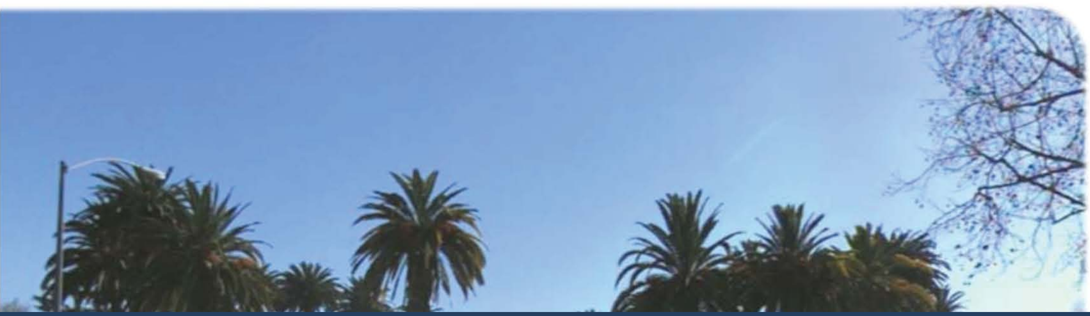
2010

City of Lynwood
Urban Water Management Plan



May, 2011
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2010

URBAN WATER MANAGEMENT PLAN

City of Lynwood

Draft Copy

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SECTION 1: INTRODUCTION

1.1 PURPOSE AND SUMMARY

This is the Urban Water Management Plan ("2010 Plan") for the City of Lynwood ("City"). This plan has been prepared in compliance with the Urban Water Management Planning Act ("Act"), which has been codified at California Water Code sections 10610 through 10657 and can be found in Appendix B to this 2010 Plan.

The legislature declared that waters of the state are a limited and renewable resource subject to ever increasing demands; that the conservation and efficient use of urban water supplies are of statewide concern; that successful implementation of plans is best accomplished at the local level; that conservation and efficient use of water shall be actively pursued to protect both the people of the state and their water resources; that conservation and efficient use of urban water supplies shall be a guiding criterion in public decisions; and that urban water suppliers shall be required to develop water management plans to achieve conservation and efficient use.

The Act requires "every urban water supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually, to prepare and adopt, in accordance with prescribed requirements, an urban water management plan." Urban water suppliers must file these plans with the California Department of Water Resources (DWR) every five years describing and evaluating reasonable and practical efficient water uses, reclamation, and conservation activities. (*See generally* Wat. Code § 10631.)

The Act has been amended on several occasions since its initial passage in 1983. New requirements of the Act due to SBx7-7 state that per capita water use within an urban water supplier's service area must decrease by 20% by the year 2020 in order to receive grants or loans administered by DWR or other state agencies. The legislation sets an overall goal of reducing per capita urban water use by 20% by December 31, 2020. The state shall make incremental progress towards this goal by reducing per capita water use by at least 10% by December 31, 2015. Each urban retail water supplier shall develop water use targets and an interim water use target by July 1, 2011. Effective 2016, urban retail water suppliers who do not meet the water conservation requirements established by this bill are not eligible for state water grants or loans.

An urban retail water supplier shall include in its water management plan due July 2011 the baseline daily per capita water use, water use target, interim water use target, and compliance daily per capita water use. The Department of Water resources, through a public process and in consultation with the California Urban Water Conservation Council, shall develop technical methodologies and criteria for the consistent implementation of this part. These new requirements are included in **Section 4: Water Demands**

1.2 COORDINATION

In preparing this 2010 Plan, the City has encouraged broad community participation. Copies of the City's draft plan were made available for public review at City Hall and the local public libraries in the City. The City noticed a public meeting to review and accept comments on the draft plan with more than two weeks in advance of the hearing. The notice of the public hearing was published in the local press and mailed to City Clerk. On June 8, 2011, the City held a noticed public hearing to review and accept comments on the draft plan. Notice of the public hearing was published in the local press. Following the consideration of public comments received at the public hearing, the City adopted the 2010 Plan on June 21 , 2011. A copy of the City Council resolution approving the 2010 Plan is included in **Appendix D**.

As required by the Act, the 2010 Plan is being provided by the City to the California Department of Water Resources, the California State Library, and the public within 30 days of the City's adoption.

Table 1.1
Coordination and Public Involvement

City Public Works Dept/Utilities Division	x	x	x	x	x
City Manager's Dept		x		x	x
Lynwood City Clerk		x		x	
Lynwood Public Library		x		x	
Lynwood City Mayor		x		x	
Lynwood City Pro Tem		x		x	
Lynwood City Council Members		x		x	
Metropolitan Water District		x		x	
Dept of Water Resources (Glendale Office)		x		x	
Los Angeles Department of Water and Power		x		x	
LA County Board of Supervisors		x		x	
LA County Dept of Public Works		x		x	
Sanitation Districts of LA County		x		x	
Central Basin Municipal Water District		x		x	
LA Regional Water Quality Control Board		x		x	
Water Replenishment District		x		x	
CA State Public Health Dept (Glendale Office)		x		x	
City of Compton		x		x	
City of Paramount		x		x	
City of South Gate		x		x	
Golden State Water Company		x		x	
Park Water Company		x		x	
LACSD		x		x	
Interested General Public		x	x	x	x

1. Participated in Plan Preparation. 2. Contacted For Assistance 3. Commented On Draft
4. Notified of Public Hearing 5. Attended Public Hearing

1.3 FORMAT OF THE PLAN

The chapters in this 2010 Plan correspond to the items presented in the Act and are as follows:

Section 1 - Introduction

This chapter describes the UWMP Act background, new amendments to the Act, City's planning and coordination process, the history of the development of the City's water supply system, a description of its existing service area, the local climate, population served and the City's water distribution system.

Section 2 - Water Sources & Supplies

This chapter describes the existing water supplies available to the City, including imported water purchased from the Central Basin Municipal Water District (CBMWD), local groundwater extracted from the Central Groundwater Basin, and recycled water provided by CBMWD. In addition, this chapter discusses potential future water supplies, including transfers and exchanges, recycled water, and desalinated water.

Section 3 – Water Quality

This chapter discuss water quality issues with the City's imported and groundwater sources and the effect of water quality on management strategies and supply reliability.

Section 4 – Water Demand

This chapter describes past, current and projected water usage within the City's service area prior to the implementation of future demand management measures.

Section 5 – Reliability Planning

This chapter presents an assessment of the reliability of the City's water supplies by comparing projected water demands with expected water supplies under three different hydrologic conditions: a normal year; a single dry year; and multiple dry years. This 2010 Plan concludes that if projected imported and local supplies are available as anticipated, no water shortages are anticipated in the City's service area during the planning period.

Section 6 – Demand Management

This chapter addresses the City's implementation of the current Best Management Practices (BMPs). The BMPs correspond to the 14 Demand Management Measures (DMMs) listed in the UWMP Act and are described in this section.

Section 7 – Water Shortage Contingency Plan

This chapter describes the City's current conservation activities, as well as those efforts that will be utilized in the event of a water supply interruption, such as drought. The City's water shortage contingency plan was developed in consultation and coordination with other MWD member agencies. In addition, MWD's Water Surplus and Drought Management Plan (WSDM) is also described.

Appendices

The appendices contain references and specific documents for the data used to prepare this 2010 Plan.

1.4 WATER SYSTEM HISTORY

The City of Lynwood was founded in the early 1800s by Don Antonio Lugo. The Lugo family later deeded the land. The land was eventually developed and opened as a suburban home site in 1913. To sustain the development of the land, the City's water system began to take shape.

The City was later incorporated in 1921, and the City began to drill wells for groundwater production. Well No. 5, drilled in 1932, has remained in operation to this day. As the City continued to grow as a residential and industrial community, the City realized the need to supplement its water sources and began to receive imported water in 1940. The City is located in the Central Basin Municipal Water District (CBMWD) which is a member agency of the Metropolitan Water District (MWD). MWD was originally founded in 1928 to build the Colorado River Aqueduct to supplement the water supplies of the original founding members. In 1972, MWD augmented its supplies to include deliveries from the State Water Project via the California Aqueduct. Today the City continues to receive imported water on an as-needed basis.

