groundwater Basin. This source annually supplies approximately 200,000 acre-feet of potable water to the area south of the Whittier Narrows to the Pacific Ocean and from the Orange County line to the city of Compton.

In 1959, the State Legislature enacted the Water Replenishment Act, enabling the formation of the Water Replenishment District of Southern California (WRD) as it is now known to be the permanent agency in charge of replenishing both the Central and West Basins. The State Legislature has vested in WRD the statutory responsibility to manage, regulate, replenish and protect the quality of groundwater supplies within its boundaries, of which the City of Vernon is included.

The Central Groundwater Basin became an adjudicated basin in 1966 (see Appendix I). The Los Angeles County Superior Court oversees the adjudication and the California Department of Water Resources (DWR) serves as the court appointed watermaster. The Court established groundwater pumping rights at the time of adjudication, and the total allowable extractions from the basin in a given year are 217,367 acre feet. Central Basin producers may also carry over up to 20 percent of the allowable pumping rights to the next fiscal year.



## CHAPTER FOUR – SYSTEM SUPPLIES

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Maintenance of the basin and the groundwater pumping allocation requires recharging; accomplished through facilities operated by the Los Angeles County Department of Public Works (LADPW). The groundwater basin is replenished with four sources of water: import supplies from Metropolitan Water District of Southern California (MWD), local run-off from storm flows, allocations from the Upper San Gabriel Groundwater Basin, and recycled wastewater from the Los Angeles County Sanitation Districts. The WRD purchases import supplies and recycled water for groundwater replenishment and seawater intrusion barriers. Imported water from MWD has not been available for replenishment since 2007; however, the lack of availability of this source is considered to be temporary.

The City of Vernon has adjudicated groundwater basin rights of 8,039 acre-feet per year (AFY) as indicated in the 2009-10 Central Basin Watermaster Report (Appendix P). With additional groundwater leases and carryover from previous years, the actual allowable extraction can exceed 8,039 AFY. As with all retailers in the Central Basin, the City is allowed to carry over its unused allocation of up to 20% of its adjudicated rights to the next fiscal year.

During a declared water shortage, the Central Basin Watermaster may allow the City to over-pump 20% of its water rights; however, in doing so it must decrease its allocation by 20% the following fiscal year. With this arrangement, the City can sustain itself during a declared water shortage. The City manages its supply so that when additional water is needed, due to the possibility of a shortfall in imported supply, these groundwater rights can be exercised.

Table 10 shows the volume of water pumped annually from the Central Basin for the last five years.

**Table 10 – Groundwater Pumped for Last Five Years**

Basin Designation	2006 (AFY)	2007 (AFY)	2008 (AFY)	2009 (AFY)	2010 (AFY)
Central Basin	8,244.7	9,004.9	8,504.4	7,327.4	7,489.2

With respect to local groundwater management options for the City, the following recommendations were published in the 2005 Hydrogeological Evaluation of the City of Vernon Groundwater Supplies:

- Due to the high potential for contamination being introduced into the groundwater from the many industries in the City, it is advisable to spread out the location of wells in order to lessen the risk of potential impacts. Wells that will be pumped simultaneously should be spaced at least 1,300 ft apart to prevent interference between wells; and wells not pumping simultaneously should be spaced at least 800 ft apart. Wells located too close to each other or a well that pumps excessively will cause a localized cone of depression to develop whereby groundwater gradients will be altered and ultimately groundwater will flow towards these wells.
- A Drinking Water Source Assessment Protection Program for City wells should be developed to inform the City's Health and Environmental Control Department as to the location of potential groundwater percolation capture zones. The City should ensure that the industries within these zones are aware that they have the potential to impact the City's groundwater supply.
- Historical data provided by the City showed evidence of pumping levels being recorded instead of true static levels. In order to obtain static levels, it is recommended that the well pump be turned off for at least six hours prior to a level being recorded. The amount of recovery time allowed before each measurement should also be recorded together with the depth to water.



## CHAPTER FOUR – SYSTEM SUPPLIES

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- Installation of a permanent pressure transducer is recommended in each well where one doesn't already exist to collect groundwater level measurements. Access into the wells may be a problem in some instances where the pump base does not have port access for sounders. Possibilities to allow a pressure transducer to be installed into the wells include retrofitting the well with a dedicated sounding tube by strapping a PVC tube onto the pump column.
- To assist in groundwater management of the City's groundwater resources, a Groundwater Monitoring and Management Plan is an essential document that incorporates a standard methodology for the collection of data in sufficient quantities and of adequate quality to enable informed decisions regarding the management of the groundwater resources in the City's service area. The types of data to be collected include groundwater levels, groundwater production, and groundwater quality.
- For on-going groundwater management, a groundwater flow model could be developed for the City area. The model can be used to predict the actual interference effects between wells, evaluate groundwater flow direction changes due to pumping, groundwater level changes in response to various operational scenarios and potential movement of contaminants using particle tracking. The flow model could also be used to predict future groundwater conditions for up to 20 years into the future.

Jurisdiction and authority over groundwater management for the entirety of the Central Basin is currently unclear. In 2010, the Water Replenishment District of Southern California sought to expand its powers in basin management, but the Superior Court did not uphold their request (see Appendix J). Agencies with an interest in Central Basin groundwater management include the California Department of Water Resources (DWR), the Association of California Water Agencies (ACWA), the Central Basin Municipal Water District (CBMWD) and the Water Replenishment District of Southern California (WRD). CBMWD has released a groundwater management draft (Initial Study – Central Basin Groundwater Storage Plan: A Blueprint for Future Reliability) which is included in Appendix D.

### 4.2.3 Recycled Water

Recycled water is one of the cornerstones of CBMWD's efforts to augment local supplies and reduce dependence on imported water. Since the planning and construction of CBMWD's recycled water system in the early 1990's, CBMWD has become a leader in distributing and marketing recycled water. This new supply has assisted the City of Vernon in meeting its process water demand for power generation. It is only limited by the infrastructure needed to deliver this source to the City of Vernon. Such infrastructure, the Southeast Water Reliability Project Proposed Phase 2, is already in the planning stages and includes a 42-inch diameter, looped pipeline.

The City purchases recycled water from CBMWD in order to provide service for the on-site cooling towers of the Malburg Generation Station power plant. In order to provide this service, the City of Vernon has constructed approximately 10,000 linear feet of recycled water pipeline, capable of supplying recycled water from CBMWD. The City of Vernon has entered into an agreement with CBMWD to provide recycled water to this power plant. In the event that the recycled water supply is interrupted, this agreement stipulates that CBMWD will increase the supply of Tier 2 imported potable water to compensate for any disruption of recycled water, regardless of the drought conditions in Central Basin.

### 4.3 Transfer Opportunities

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



Vernon maintains no interconnections with area agencies except its dedicated imported water supply connection with CBMWD. There are no feasible opportunities to develop water transfers or exchanges acting as an independent water supplier. There may be opportunities to act in cooperation with CBMWD or with the Gateway Regional Alliance; however, there are no such projects being planned at this time and initiation of such projects is expected to occur at the wholesale or JPA level.

#### 4.4 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.*

Vernon is landlocked and has no opportunity to develop desalinated water. Furthermore, the Central Basin is Vernon's only source of groundwater and is also landlocked. CBMWD does not have access to the ocean or any source of brackish water and as such does not anticipate investing in desalination in the near future.

#### 4.5 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.*



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It is the City's philosophy that recycled water shall be used within the jurisdiction wherever its use is economically justified, financially and technically feasible and consistent with legal requirements, preservation of public health, safety and welfare of the environment.

To that end, the City has previously completed the task, in coordination with CBMWD, of evaluating potential recycled water use within the service area as a precursor to continued development of the Southeast Water Reliability Project. Special care was taken to exclude potential recycled water use from various industrial processes involving food processing. Vernon is satisfied that CBMWD, who is the lead agency in the Central Basin for the development and distribution of recycled water, is aware of all potential recycled water use within the service and that CBMWD makes use of this knowledge in the justification for the expansion of the recycled water system, future rate structure and phasing of implementation.

### 4.5.1 Disposition of Wastewater Collection and Treatment

Per the 2009 Vernon General Plan, the City owns its own sewage collection system which discharges into the system managed by the Los Angeles County Sanitation Districts (LACSD). The majority of Vernon is within District 23, but also contains territory in Districts 1 and 2. These Districts, along with more than a dozen others, are signatories to the Joint Outfall System (JOS) which provides for the operation and maintenance of an interconnected system of wastewater collection, treatment, reuse, and disposal facilities across a large portion of the urban region. The JOS includes the following water reclamation plants (WRP):

- ◆ The Joint Water Pollution Control Plant (Carson)
- ◆ Whittier Narrows WRP (South El Monte)
- ◆ Los Coyotes WRP (Cerritos)
- ◆ San Jose Creek WRP (Industry)
- ◆ Long Beach WRP (Long Beach)
- ◆ Pomona WRP (Pomona)
- ◆ La Cañada WRP (La Cañada-Flintridge)

In FY 2007-08, the JOS produced a total effluent of 490,998 AFY. Of that total, 147,703 AFY met Title 22 standards for recycled water and 67,936 AFY (or 46.0%) was reused.

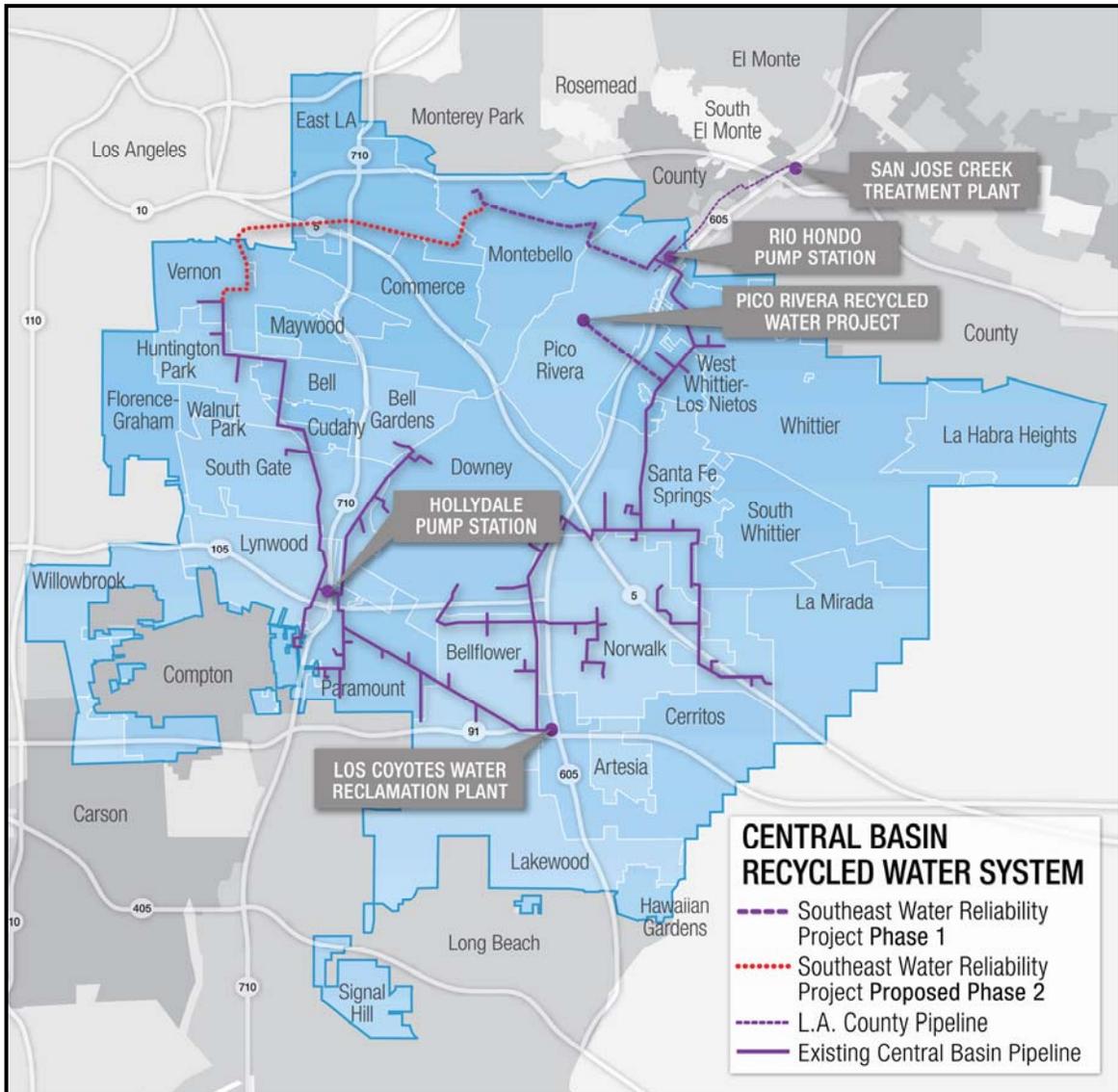
### 4.5.2 Current Recycled Water Planning

The City of Vernon has participated in the development of the Central Basin Water Recycling Master Plan. As a purveyor of both imported water and groundwater, the City has provided input on customer development, rates, facilities and impacts. The City has a current contract to purchase from CBMWD tertiary treated water, meeting all requirements of Title 22 of the California Code of Regulations.

In an effort to reduce reliance on imported water and conserve regional groundwater, CBMWD is moving forward with the Southeast Water Reliability Project (SWRP). SWRP will reduce current regional demand on imported water by 25% by delivering more than 5 billion gallons of recycled water annually to the many large industrial and irrigation sites in the Central Basin area.



Figure 4 – Central Basin Recycled Water Distribution System



4.5.3 Actual vs. Projected Recycled Water Demand for 2010

A comparison of the actual recycled water use in 2010 and the projected recycled water use as published in the 2005 Urban Water Management Plan is presented in Table 11. The discrepancy is due to the cancellation in the Southeast Regional Energy Project which had been anticipated to dramatically increase demand for recycled water as cooling tower process water.

Table 11 – Comparison of Previously Projected and Current Recycled Water Use

Use Type	2010 Actual Use (AFY)	2010 Projection from 2005 UWMP (AFY)
Geothermal/Energy	735.9	8,272



**4.5.4 Potential Future Recycled Water Use**

CBMWD, in coordination with its members, has taken the lead in recycled water development in the Central Basin, and the City defers to their documentation on potential uses, incentives and methods of encouragement regarding the continued development of recycled water.

Per the 2008 CBMWD Recycled Water Master Plan, Table 12 lists the potential recycled water demands by end user, address, demand, sector and type (if known). Specific demands associated with the Southeast Regional Energy Project, which was included in the 2008 CBMWD Recycled Water Master Plan, has been removed from this list. For planning purposes, one future power plant consuming 1,000 AFY of recycled water is projected to go online in Vernon in 2015. Also, potential demand associated with Tissurama Industries, Inc. has been removed from the list since this company has gone out of business subsequent to the release of the current Recycled Water Master Plan. The sum of the remaining potential recycled water demands is 5,722 AFY. Note that the Recycled Water Master Plan is currently being updated and is scheduled for release in mid-2011.

**Table 12 – Potential Recycled Water Demands**

End User	Address	Demand (AFY)	Sector	Type
Air Products & Chemicals, Inc	3305 E 26th St	22	Industrial	Chemical
All American Mfg Co.	2201 E 51st St	12	Industrial	Manufacturing
All West Iron, Inc.	2881 Saco St	13	Industrial	Metals
Allied Feather & Down Corp	2661 E 46th St	37	Industrial	Fabric
Aluminum Corp of America	3200 Fruitland Ave	13	Industrial	Metals
American Activewear, Inc	2807 Santa Fe Av	42	Industrial	Fabric
Ameriprid	5950 Alcoa Av	66	Industrial	Laundry
Arcadia, In	3225 Washington Blvd	31	Industrial	Manufacturing
A's Match Dyeing Co. Inc.	2522 E 37th St	556	Industrial	Fabric
Catalina Pacific Concrete	2026 E 27th St	15	Industrial	Concrete
Charleston Tex Inc.	2807 Santa Fe Av	798	Industrial	
Complete Garment, Inc	2121 E 38th St	93	Industrial	Fabric
D/K Environmental	3650 E 26th St	11	Industrial	Manufacturing
Darling International	2601 E 26th St	29	Industrial	Manufacturing
Dynix Textile Corp	4900 E 50th St	40	Industrial	Fabric
Flowserve Corporation	2300 Vernon Ave	21	Industrial	Chemical
Fortune Fashions Inc	4700 Boyle Ave	15	Industrial	Fabric
Fruitland Associates, LLC	3336 Fruitland Ave	6	Irrigation	
Hollander Home Fashions	4553 Seville Ave	47	Industrial	Fabric
JDS Finishing, Inc	5383 Alcoa Ave	510	Industrial	Fabric
Knit Heaven Inc.	2037 E 38th St	18	Industrial	Fabric
LA Washrack	4317 Downey Rd	41	Industrial	Laundry
Life Like Products, Inc.	2340 E 52nd St	14	Industrial	Manufacturing
Metro Wash & Laundry	6270 Boyle Ave	182	Industrial	Laundry
NI Industries, Inc	5215 Boyle Ave	346	Industrial	Metals
Owens Illinois, Inc.	2828 & 2910 E 50th St	26	Industrial	Manufacturing
Owens Illinois, Inc.	2923 Fruitland Ave	106	Industrial	Manufacturing
Pabco Paper Products Co.	4460 Pacific Blvd	183	Industrial	Paper
Pacific Fabric Finishing	3308 Fruitland Ave	34	Industrial	Fabric
Pacific Fabric Finishing	3314 Fruitland Ave	12	Industrial	Fabric