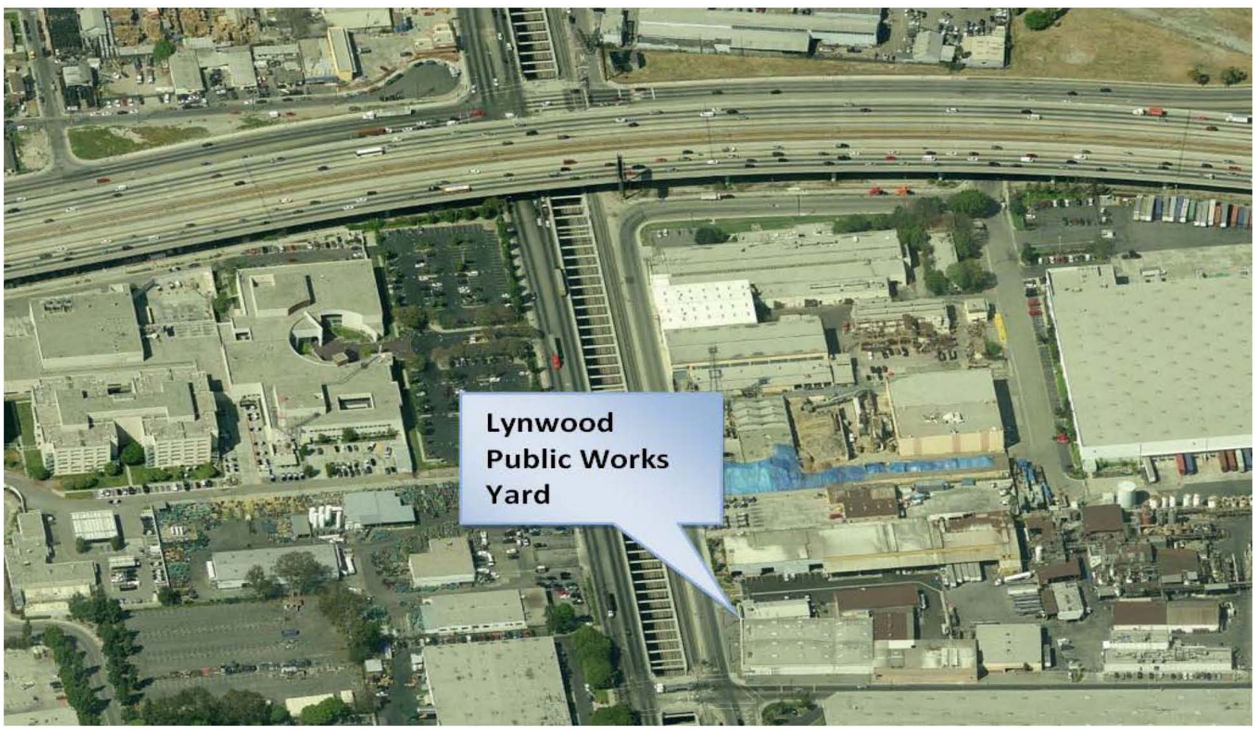

Figure 1.1: Lynwood Public Works Yard (Water Utility)

1.5 CITY WATER SERVICE AREA

The City of Lynwood is approximately 4.7 square miles in size and its water system serves about 90 percent of the land within City limits. The Park Water Company provides water service to the remaining 10% in the southeast section of the City. **Figure 1.4** shows the City's water service area. Topographically, the City is bounded on the North by the City of South Gate, on the East by the City of Paramount, on the South by the City of Compton, and on the West by the City of Los Angeles and the unincorporated County of Los Angeles (Florence/Willowbrook area).

Land use within the service area is principally composed of single and multi-family residences, business and commercial districts, and some institutional and industrial areas. Since the area is in a built-out condition, additional growth result from re-development of existing lots.

1.6 CLIMATE

The City has a Mediterranean climate with moderate, dry summers with an average temperature of about 70°F and cool, wet winters with an average temperature of 58°F. The average rainfall for the region is approximately 14 inches. Evapotranspiration (ETo) in the region averages 49.7 inches annually. **Table 1.1** lists the average ETo, and rainfall for the City.

Table 1.1
Lynwood Climate Characteristics

Jan	55.9	2.6	1.9
Feb	57.0	2.9	2.2
Mar	58.3	2.2	3.4
Apr	60.8	1.1	4.8
May	63.3	0.2	5.6
Jun	66.7	0.1	6.3
Jul	70.9	0.0	6.5
Aug	71.8	0.1	6.2
Sep	70.5	0.3	4.8
Oct	66.7	0.4	3.7
Nov	62.1	1.6	2.4
Dec	57.6	2.4	1.9
Totals:	**63.5**	**14.0**	**49.7**

Overall, the City' service area climate characteristics are comparable to other cities within the region.

1.7 POPULATION

According to the most recent population figures from the California Department of Finance, the current 2010 resident population of the City is approximately 73,295 persons. Since the City's service area accounts for about 90% of the City's total residents, the total current resident population served by the City's water system is approximately 65,965 persons. Population growth over the past 10 years is approximately 0.48%. Population projections in accordance with an annual growth rate of 0.48% over the next 25 years are shown in **Table 1.2**:

Table 1.2
Population Projections

2015	67,580	75,089
2020	69,234	76,927
2025	70,929	78,810
2030	72,665	80,739
2035	74,444	82,715

Since the City is a not a major commercial center for the region, daytime populations estimates are not significantly higher than the City's resident population.

1.8 WATER SYSTEM

The City's Public Works Department manages the City's infrastructure and natural resources, including the City's Public Water Utility. The Public Water Utility consists of efforts from various Public Works sections: Water Utility Division, CIP Division, and Engineering Division. The

Water Utility Division is responsible for providing high quality drinking water through the operation and maintenance of water production, distribution treatment, and storage facilities. The CIP Division is responsible for the Capital Improvement Program which consists of the development and replacement of water system infrastructure. The Engineering Division, along with management, is responsible for acting as the liaison with outside agencies, most notable the State and County Health Departments, water districts and other regulatory agencies. In addition, the Engineering Division, along with management functions as an advisor to the City Council. Additional Administrative Services responsibilities include developing and monitoring the Operations budget; monitoring the Capital Improvement budget and water rates; and providing customer service.

Water Supply & Operations

The City of Lynwood has five active groundwater wells (Well Nos. 5, 8, 9, 11, and 19) located throughout the City for groundwater production. The wells range in capacity from 550 to 2,000 gallons per minute (gpm) with a total pumping capacity of 6,000 gpm. The City is also scheduled to complete equipping of its Well No. 22 (capacity of 2,500 gpm) later this year.

The City also receives imported water from its connection to CBMWD, with a 12 CFS connection capacity of 5,376 gpm. Although the City previously used its imported connection to supplement its groundwater supply, the City has recently decided to use imported water only on an as-needed basis. Over the past five years, groundwater has accounted for the majority of the City water supply, providing about 90% of the City's total water supply.

In addition to imported water and groundwater, recycled water is also used in the City by Caltrans to irrigate landscapes along the Interstate 105 and State 710 freeways, and by the City to irrigate 9-acre Burke-Ham Park. Recycled water, however, is not conveyed as part of the City's distribution system infrastructure.

Figure 1.2: Lynwood Well No. 8

The City's day-to-day water operations and maintenance are conducted in its Public Works Yard Building, which houses the Engineering, Street Maintenance, Building Maintenance, Grounds Maintenance, and Water Operations staff along with equipment and vehicles necessary to perform its services. The Public Works Yard is located on the western side of the City at 11750 Alameda St., near the Alameda station as shown in **Figure 1.1**.

Distribution System

The City distributes its water to approximately 9,000 service customers through a 90 mile network of distribution mains with pipelines sizes ranging from 2-inches to 16-inches. The water system consists of one (1) pressure zone that provide sufficient water pressure to customers. The City also maintains a booster pump station consisting of 3 pumps that can deliver up to 3,600 gpm. The City of Lynwood water service area map is shown in **Figures 1.4** on the following page

FIGURE 1.3: STILL NEED CITY WATER MAP

Water Storage

For storage and fire flow needs, the City maintains one water storage reservoir with a capacity of 3 million gallons (MG). The reservoir is partially underground and is located adjacent to the City's Well No. 8 and booster pump station just West of City Hall along Bullis Road. The reservoir is shown below in **Figure 1.5**:

Figure 1.4: 3.0 MG City Reservoir

Emergency Interconnections

In addition to imported water and groundwater, the City's water supply system also includes four 8-inch emergency interconnections with the City of Compton and one 8-inch connection with the City of South Gate. The four connections with the City of Compton are manual, two-way connections capable of transferring water for the mutual benefit of both agencies. The one connection with the City of South Gate is an automatic, two-way connection capable of transferring water for the mutual benefit of both agencies. The connections to the Cities of Compton and South Gate are located on the Southerly and Northerly portions of the City's limits, respectively.

SECTION 2: WATER SOURCES & SUPPLIES

2.1 INTRODUCTION

The City's water supply sources consist of imported water from the Metropolitan Water District (MWD) via the Central Basin Municipal Water District (CBMWD), and groundwater produced from the Central Ground Water Basin.

2.2 WATER SUPPLY SOURCES

Imported Water

The City has access to imported water from the Colorado River and the Sacramento-San Joaquin River Delta in Northern California. These two water systems provide Southern California with over 2 million acre-feet (MAF) of water annually for urban uses.

The Colorado River supplies California with 4.4 MAF annually for agricultural and urban uses with approximately 3.85 MAF used for agriculture in Imperial and Riverside Counties. The remaining unused portion (600,000 - 800,000 AF) is used for urban purposes in MWD's service area.

Figure 2.1: Parker Dam at Colorado River

In addition to the Colorado River, the Sacramento-San Joaquin River Delta provides a significant amount of supply annually to Southern California. The Delta is located at the confluence of the Sacramento and San Joaquin Rivers east of the San Francisco Bay and is the West Coast's largest estuary. The Delta supplies Southern California with over 1 MAF of water annually.

Figure 2.2: Sacramento-San Joaquin Delta

The use of water from the Colorado River and the Sacramento-San Joaquin Delta continues to be a critical issue. In particular, Colorado River water allotments have been debated among the seven basin states and various regional water agencies at both the federal and state levels. The use of Delta water has been debated as competing uses for water supply and ecological habitat have jeopardized the Delta's ability to meet either need and have threatened the estuary's ecosystem.

In order to provide Southern California with imported water, MWD utilizes two separate aqueduct systems (one for each source of supply) to obtain its supplies. These two aqueduct systems convey water from each source into two separate reservoirs whereupon MWD pumps the water to one of its five treatment facilities. One of these aqueduct systems is known as the Colorado River Aqueduct (CRA). The CRA was constructed as a first order of business shortly after MWD's incorporation in 1928. The CRA is 242 miles long and carries water from the Colorado River to Lake Matthews and is managed by MWD.

Figure 2.3: Colorado River Aqueduct

In addition to the CRA, MWD receives water from northern California via the California Aqueduct. Also known as the State Water Project, the California Aqueduct is 444 miles long and carries water from the Delta to Southern California and is operated by the Department of Water Resources.

Figure 2.4: California Aqueduct

The previously mentioned aqueducts supply Southern California with a significant amount of its water and are crucial to its sustainability. In addition to these two water systems, there are also several other aqueducts that are vital to the State. The major aqueducts in California are shown in **Figure 2.5** on page 2-3.

Imported Water Purchases

As a wholesale agency, MWD distributes imported water to 26 member agencies throughout Southern California as shown in **Figure 2.6** on Page 2-4. CBMWD is one of 11 wholesale agencies served by MWD. CBMWD distributes water to its retail agencies, including the City of Lynwood, as shown in **Figure 2.7**. The City has an imported connection to CBMWD with a 12 CFS capacity of 5,376 gpm (about 8,670 AFY). The interconnection supplements the City's groundwater supplies as necessary.

Table 2.1 presents the City's five-year historic imported water purchases from 2005 to 2010:

Table 2.1
Imported Water Supply 2005-2010
(Purchases from CBMWD)

2010	262
2009	584
2008	614
2007	564
2006	1,449
2005	1,076
Average:	**729**

Although the City's imported connection capacity is 8,670 AFY, the amount of imported water available to the City is dependent on CBMWD's supplies from MWD. In 2005, CBMWD's Tier 1 limit from MWD was 72,360 AFY and in 2010 the limit was 72,361 AFY.

Figure 2.5: Aqueduct Systems in California
(Figure A.2-5 in MWD's 2010 RUWMP)