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End User	Address	Demand (AFY)	Sector	Type
Pacific Fabric Finishing	5164 Alcoa Ave	14	Industrial	Fabric
Packaging Adv Corp	4633 Downey Rd	138	Industrial	Paper
Ramcorp Professional Services	5075 Pacific Blvd	53	Industrial	Cleaning
Robertson Ready Mix	3365 E 26th St	11	Industrial	Concrete
SC Vernon Business Park LLC	6033 Malburg Way	4	Irrigation	Office
Service Packing	3399 Vernon Ave	152	Industrial	Manufacturing
Service Packing	3425 Vernon Ave	18	Industrial	Manufacturing
Soft Touch Tissue	5353 Downey Rd	39	Industrial	Paper
Southland Box Co	4955 Maywood Ave	18	Industrial	Manufacturing
Standard Concrete Products, Inc.	2822 Soto St	11	Industrial	Concrete
Stone Blue, Inc	2501 E 28th St	529	Industrial	Laundry
TGI Fashion, Inc.	3270 E 26th St	62	Industrial	Fabric
Unipolo Fabric Corp	4900 E 50th St	482	Industrial	Fabric
US Filter Recovery Services	5375 Boyle Ave	25	Industrial	Manufacturing
Vernon Truck Wash, LLC	3308 Bandini Blvd	28	Industrial	Truck
Wimatex, Inc.	5801 E 2nd St	194	Industrial	Fabric
Zion Textiles, LLC	2300 E 52nd St	164	Industrial	Fabric
<b>Total Potential Recycled Water Demand</b>		<b>5,281</b>		

### 4.5.5 Incentives to Encourage Recycled Water Use

Per the CBMWD 2010 UWMP Draft, CBMWD’s marketing efforts have been successful in changing the perception of recycled water from merely a conservation tool with minimal application to a business enhancement tool that lowers operating costs while increasing the reliability of the water supply per the following observations. Recycled water is:

- less expensive than potable water
- more reliable than imported water during a drought
- consistent with State-wide water supply and environmental goals

CBMWD is making funds available to assist customer with retrofitting on-site plumbing. Optimizing recycled water use in the Central Basin is one of the areas of focus of the CBMWD Recycled Water Master Plan Update.

### 4.5.6 Projected Recycled Water Use

Access to recycled water in Vernon is dependent on the completion of Phase 2 of the Southwest Water Reliability Project (SWRP). Implementation of this project is one of the areas of focus of the CBMWD Recycled Water Master Plan Update. Per CBMWD, “Using recycled water for commercial, industrial and landscape-irrigation uses instead of drinking water is an important component in Central Basin’s conservation plan and will support the regional achievement of statewide water conservation targets for the year 2020.”

Projected recycled water use is based on the following assumptions:

- completion of Phase 2 of the Southwest Water Reliability Project by 2015



## CHAPTER FOUR – SYSTEM SUPPLIES

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- continued demand of 800 AFY at the Malburg Generation Station
- demand of 1,000 AFY at a new power plant beginning in 2015
- retrofit of on-site commercial and industrial plumbing by 2030
- 100% conversion of potential recycled water use (i.e. 1,760 AFY of additional recycled water use in 2020, 2025 and 2030)

**Table 13 – Projected Recycled Water Use**

Water Use	2015 (AFY)	2020 (AFY)	2025 (AFY)	2030 (AFY)	2035 (AFY)
Recycled Water	1,800	3,560	5,320	7,080	7,080

### 4.6 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.*

Per the Vernon Community Services and Water Department Five-Year Capital Improvement Plan for 2010-2015, there is only one planned project related to supply. A new well is planned to be completed by 2015 to replace a well abandoned in 2008. Construction of this new well is not expected to increase supply; rather, it is intended to improve flexibility in meeting peak demands.

All other future projects that may impact supply are being conducted at the wholesale and Regional Alliance levels.



### CHAPTER FIVE – WATER SUPPLY RELIABILITY

#### 5.1 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.*

Vernon works closely with its wholesale provider, the Central Basin Municipal Water District (CBMWD), to assure water reliability. The following sections provide details on the current and projected state of water reliability at Vernon's disposal.

#### 5.2 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.*

For purposes of determining supply reliability under drought conditions, the City of Vernon has adopted 2007 as the single dry year and 2007 through 2009 as multiple dry years in coordination the CBMWD 2010 UWMP Draft. Vernon has maintained detailed supply data since 1990. Demand variation related to normal, dry and multiple dry years has been derived this data set.



## CHAPTER FIVE – WATER SUPPLY RELIABILITY

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Table 14 includes historical supply data and annual precipitation data measured at the Los Angeles Civic Center, approximately 3.5 mile to the northwest of Vernon.

**Table 14 – Historical Supply Data**

Year	Supply (AFY)	Precipitation (in.)
1990	9,099	6.5
1991	7,437	15.1
1992	7,531	22.7
1993	6,203	23.5
1994	8,419	8.7
1995	7,963	23.7
1996	7,568	17.8
1997	8,153	10.7
1998	8,765	27.9
1999	9,925	8.1
2000	10,937	11.9
2001	11,039	19.6
2002	9,810	7.4
2003	10,582	13.4
2004	10,214	20.1
2005	9,388	26.6
2006	11,457	11.6
2007	11,710	5.7
2008	11,396	14.4
2009	9,513	9.4
2010	8,898	23.1

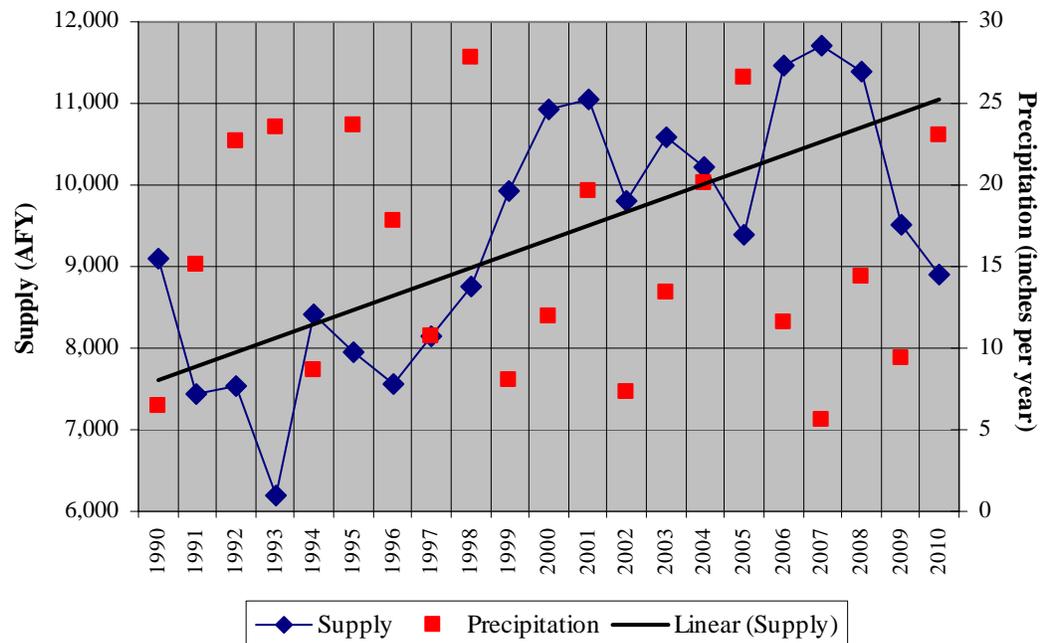
The data in Table 14 have been plotted in Figure 5. The linear regression of supply data represents normalized variation in demand due to commercial and industrial growth. The mean annual precipitation is 14.8 inches. The historical normal year is considered the average of this 21-year period, or 9,333 AFY.



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Figure 5 – Plot of Historical Annual Supply and Precipitation



### 5.2.1 Normal Year

Projected normal year demand is static at 12,800 AFY as shown in Table 6.