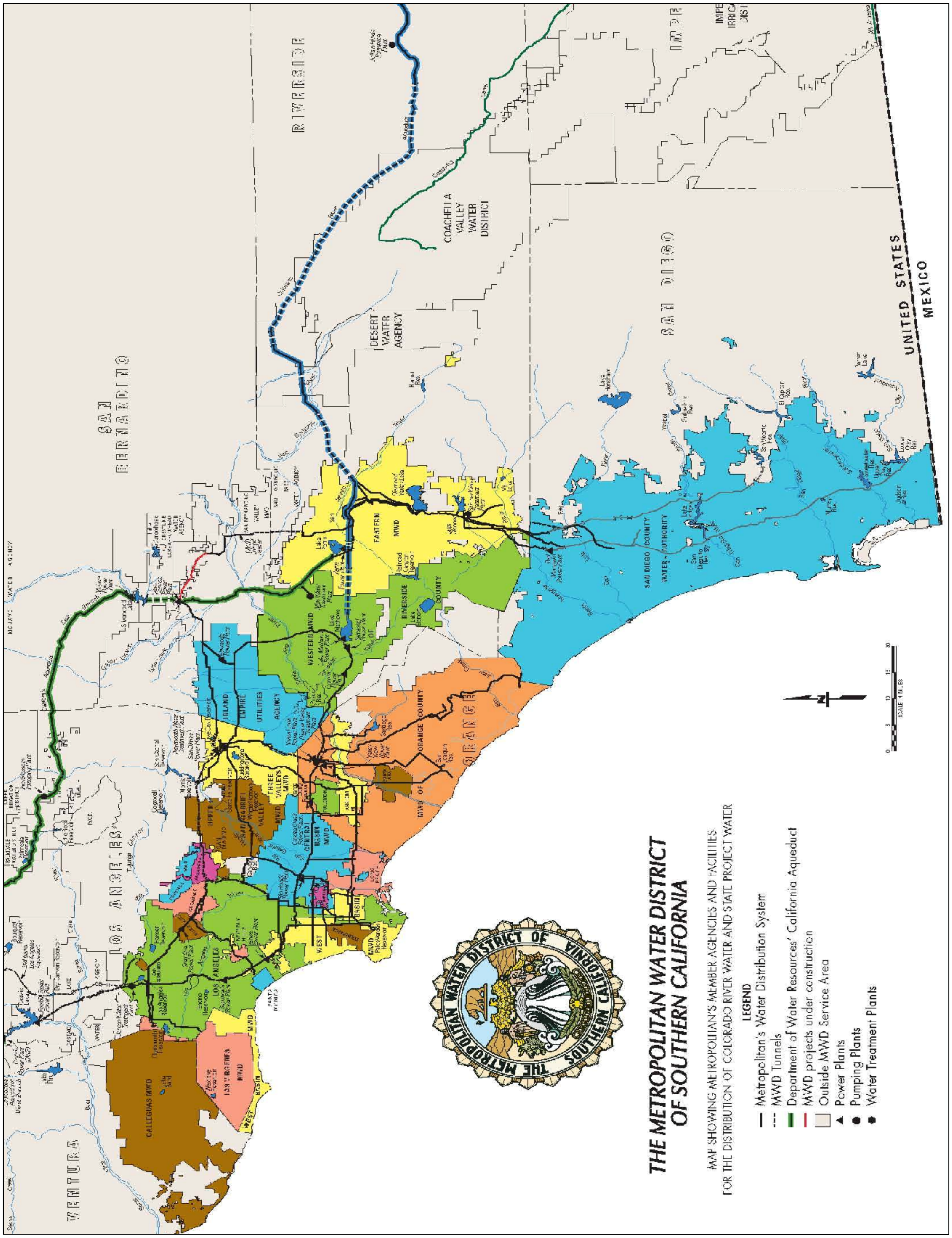

Figure 2.6: MWD Service Area Map

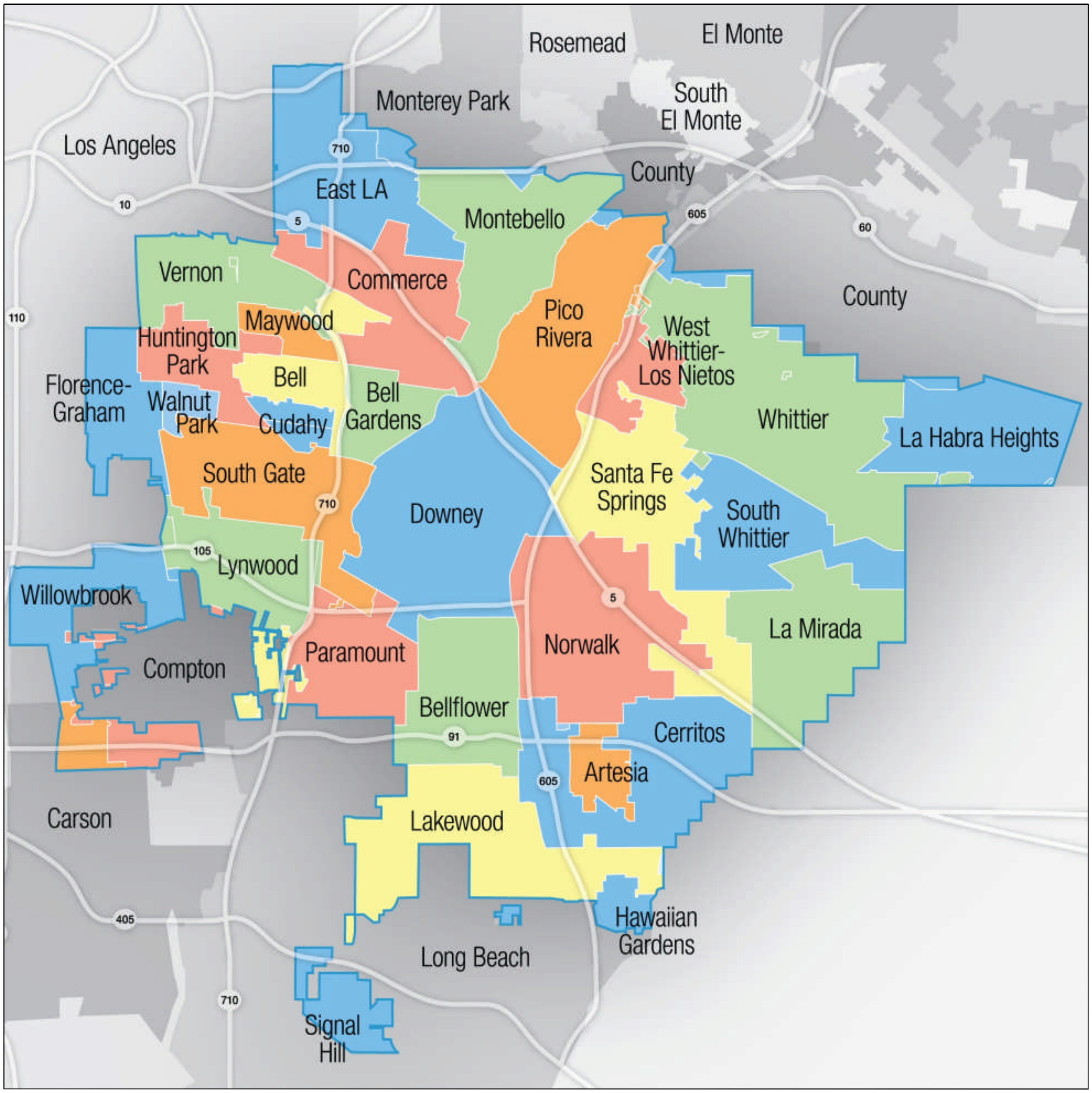

Figure 2.7: CBMWD Service Area Map

Groundwater

The City obtains its groundwater supply from the Central Groundwater Basin. The basin is located in central Los Angeles County and underlies the entire City of Lynwood, and parts of the service areas of West Basin MWD and CBMWD. The Basin has a surface area of 277 square miles of mostly flat to mildly hilly terrain. The basin is bounded by the Elysian, Repetto, Merced, and Puente Hills to the North, the Coyote Creek to the Southeast, and the Newport-Inglewood fault to the Southwest. Adjacent groundwater basins include the Hollywood, Santa Monica, West Coast, Orange County, and Main San Gabriel Basins as shown in **Figure 2.8** below.

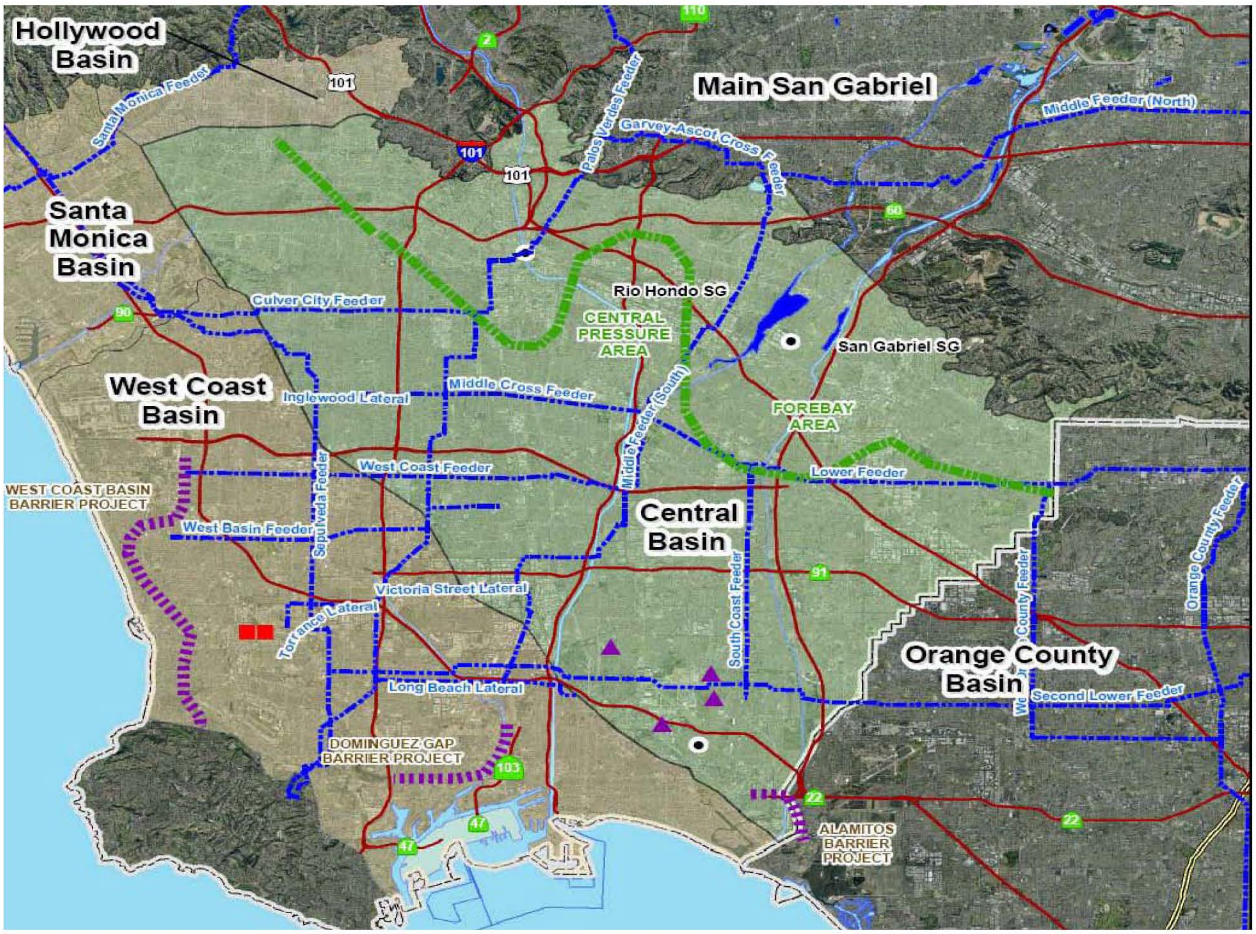

Figure 2.8: West Coast Groundwater Basin

Water-bearing deposits of the Central Basin include unconsolidated and semi-consolidated marine and alluvial sediments deposited over time. Key production aquifers include the deeper aquifers of the San Pedro Formation (i.e. Lynwood, Silverado, and Sunnyside). These aquifers produce large volumes of groundwater. The shallower aquifers of the Lakewood formation (i.e. Gaspur, Exposition, Hollydale) produce smaller volumes of water. In the area of the Basin known as the pressure area (see **Figure 2.8** above), the aquifers are separated by thick aquitards, which create confined aquifer conditions and protection from surface contamination.

Groundwater in the Basin is replenished naturally by percolation from precipitation, (receiving an annual precipitation of about 14 inches), by subsurface inflows from the San Gabriel Basin through the Whittier Narrows, and by surface flows from local rivers and streams. Since the basin is mostly urbanized and soil surfaces have been paved to construct roads, buildings, and flood channels, natural replenishment to the basin's water-bearing formations is limited to only a small portion of basin soils. However, the Basin receives additional replenishment from the San Gabriel and Rio Hondo Spreading Basins, which receive a blend of imported water and recycled water.

Groundwater in the Basin naturally and historically flows from the recharge areas in the Northeast (through the Whittier Narrows) towards the West Coast Basin and into Pacific Ocean in the Southwest. The Newport Inglewood fault provides a restrictive barrier on the flow of groundwater in the Basin.


Figure 2.9: Rio Hondo Spreading Grounds

The total storage in the basin is estimated to be approximately 13.8 MAF. Unused storage is estimated to be about 1.1 MAF. The natural safe yield of the Basin (natural replenishment only) is estimated to be about 125,805 AFY. As a result of artificial recharge activities, however, the allowable pumping allocation exceeds this amount.

Groundwater levels in the basin are generally at or above mean sea level (MSL), although low water levels in portions of aquifers adjacent to the Pacific Ocean allow for seawater intrusion to occur. When water levels are low, seawater seeps into the West Coast Basin and into the Central Basin near the Long Beach area of the West Coast Basin.


Figure 2.10: Whittier Narrows

Due to past seawater intrusion, the Water Replenishment District (WRD) maintains the Alamitos Seawater Barrier Project to prevent seawater intrusion and to protect the Basin's groundwater supplies. The Alamitos Barrier consists of 43 injection wells and 239 observation wells over a 2.2 mile course. The injection wells inject a blend of imported and recycled water to build up water pressure in the aquifers below and block seawater intrusion In 2008, the Alamitos Barrier Project injected approximately 6,000 AF into the Basin's aquifers.

The Central Basin is an adjudicated basin and the management of water resources and operations in the basin is provided by DWR, WRD, the LA County Department of Public Works, the Sanitation Districts of LA County, and the Regional Water Quality Control Board. The DWR serves as Watermaster. The California Department of Health Services provides additional oversight of the Basin's groundwater quality and help monitor contaminant levels. The adjudicated pumping rights of 267,000 AFY are shared among basin agencies at a not-to-exceed allowable pumping allocation (APA) of 217,367 AFY.

The key characteristics of the Central Basin are summarized below in **Table 2.2**:

Table 2.2
Central Basin
Summary of Characteristics

Max. Depth to Groundwater	2,200 ft.
Thickness of Groundwater Table	180-800 ft.
Storage	13.8 MAF
Natural Safe Yield	125,805 AFY
Adjudicated Rights	267,900 AFY
Allowable Pumping Allocation	217,367 AFY
Spreading Basins (Total)	3
Seawater Intrusion Barriers	1

Groundwater Production

As of April 2011, the City maintains a total of five active wells (Well Nos. 5, 8, 9, 11, and 19) for groundwater extraction. Prior to 2005, the City previously extracted groundwater from its Well No. 15. Since 2005, however, Well No. 15 has been deactivated and is no longer in service.

The City's existing groundwater wells have capacities ranging from 550 gallons per minute (gpm) to 2,000 gpm with a combined production capacity of 5,650 gpm (9,600 AFY). The City's groundwater production well characteristics are displayed in **Table 2.3** below:

Table 2.3
City Groundwater Wells

5	550
8	1,100
9	1,200
11	800
19	2,000
Total Capacity:	**5,650**

The City has adjudicated rights to the Central Basin and has an allowable pumping allocation of 5,337 AFY. In addition, the City recently leased 700 AFY of groundwater rights from another pumper in the Basin for five years. Thus, the City's current combined pumping rights stand at 6,037 AFY.

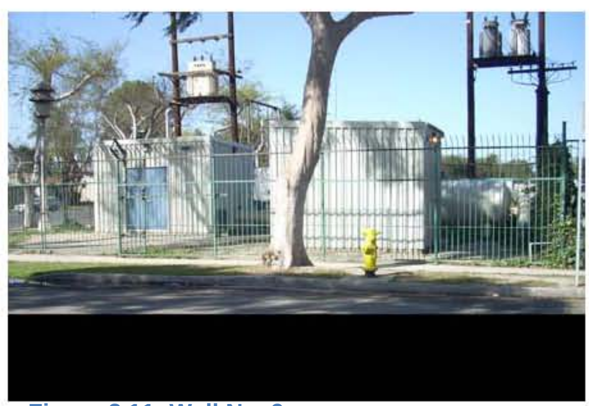

Figure 2.11: Well No. 9

As a result of increasing costs of imported water, the City intends to achieve 100% sustainability from local groundwater sources. Due to this goal, the City is pursuing additional wells to maximize its groundwater potential and to provide additional reliability of its groundwater well system. The City is also implementing infrastructural improvements to its existing facilities such as new sand separators. These equipment upgrades are needed to outfit its groundwater supply system to meet the City's water needs and to be in compliance with ever-changing water quality standards. Well No. 9 (pictured in **Figure 2.11**) received a new sand separator tank in 2010. Well No. 8 is scheduled to receive a new sand separator tank later this year. The City is currently in the process of developing an additional well (Well No. 22) at the City's Lynwood Park site. Well No. 22 has recently been drilled and the construction documents for the well facility and connection to the City's distribution system are currently being prepared. Well No. 22 is anticipated to be completed later this year. Once complete, Well No. 22 will have a capacity of 2,500 gpm The location of Well No. 22 is shown below in **Figure 2.12**.

Figure 2.12: Well No. 22 Site

To monitor the City's groundwater extraction, each of the City's wells are equipped with flowmeters to measure well production. Well production is recorded monthly by City water staff and reported annually to the Department of Water Resources (DWR). The City completes DWR's Form No. 38 (Public Water System Statistics) on an annual basis as part of their reporting and documentation efforts. Data records from the past five years indicates that Well No. 19 (capacity of 2,000 gpm) has been the most productive well for the City. Well No. 19 is located in the Western portion of the City just southwest of the Public Works Yard. Well No. 19 was drilled in 1971 by primary reverse circulation (a modern drilling technique) and has a total depth of about 1,000 ft. In 2008, Well No. 19 was measured to have a pumping rate of about 2,000 gpm. Well No. 5, on the other hand is the City's least productive well with a recently measured pumping rate of 550 gpm. Well No. 5 was drilled in 1932 by the conventional (cable tool) method and has a total depth of 751 ft.

The total groundwater production since 2005 is shown below in **Table 2.4**:.

Table 2.4
Groundwater Production (2005-2010)
(Goldsworthy Desalter)

2010	5,565
2009	5,371
2008	5,982
2007	5,570
2006	4,675
2005	5,366
Average:	**5,422**

The groundwater production totals shown in **Table 2.4** represent the majority of the City's water supply since 2005. Overall, groundwater has accounted for about 90% of the City's total water supply for the past five years (an increase of nearly 10% from 2000-2005).

2.3 WATER SUPPLY SUMMARY

Over the past five years, the City's water supply has consisted of imported water and groundwater. In 2005, imported water accounted for 17% of the City's water supply. In 2010, imported water accounted for only 2% of the City's water supply (the lowest total in the City's water history). Imported water purchases have declined from previous years (prior to 2005) due to increases in groundwater pumping. The City's pursuit of groundwater not only has added to its supply reliability (as groundwater is considered to be drought-proof over the short term), but has also offset some of the recent and future economic burdens of purchasing imported water at ever-increasing rates.

2.4 PROJECTED SUPPLY OUTLOOK

As population and land-use densities increase, the City understands the need to discover and support local water supply projects to augment imported supplies. As part of this process, the City intends to continue to upgrade its existing groundwater supply facilities and also intends to pursue the addition of new wells to add to or replace existing wells in the City. Continued upgrades will help the City's groundwater capacity to be maintained at or near their combined pumping rights of 6,037 AFY. As a result of these improvements, the City expects to reduce their dependency on imported water to an as-needed basis, although the City expects both MWD and CBMWD to raise imported water rates in the near future. Through conservation efforts, the use of groundwater is expected to meet all or most of future demands for the next five years.

Overall, the City's supply reliability is expected to increase through the implementation of planned improvements to its groundwater facilities and through continued access to imported water, and through the potential uses of alternative water supplies as discussed in the following section. The City will also continue to benefit indirectly from regional conservation efforts and also through MWD's efforts to augment its supplies and improve storage capacities. **Section 5: Reliability Planning** discusses reliability issues and compares the City's projected water supplies to projected demands for normal, dry, and multiple dry years through the year 2035.

2.5 ALTERNATE WATER SOURCES

This section provides an overview of alternative water sources (non-potable supplemental supplies) and their potential uses. Alternative water sources including recycled wastewater, recycled stormwater, graywater, and desalinated water.

Recycled Wastewater

Although the City does not currently have the capability to construct a wastewater recycling facility within its limits, the City currently benefits from the use of recycled wastewater in the CBMWD region, including the use of recycled water by the City at Burke-Ham Park and by Caltrans along the Interstate 105 and 710 freeways in the City limits. If the City were to expand its use of recycled water, the City would receive additional benefit.