Projected normal year supply for 2015 consists of the following assumptions:

- Recycled water supply for energy generation is consistently available at 1,800 AFY
- Groundwater is available at 120% of the adjudicated right of 8,039, or 9,647 AFY on a single year basis
- Imported water is available at Tier 1 rates up to the volume indicated in Table 9, and as required at Tier 2 rates. The open-ended nature of Vernon’s imported water supply agreement with CBMWD provides the flexibility needed to accommodate the high level of variation in commercial and industrial water use historically experienced by the City. CBMWD’s normal year supply projections indicate surpluses for all reporting periods, which justifies this approach.

Projected normal year supply for 2020 and thereafter assumes the implementation of and the gradual conversion to recycled water use by key industries within the City per Table 13.

A comparison of normal year supply and demand is shown in Table 15. Since excess imported water is to be purchased at Tier 2 rates as needed to match demand in 2015, the difference between supply and demand for that year is zero.



## CHAPTER FIVE – WATER SUPPLY RELIABILITY

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**Table 15 – Normal Year Supply and Demand Comparison**

Item	2015 (AFY)	2020 (AFY)	2025 (AFY)	2030 (AFY)	2035 (AFY)
<b>Supply</b>	13,800	21,689	21,739	21,839	21,889
<b>Demand</b>	13,800	13,800	13,800	13,800	13,800
<b>Surplus</b>	0	7,989	8,039	8,139	8,189

### 5.2.2 Single Dry Year

The driest year during the study period is 2007 at 5.7 inches of precipitation which coincides with the highest annual supply. This is generally consistent with CBMWD’s designation of FY 2006-07 as the single dry year.

Projected single dry year demand is static at 13,800 AFY as shown in Table 6. Note that demand in Vernon is driven by commercial and industrial activity, not by prevailing weather conditions or water availability.

Projected single dry year supply for 2015 consists of the following assumptions:

- ◆ Recycled water supply for energy generation is consistently available at 800 AFY
- ◆ Groundwater is available at 120% of the adjudicated right of 8,039, or 9,647 AFY on a single year basis
- ◆ Imported water is available at Tier 1 rates up to the volume indicated in Table 9, and as required at Tier 2 rates. The open-ended nature of Vernon’s imported water supply agreement with CBMWD provides the flexibility needed to accommodate the high level of variation in commercial and industrial water use historically experienced by the City. CBMWD’s single dry year supply projections indicate surpluses for all reporting periods, which justifies this approach.

Projected single dry year supply for 2020 and thereafter assumes the implementation of and the gradual conversion to recycled water use by key industries within the City per Table 13.

A comparison of single dry year supply and demand is shown in Table 16. Since excess imported water is to be purchased at Tier 2 rates as needed to match demand in 2015, the difference between supply and demand for that year is zero.

**Table 16 – Single Dry Year Supply and Demand Comparison**

Item	2015 (AFY)	2020 (AFY)	2025 (AFY)	2030 (AFY)	2035 (AFY)
<b>Supply</b>	13,800	21,689	21,739	21,839	21,889
<b>Demand</b>	13,800	13,800	13,800	13,800	13,800
<b>Surplus</b>	0	7,989	8,039	8,139	8,189



## CHAPTER FIVE – WATER SUPPLY RELIABILITY

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### 5.2.3 Multiple Dry Years

The only three consecutive years with less than the mean annual precipitation of 14.8 inches during the study period are 2006 through 2008. This is generally consistent with CBMWD’s designation of FY 2006-07 through FY 2008-09 as multiple dry years.

Projected multiple dry year demand is static at 13,800 AFY as shown in Table 6 for all three years. This approach is conservative since it is unlikely that three years of drought will coincide with three years of 100% occupancy. Note that demand in Vernon is driven by commercial and industrial activity, not by prevailing weather conditions.

Projected multiple dry year supply for all three years beginning in 2015 consists of the following assumptions:

- Recycled water supply for energy generation is consistently available at 1,800 AFY
- Groundwater is available at 120% of the adjudicated right of 8,039, or 9,647 AFY, for the first year, and 100% of the adjudicated right of 8,039 AFY for second and third years
- Imported water is available at Tier 1 rates up to the volume indicated in Table 9, and as required at Tier 2 rates. The open-ended nature of Vernon’s imported water supply agreement with CBMWD provides the flexibility needed to accommodate the high level of variation in commercial and industrial water use historically experienced by the City. CBMWD’s multiple dry year supply projections indicate surpluses for all reporting periods, which justifies this approach.

Projected multiple dry year supply for 2020 and thereafter assumes the implementation of and the gradual conversion to recycled water use by key industries within the City per Table 13.

Also, in the third year of the multiple year cycle for all projection periods, imported water supply from CBMWD is reduced by 10% per the CBMWD 2010 UWMP Draft.

A comparison of multiple dry year supply and demand is shown in Table 17. Since excess imported water is to be purchased at Tier 2 rates as needed to match demand in the three-year cycled beginning in 2015, the difference between supply and demand for those years is zero.

**Table 17 – Multiple Dry Year Supply and Demand Comparison**

Year	Item	2015 (AFY)	2020 (AFY)	2025 (AFY)	2030 (AFY)	2035 (AFY)
1	Supply	13,800	21,689	21,739	21,839	21,889
	Demand	13,800	13,800	13,800	13,800	13,800
	Surplus	0	7,989	8,039	8,139	8,189
2	Supply	13,800	21,689	21,739	21,839	21,889
	Demand	13,800	13,800	13,800	13,800	13,800
	Surplus	0	7,989	8,039	8,139	8,189
3	Supply	13,800	21,494	21,539	21,629	21,674
	Demand	13,800	13,800	13,800	13,800	13,800
	Surplus	0	7,694	7,739	7,829	7,874



### 5.3 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

#### 5.3.1 Imported Water Constraints

Vernon receives its imported water supply from CBMWD. In turn, CBMWD works in coordination with the Metropolitan Water District of Southern California (MWD) and its member agencies to ensure the reliability of the regional water supply. The foundational planning tool for this coordinated effort is the 2010 MWD Integrated Resources Plan (IRP). The IRP is a multi-tiered approach aimed at developing a preferred supply mix including conservation, local supplies, State Water Project supplies, Colorado River Aqueduct supplies, groundwater banking and water transfers. Additional details related to water reliability at the local and regional wholesale levels is available in Chapter 4 of the CBMWD 2010 UWMP in Appendix E.

CBMWD has projected surplus supply under all scenarios. CBMWD conservatively estimates a 10% drop in available supply during the third year of multiple dry year. However, such a drop in supply is anticipated not to impact reliability according to projected demand and future implementation of the IRP.

#### 5.3.2 Groundwater Constraints

Wells serving Vernon are generally considered to have a useful service life of approximately 50 years. Of the city's eight existing wells, two have already exceeded the 50-year mark and another is nearing the 50-year mark. Wells are inspected periodically for condition and efficiency. If a drop in efficiency or collective productivity is considered to impact the city's ability to produce an adequate supply of groundwater on a short-term basis as needed, capital improvements are initiated to mitigate the deficiency. As shown in Table 18, the existing wells have more than double the capacity required to produce the city's



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annual groundwater allocation 8,039 AFY. The current maintenance and replacement schedules are geared toward providing flexibility and efficiency and are not intended increase supply.

**Table 18 – Existing Well Capacity**

<b>Well ID</b>	<b>Design Flow Rate (gpm)</b>	<b>Equivalent Annual Production (AFY)</b>
<b>11</b>	1,145	1,847
<b>12</b>	700	1,129
<b>14</b>	1,400	2,258
<b>15</b>	1,500	2,419
<b>16</b>	1,450	2,339
<b>17</b>	1,750	2,823
<b>19</b>	1,600	2,581
<b>20</b>	1,600	2,581
<b>Total</b>	11,145	17,976

### 5.3.1 Recycled Water Constraints

Recycled water demand will never exceed recycled water supply. It is not expected that any potable water supply reductions would result in recycled water shortages. In the event of a short-term recycled water shortage, existing and future agreements with CBMWD stipulate that CBMWD will increase the supply of Tier 2 imported potable water to compensate for any disruption of recycled water, regardless of the drought conditions affecting Central Basin. In the event of a long-term recycled water shortage, the existing power plant will maintain enough on-site emergency storage to “power down” and terminate operations until the recycled water shortage is over.

### 5.4 Water Quality

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

Background information and conclusions in this section are drawn largely from the 2009 Vernon General Plan, the 2009 Vernon Annual Water Quality Report and the 2005 Hydrogeological Evaluation of the City of Vernon Groundwater Supplies (prepared by Geosciences Support Services, Inc.).

CBMWD is responsible for ensuring compliance with State and federal drinking water regulations with respect to the water it delivers to Vernon. In addition, CBMWD assists the Central Basin purveyors, including Vernon, to meet drinking water standards with respect to groundwater quality through its Cooperative Basin-Wide Title 22 Groundwater Quality Monitoring Program. Title 22 refers to the California Code of Regulations pertaining to domestic and recycled water standards.

A significant portion of water resources in Vernon are drawn from the groundwater basins that underlie the City and surrounding lands. Local groundwater is contained within the Recent, Lakewood, Upper San Pedro and Lower San Pedro aquifers. Because these aquifers extend beneath surrounding jurisdictions,



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activities both in Vernon and other cities may affect the quantity and quality of local groundwater. Potential contamination and depletion of the underground basins have been historic concerns, and conditions are continuously monitored to guard against possible interruption of supply.

Water quality standards established by federal and State agencies and requirements for water quality monitoring protect end users from contamination and ensure reliable drinking water supplies. In particular, National Pollution Discharge Elimination Systems (NPDES) requirements enforced by the State Regional Water Quality Control Board necessitate the control and clean up of surface runoff prior to its direct discharge into storm drain systems and ultimately into groundwater basins or surface waters. State agencies continue to press for percolation as a means of reclaiming storm water runoff, both as a mechanism to replenish aquifers and to allow for continued natural cleaning processes. Given Vernon's built-out condition and the severe lack of open space, local clean-up and recharge via percolation proves difficult.

In general, the groundwater quality in the aquifers in which the production wells are screened is relative good. The only naturally occurring constituent of concern is manganese. Other minor localized water quality concerns are problems related to the color of the groundwater and relatively high iron content.

- ◆ Manganese concentrations in City wells range from below 20 µg/L (detection limit) to 106 µg/L. In portions of the City, manganese concentrations exceed the California Department of Health Service (CDPH) secondary Maximum Contaminant Level (MCL) of 50 µg/L, which is set for aesthetic reasons. CDPH recommends notification for concentrations above the secondary MCL and treatment for concentrations more than ten times the secondary MCL. Vernon is in compliance with the notification recommendation, and there is currently no need for treatment. There is no impact on supply due to Manganese.
- ◆ Water color is an unregulated water quality issue that has no impact on supply.
- ◆ Iron has been detected in only one well and at a concentration below the secondary MCL of 300 µg/L. There is no impact on supply due to Iron.

As the City of Vernon is predominantly industrial, there are a large number of operational and former facilities that store, use and produce a variety of chemicals that are potential contaminants to the underlying groundwater should they be spilt and leak into the ground. Examples of the types of industries within the City are textiles, dry cleaning, trucking terminals, metal fabricating and foundries, machine shops, printing and inks, chemical processing and storage, and food processing. Over 100 potentially contaminating activities have been identified within the City.

Review of site characterization reports for many of the sites undergoing City, Department of Toxic Substances Control (DTSC) or Los Angeles Regional Water Quality Control Board (RWQCB) oversight showed contaminants released from potentially contaminating activities generally remain in the soils above the Bellflower aquitard, which occurs from approximately 40 to 80 ft bgs, and in the perched shallow groundwater that occurs above the aquitard. Soil contamination was the most frequently reported type of contamination, with minor VOC contamination of perched groundwater taking place. The impact of soil contamination on regional groundwater found at a depth of between 180 ft to 220 ft bgs has rarely been reported. Oversight efforts are credited with protecting groundwater reliability.

There are no known water quality issues that are anticipated to impact the reliability of the Vernon's groundwater supply during the planning horizon of this document.



### 5.5 Contingency Planning for Water Shortage and Drought

*§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.*

*§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.*

*§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(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.*

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

The City of Vernon adopted Ordinance No. 995 in 1991 (Appendix F), which enacted Article VI of Chapter 25 of the Code of the City of Vernon, “Water Conservation”, containing Code Sections 25.100 through 25.111. Minimum requirements were outlined in this Ordinance to protect the water supplies and to establish standards for reductions in the use of water in the City of Vernon. The City’s “Water Conservation” code was further amended in 2006 through the adoption of City Ordinance No. 1115 (Appendix G). Continuing the City’s proactive approach to water conservation, the City recently adopted Ordinance No. 1161 (Appendix H) in October 2009, which further expanded the City’s water conservation efforts by amending Article VI of Chapter 25 of the Code of the City of Vernon. This Ordinance established general water waste provisions, as well as conservation measures for Phase I, Phase II and Phase III water shortages. These shortages equate to water supply deficiencies of 20%, 30% and 50% and greater, respectively. The City has developed a three stage rationing plan to invoke during declared water shortages, in addition to specific water waste provisions mandated regardless of supply conditions. The rationing plan includes mandatory rationing in order to obtain the associated customer reduction goal.



### 5.5.1 Rationing Stages

During declared shortages, or when a shortage declaration appears imminent, Ordinance No. 1161 establishes conservation measures for Phase I, Phase II and Phase III water shortages. These shortages equate to water supply deficiencies of 20%, 30% and 50% or greater, respectively. Restrictions are outlined governing acceptable water use for commercial, industrial, institutional and residential customers during declared water shortages. Penalties for violations include increase water surcharges, as well as the installation of flow restriction devices. Customers may file applications for relief from these provisions with the Director of Community Services of the City of Vernon.

### 5.5.2 Mandatory Prohibitions

A Phase I water supply shortage may be declared when the City Council determines it is likely that the City of Vernon will suffer a shortage in City water supplies up to 20%, but shall become mandatory when the City Council determines that the City will suffer a water shortage in excess of 20% of its normal water supplies. Phase I conservation requirements include:

- ◆ **Limits on Watering Days:** Watering or irrigating of lawn, landscape or other vegetated area with potable water is limited to three (3) days per week on a schedule established and posted by the City. Watering or irrigating of lawn, landscape or other vegetated area with potable water is prohibited between the hours of 6:00 a.m. and 6:00 p.m. Pacific Standard Time. This provision does not apply to landscape irrigation zones that exclusively use very low flow drip type irrigation systems when no emitter produces more than two (2) gallons of water per hour. This provision also does not apply to watering or irrigating by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off nozzle or device, or for very short periods of time for the express purpose of adjusting or repairing an irrigation system.
- ◆ **Obligation to Fix Leaks, Breaks or Malfunctions:** All leaks, breaks, or other malfunctions in the water user's plumbing or distribution system must be repaired within seventy-two (72) hours of notification by the city unless other arrangements are made with the city.

A Phase II water supply shortage exists when the City Council determines, in its sole discretion, that due to drought or other water supply conditions, a water supply shortage or threatened shortage exists and a consumer demand reduction is necessary to make more efficient use of water and appropriately respond to existing water conditions, except that a phase II Water Supply Shortage shall become mandatory when the City Council determines that the City will suffer a water shortage in excess of 30% of its normal water supplies. Phase II conservation requirements include:

- ◆ **Limits on Watering Days:** Watering or irrigating of lawn, landscape or other vegetated area with potable water is limited to two (2) days per week on a schedule established and posted by the city. During the months of November through March, watering or irrigating of lawn, landscape or other vegetated area with potable water is limited to no more than one (1) day per week on a schedule established and posted by the city. This provision does not apply to landscape irrigation zones that exclusively use very low flow drip type irrigation systems when no emitter produces more than two (2) gallons of water per hour. This provision also does not apply to watering or irrigating by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off nozzle or device, or for very short periods of time for the express purpose of adjusting or repairing an irrigation system.
- ◆ **Obligation to Fix Leaks, Breaks or Malfunctions:** All leaks, breaks, or other malfunctions in the water user's plumbing or distribution system must be repaired within forty-eight (48) hours of notification by the city unless other arrangements are made with the city.



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- ◆ Limits on Filling Ornamental Lakes or Ponds: Filling or re-filling ornamental lakes or ponds is prohibited, except to the extent needed to sustain aquatic life, provided that such animals are of significant value and have been actively managed within the water feature prior to declaration of a supply shortage level under this article.
- ◆ Limits on Washing Vehicles: Using water to wash or clean a vehicle, including but not limited to, any automobile, truck, van, bus, motorcycle, boat or trailer, whether motorized or not, is prohibited except by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off nozzle or device, by high pressure/low volume wash systems, or at a commercial car washing facility that utilizes a re-circulating water system to capture or reuse water.
- ◆ Limits on Filling Residential Swimming Pools & Spas: Re-filling of more than one (1) foot and initial filling of residential swimming pools or outdoor spas with potable water is prohibited.
- ◆ Commercial Nurseries Watering Limitations: Commercial Nurseries shall be prohibited from watering lawn, landscaped or other turf areas more often than every other day and shall be prohibited from watering between the hours of 10:00 a.m. and 4:00 p.m.
- ◆ Mandatory Water Restrictions: No customer shall make, cause, use or permit the use of city water for any purpose in excess of eighty-five percent (85%) of the amount used the same corresponding monthly billing period two (2) years preceding the city council declaring a Phase I Water Supply Shortage. In the case of a newly established business, no restriction shall be required until such time that the business has been established for one (1) year, at which time the preceding year's corresponding monthly billing shall be used to determine the businesses monthly water consumption.