Figure 2.13: Clarifier Treating Wastewater

Wastewater Collection & Treatment System

The City of Lynwood maintains a local sewer system that collects wastewater. The local sewer mains transfer sewage to County Sanitation District (CSD) trunk lines where the sewage is received at the Joint Water Pollution Control Plant (JWPCP) in the City of Carson for treatment. Treated effluent is then discharged into the Ocean. The JWPCP does not produce recycled water. Recycled water is produced at the Los Coyotes Water Reclamation Plant in Cerritos and provided to the City via CBMWD.

Recycled Wastewater Use

Currently the City benefits from the use of groundwater and imported water and also recycled wastewater at the Burke-Ham Park, in addition to a few landscaped areas and dual-plumbed buildings. Caltrans also used recycled water for irrigation along the Interstate 105 and 710 freeways in the City limits.

Potential Uses of Recycled Wastewater

Since the City uses recycled water, the City has identified potential recycled water users. Typical recycled water uses in the City would include landscape irrigation, dual-plumbing in buildings, and industrial uses. If the City were to expand its use of recycled wastewater, the City could benefit as a number of parks, schools, medians, and dual-plumbed buildings could use recycled water. The City, however, currently lacks the infrastructure required to serve additional potential customers.

Future Plans for Recycled Wastewater

The City expects the use of recycled water in the CBMWD service area to increase. Additionally, recycled water use by Caltrans for irrigation purposes is expected to continue. The City does not have any formal plans in place to expand recycled water use, but expects to increase recycled water use in the near future.

Graywater

Graywater systems have been used in California to provide a source of water supply for subsurface irrigation and also as a means to reduce overall water use. Graywater consists of water discharged from sinks, bathtubs, dishwashers, and clotheswashers. Graywater systems consist of an underground tank and pumping system. Graywater is currently legal for subsurface irrigation in the State of California. However, strict regulations and high installation costs have impeded installation of professional graywater systems and has the unintended consequence of undocumented and noncompliant use of graywater.

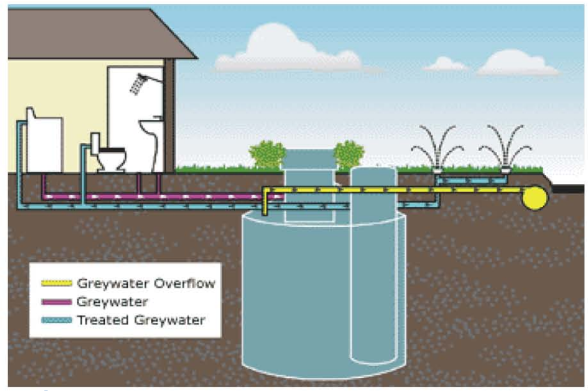

Figure 2.13: Graywater System

The promotion of graywater systems as a means to reduce the City's overall water use is not recommended since the use of graywater is currently limited to subsurface irrigation and therefore the overall Citywide reduction in water use (in AF) would be minimal at best. With the recent passage of SB 1258, however, graywater use is expected to be expanded to include use for toilet flushing, and may have its place as a potential water supply.

Desalinated Seawater

Seawater desalination is a process whereby seawater is treated to remove salts and other contents to develop both potable and non-potable supplies. There are over 10,000 desalination facilities worldwide that produce over 13 million AFY. Desalinated water can add to Southern California's supply reliability by diversifying its water supply sources and mitigating against potential supply reductions. With its Seawater Desalination Program (SDP), the MWD facilitates progress and provides financial incentives for the development of seawater desalination facilities within its service area.

A total of five member agencies submitted projects totaling 142,000 AFY. In 2004, MWD adopted an Integrated IRP update which included a desalination goal of 150,000 AFY by the year 2025. Currently, the five member agency projects are in various levels of development.

Figure 2.3: Seawater Desalination Plant

Since the City is not located adjacent to the ocean, there are no plans to incorporate desalinated seawater into its supply sources.

2.6 TRANSFERS OR EXCHANGES

The City owns rights to extract 5,337 AF of groundwater annually. Due to a lease from another pumper in the region, the City currently maintains an allowable pumping allocation of 6,037 AFY. This current agreement will last for five years and highlights the ability of the sharing of water rights among pumpers in the Central Basin. The City may, at any period when its pumping capacity is reduced due to aging infrastructure or changes in water quality standards, lease a portion of its water rights to another pumper in the region to offset some of the economic burdens of purchasing imported water. During period of

The City also maintains five emergency inter-connections to adjacent water purveyor systems. These connections have the ability to transfer water into the City's distribution system during an emergency. There are four 8-inch connections to the City of Compton, and one 8-inch connection to the City of South Gate. Each has a two-way interconnection, allowing water transfers to and from the City, depending on the emergency situation.

2.7 PLANNED SUPPLY PROJECTS

The City continually reviews practices that will provide its customers with adequate and reliable supplies. Trained staff continues to ensure the water quality is safe and the water supply will meet present and future needs in an environmentally and economically responsible manner. The City's water demand within its service area could remain relatively constant over the next 20 years due to minimal growth combined with water use efficiency measures and the potential use of recycled water. Any new water supply sources will be to replace or upgrade insufficient wells rather than to support population growth and new development. Once the City completes its Well No. 22, the City intends to construct another well (Well No. 23) at a site to be determined. The City will also identify specific means of achieving their sustainability goals from local sources which will likely include the drilling of additional wells, alternative water supply projects, and additional leasing of groundwater rights to meet demand.

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SECTION 3: WATER QUALITY

3.1 WATER QUALITY SUMMARY

In 1974, Congress passed the Safe Drinking Water Act in order to protect public health by regulating the nation's drinking water supply. As required by the Safe Drinking Water Act, the City provides annual Water Quality Reports to its customers. Currently all of the water that the City distributes to its customers meet federal EPA standards and California Department of Health Services (CDHS) Standards.

The quality of water distributed to the City's water system is directly related to the quality of the supply sources from which the City obtains its water. This section explores the quality of the City's supply sources and examines important water contaminants that the City actively monitors as part of its efforts to supply safe drinking water to its customers.

3.2 QUALITY OF SOURCES

Imported Water

The City receives imported water from MWD via CBMWD in order to supplement its groundwater supplies and for blending needs to meet Federal and CDHS standards. Imported water obtained from the SWP and the CRA contain specific contaminants which are characteristic of the Bay Delta and the Colorado River regions. Some of the contaminants of concern include: salinity, biological loads, disinfection by-products, percholorate, uranium, and arsenic. MWD's 2010 RUWMP discusses the water quality concerns of its supplies.

To provide safe drinking water to its customers, MWD treats its water supply at five (5) separate treatment plants, three of which blend a mixture of SWP and CRA water and it is tested regularly. Of the five plants that serve Southern California, the City has access to treated effluent from the Weymoth Treatment Plant via MWD's Middle Feeder pipeline.

Figure 3.1: Weymouth Treatment Plant

Although MWD water meets all regulatory requirements, MWD understands the need for strong testing and quality assurance for its customers. Water is analyzed and tested at one central, state-of-the-art treatment facility in addition to five satellite laboratories at each treatment facility to ensure the quality and safety of its water.

Central Basin Groundwater

In addition to imported water quality concerns, the City is also concerned with groundwater quality pumped from the Central Ground Water Basin. In general, groundwater in the Basin is of good quality, with average total dissolved solids (TDS) concentrations around 500 mg/L, particularly in the key producing deeper aquifers of the Basin. Localized areas of marginal to poor water quality exist, primarily on the basin margins and in the shallower and deeper aquifers impacted by seawater intrusion.

As part of the Basin's groundwater quality monitoring, WRD and the U.S. Geological Survey (USGS) began a cooperative study in 1995 to improve the understanding of the geohydrology and geochemistry of the Central and West Coast Basins. Out of this effort came WRD's geographic information system (GIS) and the Regional Groundwater Monitoring Program. Twenty-one depth-specific, nested monitoring wells located throughout the basin allow water quality and groundwater levels to be evaluated on an aquifer-specific basis. Regional Groundwater Monitoring Reports are published by WRD for each water year. Constituents monitored include: TDS, iron, manganese, nitrate, TCE, PCE, arsenic, chromium including hexavalent chromium, MTBE, and perchlorate.

City Groundwater Constituents of Concern

The local aquifer systems beneath the City contain groundwater which mostly meets federal and state maximum contaminant levels (MCLs) for water quality constituents without having to undergo special treatment. The City's groundwater mostly has a calcium bi-carbonate character with high total hardness (TH) concentrations (180-620 mg/L) which place the water in the very hard range (above 180 mg/L). The pH of the groundwater ranges from 7.46 to 8.1, which indicates that the water is slightly basic or alkaline.