A Phase III water supply shortage condition is also referred to as an "Emergency" condition. A Phase III condition exists when the City of Vernon declares a water shortage emergency or when the City Council determines that the City will suffer a shortage of more than 50% of its normal water supplies. Upon the declaration of a Phase III Water Supply Shortage condition, the City shall notify its residents and businesses that a significant reduction in consumer demand is necessary to maintain sufficient water supplies for public health and safety and shall implement the following mandatory Phase III conservation measures:

- ◆ No Watering or Irrigating: Watering or irrigating of lawn, landscape or other vegetated area with potable water is prohibited. This restriction does not apply to the following categories of use, unless the city has determined that recycled water is available and may be applied to the use:
- ◆ Maintenance of vegetation, including trees and shrubs, that are watered using a handheld bucket or similar container, hand-held hose equipped with a positive self-closing water shut-off nozzle or device;
- ◆ Maintenance of existing landscape necessary for fire protection;
- ◆ Maintenance of existing landscape for soil erosion control;
- ◆ Maintenance of plant materials identified to be rare or essential to the well-being of protected species;
- ◆ Maintenance of landscape within active public playing fields and school grounds, provided that such irrigation does not exceed two (2) days per week according to the schedule established in the



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City of Vernon Municipal Code Section 25.104(a) and the time restrictions as established in section 25.103(a);

- Actively irrigated environmental mitigation projects.
- **Obligation to Fix Leaks, Breaks or Malfunctions:** All leaks, breaks, or other malfunctions in the water user's plumbing or distribution system must be repaired within twenty four (24) hours of notification by the city unless other arrangements are made with the city.
- **Commercial Nurseries Watering Limitations:** Commercial Nurseries shall be prohibited from watering lawn, landscaped or other turf areas more often than every third (3rd) day and shall be prohibited from watering between the hours of 6:00 a.m. and 6:00 p.m.
- **Mandatory Water Restrictions:** No customer shall make, cause, use or permit the use of city water for any purpose in excess of seventy-five percent (75%) of the amount used the same corresponding monthly billing period two (2) years preceding the city council declaring a Phase I Water Supply Shortage. In the case of a newly established business, no restriction shall be required until such time that the business has been established for one (1) year, at which time the preceding year's corresponding monthly billing period shall be used to determine the businesses monthly water consumption.
- **Fire Hydrant Use:** The use of water from a fire hydrant shall be limited to fire fighting and related activities. Other uses of city water for municipal purposes shall be limited to activities necessary to maintain the public health, safety and welfare.
- **Customer Water Conservation Report:** The city may, by written request, require all commercial and industrial customers using 100 acre feet or more per year of potable water to submit a water conservation plan and quarterly progress reports on such plan. The conservation plan shall include recommendations for increased water savings, including increased water recycling based on feasibility. The quarterly report shall include progress to date on implementation of such recommendations.



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### 5.5.3 Consumptive Reductions Methods

Table 19 lists the consumptive reduction methods implemented by Ordinances 995, 1115 and 1161.

**Table 19 – Consumptive Reduction Methods**

Consumptive Reduction Method	When Method Takes Effect	Percent Reduction
Demand reduction program	All stages	5%
Flow restriction	Third Violation <sup>6</sup>	< 5%
Restrict for only priority uses	Stage III	15%
Use prohibitions	All stages	15%
Water shortage pricing	Stages II and III	5%
Voluntary rationing	All stages	< 5%
Mandatory rationing	Stages II and III	20%
Incentives to reduce water consumption	All stages	< 5%
Education Program	All stages	< 5%
Percentage reduction by customer type	Stages II and III	20%

### 5.5.4 Penalties and Charges

As per Section 25.107(b) of the City code, any customer violating the regulations and restrictions on water use set forth in Ordinance 1161 shall receive a written warning for the first such violation. Upon a second violation, the customer shall receive a written warning and the City shall impose a surcharge in an amount equal to 10% of the customer’s water bill. Upon the third and subsequent violations, the customer will receive a written warning and the City may impose an additional surcharge of 10% for each such violation and the City may install a flow-restrictor on the service of the customer at the premises at which the violation occurred for a period determined by the Director of Community Services. If a flow-restrictor is placed, the violator shall pay the cost of the installation and removal.

As per Section 25.107(a) of the City code, any customer violating the water use curtailment provision of the Phase II mandatory water restriction, a surcharge shall be imposed in an amount equal to fifty percent (50%) of the portions of the water bill that exceeds the respective percentages set in said section. For each violation by any customer of the water use curtailment provision of the Phase III mandatory water restriction, a surcharge shall be imposed in an amount equal to 100 percent (100%) of the portions of the water bill that exceeds the respective percentages set in said section.

### 5.5.5 Analysis of Impacts Due to Implementation of Contingency Planning

Vernon’s water rate structure is devised to provide adequate revenue for the maintenance and administration of the water distribution system. In the event water supply is reduced, new water rates will necessarily be issued to compensate for lost revenue in order to generate the minimum required revenue needed for a functioning system.

Due to the nature of Vernon’s primary water users being commercial and industrial, a reduction in water supply would result in a reduction or shutdown of commercial and industrial activity. Due to the diversity

<sup>6</sup> Per Ordinance 995, Section 25.107(b)



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of commercial and industrial activity in the City, the exact water demand is in flux and the resulting impact would have to be determined on a case by case basis. High water use industries would be the most severely impacted. Such an impact would not be limited to Vernon or even the surrounding area, but would be felt on a national and global level due the important role Vernon plays in the commodities, services and shipping marketplace.

### 5.5.6 Mechanism for Determining Actual Reduction

Vernon’s current billing software monitors consumption in real time. Global water reduction can be easily monitored in this fashion.

### 5.5.7 Water Supply Availability for Immediate 3-year Drought

Demand during an immediate 3-year drought is static at 12,800 AFY based on the following assumptions:

- The City estimates that a potable water supply of 12,000 AFY provides sufficient flexibility to maintain the business plan.
- Recycled water demand at the Malburg Generation Station is constant at 800 AFY.

Supply availability for an immediate 3-year drought (see Table 20) is based on the following assumptions:

- Recycled water supply for energy generation is consistently available at 800 AFY
- Groundwater is available at 120% of the adjudicated right of 8,039, or 9,647 AFY, for the first year, and 100% of the adjudicated right of 8,039 AFY for second and third years
- Imported water is available at Tier 1 rates up to the volume indicated in Table 9, and as required at Tier 2 rates. The open-ended nature of Vernon’s imported water supply agreement with CBMWD provides the flexibility needed to accommodate the high level of variation in commercial and industrial water use historically experienced by the City. CBMWD’s multiple dry year supply projections indicate surpluses for all reporting periods, which justifies this approach.

**Table 20 – Response to an Immediate 3-year Drought**

Year	Item	(AFY)
2011	Supply	12,800
	Demand	12,800
	Surplus	0
2012	Supply	12,800
	Demand	12,800
	Surplus	0
2013	Supply	12,800
	Demand	12,800
	Surplus	0



### CHAPTER SIX – DEMAND MANAGEMENT MEASURES

#### 6.1 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.*

Although Vernon is a signatory to the CUWCC MOU for reporting on Best Management Practices related to water conservation activities, recent events have complicated completion of the 2009-10 Annual BMP Activity and Coverage Reports. Due to the time necessary to become familiar with new legislation regarding the UWMP process, the late release of guidance materials from DWR and unexpected difficulties in accessing the automated CUWCC BMP Reporting Database, the City determined there was insufficient time to produce the BMP reports for submittal as part of this UWMP.

For the purpose of responding to the Urban Water Management Planning Act, the City has addressed below and in the following sections the 14 Demand Management Measures outlined in the Water Code. The City has, in good faith, tried to address and comply with all of the DMM targets listed in the CUWCC MOU, where applicable. However, those DMMs targeting residential water use have largely been determined to be either (1) implemented in their entirety or (2) beyond practical implementation due to Vernon's character as a primarily industrial and commercial city. In the City of Vernon, residential water use accounts for less than 0.1% of total water consumption. With only approximately 100 residents, the



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following MDDs were determined not to provide reasonable savings (or any additional savings) relative to the efforts required to establish the necessary administration and documentation for proper implementation:

- DMM 1 – Interior and Exterior Water Audits for Single and Multi-Family Customers
- DMM 2 – Residential Plumbing Retrofit
- DMM 5 – Large Landscape Conservation Programs and Incentives
- DMM 6 – High-efficiency Washing Machine Rebate Programs
- DMM 14 – Residential Ultra-low-flush Toilet Replacement Program

Descriptions of the implementation of the remaining DMMS are provided in the following sections.

### 6.2 DMM 3 – Water Audits, Leak Detection and Repair

The City's water section reads over one thousand water service meters each month. Meter readers inspect each service meter for leaks or damage that may adversely impact the functionality or accuracy. The City's automated billing system flags high and low meter readings. This information is sent electronically to maintenance crews who then perform inspections of suspect service meters in an expedient fashion. The City's in-house construction crews make water system repairs in an efficient and productive fashion, providing for significant reduction in water loss. Vernon has a complex database system that meticulously quantifies water consumption, water production and net water loss for the entire water distribution system. This allows Vernon staff to continuously monitor water consumption and water loss in order to ensure that no system failures have occurred and to conserve precious water supplies. The City plans to conduct a comprehensive water audit to further pinpoint possible manifestations of water loss and to develop a repair program, if necessary, to minimize losses.

### 6.3 DMM 4 – Metering with Commodity Rates

Vernon is currently in compliance with DMM-4. All existing and new City service connections are metered ensuring proper billing by volume. There is a meter retrofit program in place. New billing software includes meter status. There is no large landscape irrigation in Vernon and therefore no need for conversion of mixed use accounts to multiple meters including a dedicated landscape meter.

### 6.4 DMM 7 – Public Information Programs

The City continues to operate a strong outreach program, as it has for the past several decades. Public information about the City of Vernon and its mission, programs and events are constantly disseminated to numerous interested parties in order to promote water conservation. The City provides information for customers at the front desk of the Department of Community Services and maintains a strong link with the local news media through press releases of important subjects reinforcing the water conservation message.

The City uses numerous printed materials to send information to the community. The publication includes articles on water quality, conservation and infrastructure improvement information. In addition, the Department of Community Services publishes an annual water quality report, which provides quality information, and promotes water conservation. The Water Quality Report is delivered to every service address in the City's service area. Both publications are also available for download on the City's website at [www.cityofvernon.org](http://www.cityofvernon.org).



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### 6.5 DMM 8 – School Education Programs

The City of Vernon is almost entirely industrial and commercial, with a very small residential population of approximately 100 people. The City has only one school within its service area, which is the Vernon Elementary School. The City of Vernon's Public Works and Water Superintendent gives presentations at the School, which highlight efficient use of resources and water conservation.

Expansion of the school education program with Vernon Elementary School is underway. The City plans to create a poster contest to promote water conservation with the school children. The program is anticipated to consist of providing each age appropriate class with poster paper and a water conservation related giveaway. The winning posters in three age categories may be displayed in the Department of Community Services. The students will also receive information on water supply and simple water conservation tips, which meet state educational requirements. The City will track the number of classes which participate to track the effectiveness of the School Education Program.

### 6.6 DMM 9 – Conservation Programs for CII Accounts

The construction of new development is limited in the City of Vernon due to the lack of vacant or underutilized land within the service area. All new Commercial, Industrial and Institutional development proceeds as follows:

- ◆ Building plans must be submitted to the City's Building Section for review and approval.
- ◆ Water saving appurtenances and fixtures are a requirement of the approval process and documentation regarding the implementation of such devices is required to obtain a permit.
- ◆ A water consumption review is performed based upon the Building Section's estimated water use.
- ◆ An appropriately sized water meter is selected in order to ensure that all consumption is billed by volume, which in turn provides a financial incentive to encourage water conservation.

As a member agency of the Central Basin Municipal Water District (CBMWD), the City works in coordination with CBMWD in the implementation of conservation programs to promote CII conservation. CBMWD participates in MWD's "Save A Buck" region-wide CII rebate program and helps promote these rebates for use by businesses, schools and other qualifying facilities throughout the City's service area. Rebates are offered for commercial clothes washers, water brooms, cooling tower conductivity controllers, x-ray machine recirculating devices, water free urinals, high efficiency toilets, weather-based irrigation controllers, pre-rinse spray valves, nozzles and various industrial pressure devices.

In 2002, the California Urban Water Conservation Council (CUWCC) pursued and received a \$2.3 million grant from the California Public Utilities Commission (CPUC) to purchase and install restaurant pre-rinse spray nozzle valves. The new nozzles use 1.6 gpm compared to 2 to 6 gpm valves. These valves conserve water, reduce heating costs and reduce waste-water discharge. CBMWD supported CUWCC's efforts in marketing the program. The nozzles and installations were provided free of charge to several food services customers in the City's service area.

### 6.7 DMM 10 – Wholesale Agency Programs

As a part of its "Shut Your Tap!" Conservation Campaign, CBMWD hosts a bi-monthly event called the "Shut Your Tap! Roundtable". The Roundtable provides a forum for cities, water agencies and interested parties to share ideas and information on conservation trends and issues. The setting provides for interaction and networking among area water stakeholders.



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In order to provide member cities with support for their marketing, outreach and enforcement of local mandatory water conservation ordinances, a “Water Use Efficiency Ordinance Tool Kit” was developed by CBMWD. The kit includes a cover letter, sample ordinances, a sample staff report template, sample violation notices and ordinance enforcement collateral.

To add to the advertising opportunities of our campaign partners, a “Conservation Messaging Tool Kit” was provided to member cities and agencies by CBMWD. The kit includes water conservation tip sheets, door hangers, bill inserts, local cable television announcements, countertop tent cards and sample newsletter articles.

### 6.8 DMM 11 – Conservation Pricing

The City of Vernon’s commodity rate for water is the same for all use types (i.e. commercial, industrial, and residential). Water use in Vernon, which is primarily commercial and industrial, is more closely linked to market trends than to the habits of consumers. As a result, the established rate structure provides local businesses with the security and assurance of availability they need to make daily operational decisions.

### 6.9 DMM 12 – Water Conservation Coordinator

The City’s designated Water Conservation Coordinator is the Public Works and Water Superintendent. This senior management position spends approximately five percent of the time managing the provisions in the water conservation program, implementing the public information program and planning the school education program. During periods of declared drought the time allocated to conservation duties increases to approximately 50 percent. The City’s conservation coordinator often represents the City at regional and statewide workshops and organizations. In addition, the conservation coordinator also seeks Federal, State, and local funding to develop new programs that water conservation throughout the City’s service area.

### 6.10 DMM 13 – Water Waste Prohibition

The City recently adopted Ordinance No. 1161 (Appendix H) in October 2009, which further expanded the City’s water conservation efforts by amending Article VI of Chapter 25 of the Code of the City of Vernon. This Ordinance established general water waste provisions, as well as conservation measures for Phase I, Phase II and Phase III water shortages. The water waste provisions apply regardless of supply conditions, and include:

- ◆ Limits on Watering Hours: Watering or irrigating of lawn, landscape or other vegetated area with potable water is prohibited between the hours of 10:00 a.m. and 5:00 p.m. on any day, except by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive selfclosing water shut-off nozzle or device, or for very short periods of time for the express purpose of adjusting or repairing an irrigation system.
- ◆ Limit on Watering Duration: Watering or irrigating of lawn, landscape or other vegetated area with potable water using a landscape irrigation system or a watering device that is not continuously attended is limited to no more than fifteen (15) minutes watering per day per station. This subsection does not apply to landscape irrigation systems that exclusively use very low-flow drip type irrigation systems when no emitter produces more than two (2) gallons of water per hour and weather based controllers or stream rotor sprinklers that meet a seventy percent (70%) efficiency standard.
- ◆ No Excessive Water Flow or Runoff: Watering or irrigating of any lawn, landscape or other vegetated area in a manner that causes or allows excessive water flow or runoff onto an adjoining sidewalk, driveway, street, alley, gutter or ditch is prohibited.