The City routinely monitors its groundwater to meet primary and secondary water quality standards. Among the general mineral constituents detected in the City's groundwater include sulfate, chloride, fluoride, and nitrate. Sulfate concentrations are generally below the secondary MCL with the exception of Well No. 6 (recently abandoned), where sulfate was reported above the MCL in one sample. Well No. 6 typically had the highest sulfate concentrations of the City's wells. Chloride, fluoride, and nitrate concentrations in the City's wells have been under the applicable primary and secondary MCLs for all wells in all reported samples.

Figure 3.2: Hard Water Leaves Mineral Residue

Inorganic trace metal constituents detected in the City's groundwater include aluminum, arsenic, barium, boron, chromium, copper, iron, manganese, and zinc. All of the trace metal constituents concern are well below the applicable primary or secondary MCLs with the exception of iron and manganese. Iron (Fe) has been detected in concentrations of up to 1,500 μg/L and manganese (Mn) has been detected in concentrations of up to 1,200 μg/L, well above the Secondary MCLs of 300 μg/L and 50 μg/L, respectively. Iron and manganese concentrations have affected the City's groundwater pumping ability, and recently have been an obstacle to the drilling and construction of the City's new Well No. 22 at the City Park site.

Volatile Organic Compounds (VOCs) detected in the City's groundwater include 1,2,3-trichloropropane (TCP), total trihalomethanes (THMs), tetrachloroethylene (PCE), and trichlorothylene (TCE). Of the VOCs detected, PCE and TCE have been detected at concentrations above the CDPH MCLs. PCE has been detected in concentrations up to 7.1 µg/L, which exceed the CDPH Primary Standard MCL of 5 µg/L. The wells with reported PCE concentrations above the MCL also exhibited increasing PCE concentrations over time. TCE was only detected in Well Nos. 9 and 15. Samples from Well No. 15 (currently in the process of abandonment) reported TCE concentrations above the CDPH MCL of 5 µg/L. Samples from Well No. 9 did not exceed the MCL of 5 µg/L. Other VOCs from collected samples were detected below the applicable secondary or primary MCLs.

Overall, there are four major constituents of concern for the City: iron, manganese, PCE, and TCE. Of the City's active wells, Well Nos. 8 and 19 experience high concentrations of both iron and manganese, while Well No. 9 experiences high iron concentrations. None of the City's active wells have high PCE or TCE concentrations. **Table 3.2** summarizes the City's Constituents of concern:

Table 3.1
City of Lynwood
Groundwater Constituents of Concern

	General Perforation Interval:		**650-720**	**154-824**	**322-790**	**310-924**	**250-950**
	Year(s) of Record>>>		**1989-2008**	**1987-2008**	**1981-2008**	**1998-2008**	**1987-2006**
General Physical Constituents							
Turbidity	NTU	5	0-0.9	0-1.8	0-1.7	0-0.23	0-0.6
Specific Conductance	µmhos/cm	900, 1600, 2200(1)	675-997	640-780	470-830	672-780	560-708
pH	units	6.5 to 8.5	7.55-7.9	7.55-8.06	7.5-8.04	7.57-8.0	7.62-8.01
Color	CU	15	ND	ND-30(2)(19	ND-10(2)	ND	ND-5(2) (2006)
Odor	TON	3	ND-1	ND-2	ND-2	ND-1	3-Jan
General Mineral Constituents							
Total Dissolved Solids		500, 1000, 1500(1)	423-470	383-480	338-470	402-470	368-437
Total Hardness	mg/L	None	260-310	248-293	204-270	240-360	218-254
Calcium		None	70-100	64-100	55-84	65-105	52-89
Magnesium		None	16-22	10-Mar	19-Oct	14-37	16-Jun

Sodium		None	32-44	32-44	32-40	36-42	40-53
Potassium		None	2.7-3.1	2.3-4.6	2.4-4.0	2.9-3.7	2.3-4.7
Bicarbonate (HCO3)		None	180-236	190-264	180-230	180-246	190-230
Sulfate		250, 500, 600(1)	100-111	75-120	72-113	100-126	85-100
Chloride		250, 500, 600(1)	42-52	37-52	27-43	40-49	28-43
Fluoride(1)		2	0.35-0.41	0.3-1.4	0.2-0.39	0.3-0.7	0.2-0.39
Nitrate as NO3		45	3.1-8.7	ND-13.5	ND-4	3.5-9.1	ND-4.3
Detected Inorganic Constituents							
Aluminum		200	ND	ND-0.12	ND	ND-0.12	ND
Arsenic		10	2.7-7.3	2.6-4.5	4.8-7.9	2-3.1	2.4-3.6
Barium		1000	ND-140	ND-150	ND-140	ND-130	ND-110
Boron		1000 (NL)	ND-100	ND	ND-210	ND	ND-120
Chromium (Total)		50	1.6, 6.5	ND	ND	ND	ND
Copper	μg/L	1300	3.4	ND-2.6	2.4,3.8	ND	2, 2.2
Iron		300	ND-39	ND-1280	ND-950	ND	ND-360
Manganese		50	ND-16	ND-215	2.9-54	ND-4	ND-1200
Selenium		50	ND	ND	3.5(2)	ND	ND
Zinc		5000	ND-125	ND-55	ND-52	ND	ND
Detected Volatile Organic Compounds							
1,2,3-Trichloropropane (TCP)		ND	ND	ND	ND	ND	0.41(2) (2001)
Total Trihalomethanes (THMs)	μg/L	80-100	ND-36.8	ND-6.5(2)	ND-0.92(2)	ND-1.1(2)	ND
Tetrachloroethylene (PCE)		5	ND-2.8	ND-3.3	ND-0.93	ND-6.7	0.7-1.9
Trichloroethylene (TCE)		5	ND	ND	ND-0.55	ND	ND

3.4 EFFECTS ON MANAGEMENT STRATEGIES & SUPPLY RELIABILITY

The previous section discussed water quality issues affecting the City's imported water supply and the City's groundwater supplies pumped from the Central Basin. Due to the mitigation actions undertaken by MWD and the City, the City does not anticipate any reductions in its overall water supplies due to water quality issues. Future regulatory changes enacted by the EPA and/or the State legislature will be met through additional mitigation actions in order to meet the standards and to maintain water supply to the City's customers. Thus, the City does not expect water quality to be a major factor in its supply reliability considerations

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SECTION 4: WATER DEMANDS

4.1 INTRODUCTION

Water use within the City is variable and depends on a number of factors which range from irrigation to industrial use and from inefficient plumbing to water losses. Changes in residential plumbing fixtures and customer usage habits can significantly affect water usage for most agencies. This section explores the water usage trends within the City and quantifies total usage per customer type. In addition, the provisions of the Water Conservation Act of 2009 are explored in detail.

4.2 URBAN GROWTH

The City of Lynwood, like most of Southern California, began as small, suburban town with plenty of room for residential, commercial, and industrial development. Previous land uses in the City at that time comprised mostly of a mixture of residential and industrial uses.

Figure 4.1: Early Lynwood

In the early 1800s the community of Lynwood was founded and in 1921 the City was officially incorporated. The City's water and land resources provided an opportunity for growth and development. As result, the City has supported significant residential, commercial, and industrial growth over the past 90 years. Among the significant commercial centers in the City is Plaza Mexico, which is located adjacent to the Interstate 105 freeway.

Figure 4.2: Lynwood Today

Through urbanization, the City has become one of the key central basin cities in Los Angeles County. The City's strategic location along the Alameda Corridor allows for industrial activity to occur. In addition, the City provides a unique opportunity for sustainable residential, commercial, and institutional development due to its commitment to utilize its resources efficiently, which has over the years contributed to the City's population and economic growth. Due to current "built-out" conditions, additional growth is expected to occur mainly through re-development.

4.3 CURRENT CITY WATER NEEDS

The City's image as a residential, industrial and commercial friendly City is due in part to its dedication to conserving its resources while maintaining the beauty of its parks, schools, and recreational facilities both in the private and in the public sector.

Since the City is zoned primarily for residential use, the City has a significant number of residential lots which require consistent irrigation to maintain landscapes. The City therefore has ordinances to ensure landscapes are irrigated efficiently the proper time in order to avoid water waste.

Figure 4.3: Residential Irrigation

In addition to water demand for residential irrigation purposes, there are a number of other significant water demands within the City's service area. These include commercial and industrial properties in addition to municipal properties such as schools and parks.

Figure 4.4: Lynwood City Park

The City's socio-economic stature is comparable to many cities in the CBMWD service area, and overall water use characteristics within the City's service area are lower than regional averages in Southern California. The City's water consumption rates are typical of many Central Basin agencies, and are less than half of high-end communities such as Beverly Hills.