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- ◆ No Washing Down Hard or Paved Surfaces: Washing down hard or exterior paved surfaces, including but not limited to sidewalks, walkways, driveways, parking areas, patios or alleys, is prohibited except when necessary to alleviate safety or sanitary hazards, and then only by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off device, a low-volume, high-pressure cleaning machine equipped to recycle any water used, or a low-volume high-pressure water broom.
- ◆ Obligation to Fix Leaks, Breaks or Malfunctions: Excessive use, loss or escape of water through breaks, leaks or other malfunctions in the water user's plumbing or distribution system for any period of time after such escape of water should have reasonably been discovered is prohibited and shall be repaired as soon as reasonably practicable.
- ◆ Re-circulating Water Required for Water Fountains and Decorative Water Features: Operating a water fountain or other decorative water feature that does not use re-circulated water is prohibited.
- ◆ Limits on Washing Vehicles: Using water to wash or clean a vehicle, including but not limited to any automobile, truck, van, bus, motorcycle, boat or trailer, whether motorized or not is prohibited, except by use of a hand-held bucket or similar container or a hand-held hose equipped with a positive self-closing water shut-off nozzle or device. This subsection does not apply to any commercial vehicle washing facility.
- ◆ Drinking Water Served Upon Request Only: Eating or drinking establishments, including but not limited to a restaurant, hotel, cafe, cafeteria, bar, or other public place where food or drinks are sold, served, or offered for sale, are prohibited from providing drinking water to any person unless expressly requested.
- ◆ No Installation of Single Pass Cooling Systems: Installation of single pass cooling systems is prohibited in buildings requesting new water service.
- ◆ Limits on Commercial Car Wash and Laundry Systems: Installation of non-recirculating water systems is prohibited in new commercial conveyor car wash and new commercial laundry systems.

City crews have been trained in the areas of water waste and actively monitor the City for water waste activities. The Public Works and Water Superintendent currently tracks total City water demands through billing meter data. As these water waste provisions have only recently been adopted in October 2009, the City anticipates utilizing water demand data to evaluate the effectiveness of the water waste prohibitions.

### 6.11 DMM Summary

Vernon takes its status as a CUWCC MOU signatory seriously. A more definitive assessment of DMM effectiveness will be forthcoming following completion of the CUWCC BMP Activity and Coverage Reports for FY 2009-10 and FY 2010-11. In the meantime, Vernon offers the following assessment.

The majority of DMMs are tailored toward residential and irrigation water uses. These water uses are virtually non-existent in Vernon, and the related savings has either already been achieved or is negligible. Administrative programs aimed at influencing behavior have minimal impact since most water use in Vernon is a business expense and many business owners already minimize this expense internally. The DMMs that show the greatest potential for water savings are DMM 3 (System water audits, leak detection, and repair), DMM 9 (Conservation programs for CII accounts) and DMM 13 (Water waste prohibition). The City estimates that 4% of total potable supply will be achieved through aggressive implementation of DMM 3. MDDs 9 and 13 more directly impact the commercial and industrial sectors and the City estimates a water use savings for each of about 1% of commercial and industrial demand. Table 21



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provides a summary of the estimated future impact of DMM implementation assuming a potable water demand of 12,000 AFY.

**Table 21 – Future Impact of DMMs**

<b>DMM No.</b>	<b>DMM Description</b>	<b>2015 (AFY)</b>	<b>2020 (AFY)</b>	<b>2025 (AFY)</b>	<b>2030 (AFY)</b>	<b>2035 (AFY)</b>
1	Water survey programs for residential customers	0	0	0	0	0
2	Residential plumbing retrofit	0	0	0	0	0
3	System water audits, leak detection, and repair	480	480	480	480	480
4	Metering with commodity rates	0	0	0	0	0
5	Large landscape conservation programs and incentives	0	0	0	0	0
6	High-efficiency washing machine rebate programs	0	0	0	0	0
7	Public information programs	0	0	0	0	0
8	School education programs	0	0	0	0	0
9	Conservation programs for CII accounts	100	100	100	100	100
10	Wholesale agency programs	0	0	0	0	0
11	Conservation pricing	0	0	0	0	0
12	Water conservation coordinator	0	0	0	0	0
13	Water waste prohibition	100	100	100	100	100
14	Residential ultra-low-flush toilet replacement programs	0	0	0	0	0
<b>Total Potential Water Savings</b>		<b>680</b>	<b>680</b>	<b>680</b>	<b>680</b>	<b>680</b>



**CHAPTER SEVEN – CLIMATE CHANGE**

Per WRD (Technical Bulletin, Vol. 10, Winter 2007), it is well documented that global warming has been occurring for a long time, with one significant impact being the melting of glaciers all over the world. The earth has never been at a constant temperature. It is either cooling (glacial periods) or warming (interglacial periods) naturally for reasons not completely understood. Sea levels rise and fall in response to massive ice sheets forming and melting over cycles of tens of thousands of years or more. Over the past 800,000 years, twenty different glacial/interglacial periods have been defined resulting in sea level highs and lows.

During the peak of the last ice age (18,000 to 20,000 years ago), geologic evidence indicates that the sea level was 400 feet lower than it is today. Since then, the earth has been warming, the ice has been melting, and sea levels have been rising at the rate of about 2 inches per century.

Until recently, another debate was whether or not climate change was being caused in part by human activities. In the opinion of the EPA and the United Nations, most of the warming in recent decades has probably been caused by human activities. Over the past 200 years since the industrial revolution, the burning of fossil fuels and deforestation have caused the concentrations of heat-trapping "greenhouse gases" (such as carbon dioxide, methane, and nitrous oxide) to increase significantly in our atmosphere, preventing heat from escaping to space, thus warming the earth somewhat like the glass panels of a greenhouse. This extra heating has contributed to the normal heating cycle of the earth, and model predictions are for California to have temperature increases of 2.5 to 9 degrees Celsius by 2100.

Per DWR (July 2006), the potential impacts and expected consequences of climate change on the State’s water supply are summarized in Table 22.

**Table 22 – Potential Impacts of Climate Change**

Potential Water Resource Impact	Expected Consequence
<b>Reduction of the State’s average annual snowpack</b>	<ul style="list-style-type: none"> <li>• Potential loss of 5 million AFY of storage</li> <li>• Increased challenges for reservoir management and balancing the competing concerns of flood protection and water supply</li> </ul>
<b>Changes in the timing, intensity, location, amount and variability of precipitation</b>	<ul style="list-style-type: none"> <li>• Potential increased storm intensity</li> <li>• Potential increased flood</li> <li>• Possible increased potential for drought</li> </ul>
<b>Long-term changes in watershed vegetation and increased incidence of wildfire</b>	<ul style="list-style-type: none"> <li>• Changes in the intensity and timing of runoff</li> <li>• Possible increased incidence of flooding and sedimentation</li> </ul>
<b>Sea level rise</b>	<ul style="list-style-type: none"> <li>• Inundation of coastal marshes and estuaries</li> <li>• Increased salinity intrusion in the Delta</li> <li>• Increased salinity intrusion into coastal aquifers</li> <li>• Increased potential for Delta levee failure</li> <li>• Increased potential for flooding at river mouths due to backwater effects</li> </ul>



## CHAPTER SEVEN – CLIMATE CHANGE

CITY OF VERNON

Potential Water Resource Impact	Expected Consequence
<b>Increased water temperatures</b>	<ul style="list-style-type: none"> <li>• Possible critical effects on aquatic species</li> <li>• Increased water demand for environmental temperature control</li> <li>• Possible increase of invasive species in aquatic ecosystems</li> <li>• Potential adverse changes in water quality</li> </ul>
<b>Changes in urban and agricultural water demand</b>	<ul style="list-style-type: none"> <li>• Changes in demand patterns and evapotranspiration rates</li> </ul>

No one knows for sure whether climate change will affect the groundwater supplies in the Central Basin, but close monitoring, planning, and responses to changes will likely be necessary. Warmer summers may cause drought, an increase in water demand, and a decrease in water supply. Warmer winters may result in precipitation falling as rain instead of snow reducing the snow pack that is a natural reservoir for spring and summer snow melt. Warmer winters may increase the intensity of storm runoff that may overflow stream channels, cause flooding, and cause more runoff losses to the oceans. Northern California sea level rises may threaten the Bay Delta freshwater supplies, reducing imported water availability. Southern California sea level rises may threaten the Central and West Coast Basins with increased salt water intrusion.

Water managers, water providers, and elected officials at the local, state, and federal level are working together towards solutions. Additional scientific information and modeling is needed to reduce the climate change uncertainties so that planning can be performed to implement the necessary projects to meet future water needs. The importance of maintaining and expanding the use of the Central Basin as a water supply reservoir is crucial. New and improved spreading grounds and conservation pools will help capture as much storm water as possible to ensure a local supply of replenishment water. Finding ways to decrease our reliance on imported water, increasing the use of recycled water, maximizing groundwater storage, conserving water, and protecting the basin from contamination due to salt water intrusion or other pollutants will ensure a reliable supply of locally-derived groundwater. WRD, the groundwater steward for the Central and West Coast Basins, is working to find practical and optimum solutions to ensure the future reliability of the local groundwater supplies in the face of climate change.

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