4.4 HISTORIC WATER DEMAND

Water demands within the City's service area over the past five years are met by groundwater from the Central Ground Water Basin and imported water from CBMWD. Annual water use since 2005 has ranged from about 5,821 AFY to 6,596 AF as shown below in **Table 4.1**:

Table 4.1
Five-Year Historic Total Water Consumption

2010	5,821
2009	5,955
2008	6,596
2007	6,134
2006	6,124
2005	6,443
Average:	**6,151**

As indicated by **Table 4.1** above, annual water use fluctuates each year and is dependent on climatologic conditions.

4.5 WATER USE STATISTICS

Water Service Connections

The City maintains records of water consumption and bills its customers on a monthly basis for its water service. the City maintains approximately 9,000 service connections with a mixture of residential, commercial, institutional, and industrial customers. The City maintains records of its single family accounts.

Multi-family accounts are combined with commercial and institutional accounts. However, for billing purposes, does not separate water use by sector. The City records water use per service connection only and bills customers based on a single water rate structure. Water sales data is compiled by City water staff and recorded on DWR's Form No. 38 (Public Water System Statistics) and submitted to DWR annually. The total number of service connections and total water consumption since 2005 is shown below in **Tables 4.2** and **4.3**:

Table 4.2
Number of Service Connections 2005-2010

Single Family Residential	7,415	7,421	7,440	7,442	7,445	7,602
Multi-Family Residential/ Commercial/ Instiutional	1,546	1,588	1,583	1,590	1,590	1,408
Total Connections:	**8,961**	**9,009**	**9,023**	**9,032**	**9,035**	**9,010**

Table 4.3
Water Sales 2005-2010

Total Sales	5,798	6,036	6,021	6275	5,631	5,167
Unaccounted for Water	644	88	113	321	324	654
Water Consumption (Water Production):	**6,442**	**6,124**	**6,134**	**6,596**	**5,955**	**5,821**

As indicated by **Table 4.3** above, the City's unaccounted for water ranged from 88 to 486 AF (1.4% to 8.6%). Unaccounted for water consists of routine flushing, unmetered use, and water losses. Although water losses at or near the 10% range (not untypical of many water agencies), have cost impacts on water agencies, they cannot be prevented entirely. Instead, effort is given to controlling the quantity of water losses (to a cost-effective extent) in order to reduce the cost impact of water losses on water operations.

4.6 WATER CONSERVATION ACT

SBx7-7 Background

Due to reductions of water in the San Joaquin Delta, the Legislature drafted the Water Conservation Act of 2009 (SBx7-7) to protect statewide water sources. The new legislation called for a 20% reduction in water use in California by the year 2020. The new legislation amended the Water Code to call for reporting changes in the 2010 Urban Water Management Plans and allows the Department of Water Resources (DWR) to enforce compliance to the new water use standards. The new reporting requirements allow provisions for agencies located within different Hydrologic Regions to satisfy the requirements of the new legislation.

Figure 4.5: California's 2020 Water Conservation Goals

In addition to an overall statewide 20% water use reduction, the objective of SBx7-7 is to reduce water use in within each hydrologic region in accordance with the agricultural and urban water needs of each region. Currently, the Department of Water Resources (DWR) recognizes 10 separate hydrologic regions in California as shown in **Figure 4.5**. Each hydrologic region has been established for planning purposes and corresponds to the State's major drainage areas. The City of Lynwood is located in the South Coast Hydrologic Region (HR), which includes all of Orange County, most of San Diego and Los Angeles Counties, parts of Riverside, San Bernardino, and Ventura counties, and a small amount of Kern and Santa Barbara Counties. The South Coast HR is shown below in **Figure 4.6.** Per capita water use, measured in gallons per capita per day (GPCD), in the South Coast HR varies between different water agencies, depending on the geographic and economic conditions of the agency's service area. Regions with more affluence, such as Beverly Hills, typically consume more water and therefore have higher per capita water use numbers. The South Coast Hydrologic Region has an overall baseline per capita water use of 180 GPCD and DWR has established a regional target of 149 GPCD for the region as a compliance target to satisfy SBx7-7 legislation.

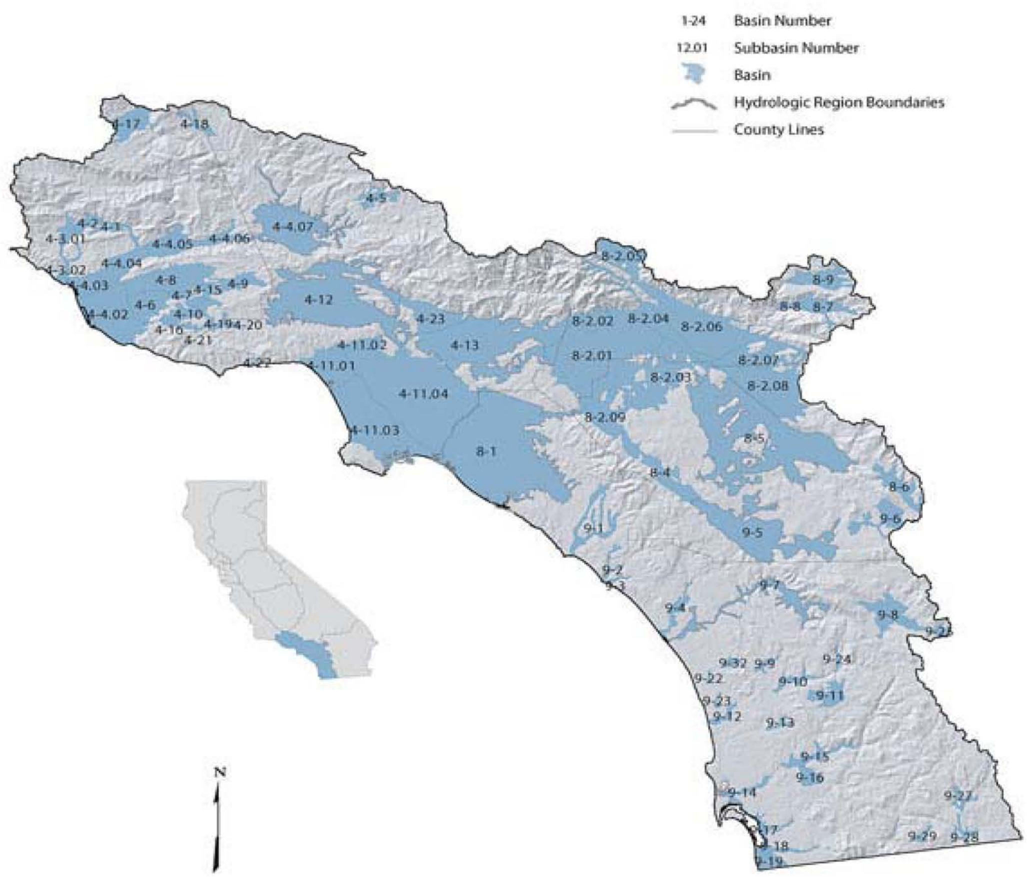

Figure 4.6: South Coast Hydrologic Region

SBx7-7 Methodologies

To satisfy the provisions of SBx7-7, the City must establish a per capita water use target for the year 2020 as well as an interim target. DWR has provided guidelines for determining these targets in its *Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use* and also in the 2010 UWMP Guidebook (Section D). The City's baseline water use is based on the City's historic water use and is determined by the procedure on the following page:

Step 1
Determine Service Area of City

↓

Step 2
Compile Potable Water Use Records in City's Service Area from 1996 to 2009 in Acre-Feet (AF) for either Fiscal or Calendar Year

↓

Step 3
Determine Per Capita Water Use for Each Year from the Following Formula:
(AF) From Step 2 X 325,851 Gallons / Population / 365 Days

↓

Step 4
Tabulate Per Capita Water Use and Determine the Baseline Per Capita Water Use (Highest 10 yr. average)

Figure 4.7: Procedure for Determining Baseline Per Capita Water Use

In the same fashion, the City is responsible for determining a five-year baseline water use in accordance with DWR's guidelines. The *Methodologies* guidebook makes provisions which allow a water supplier to meet the target requirements by achieving any one of a number of target requirements, provided that the water supplier's per capita water use is low enough relative to the region within which it supplies water. The basic options include a minimum reduction requirement of 5% (Water Code § 10620), a 5% Reduction from the Regional (South Coast HR) target (Water Code § 10608.20 (b) (3)), or a strict 20% reduction.

These options have been established in order

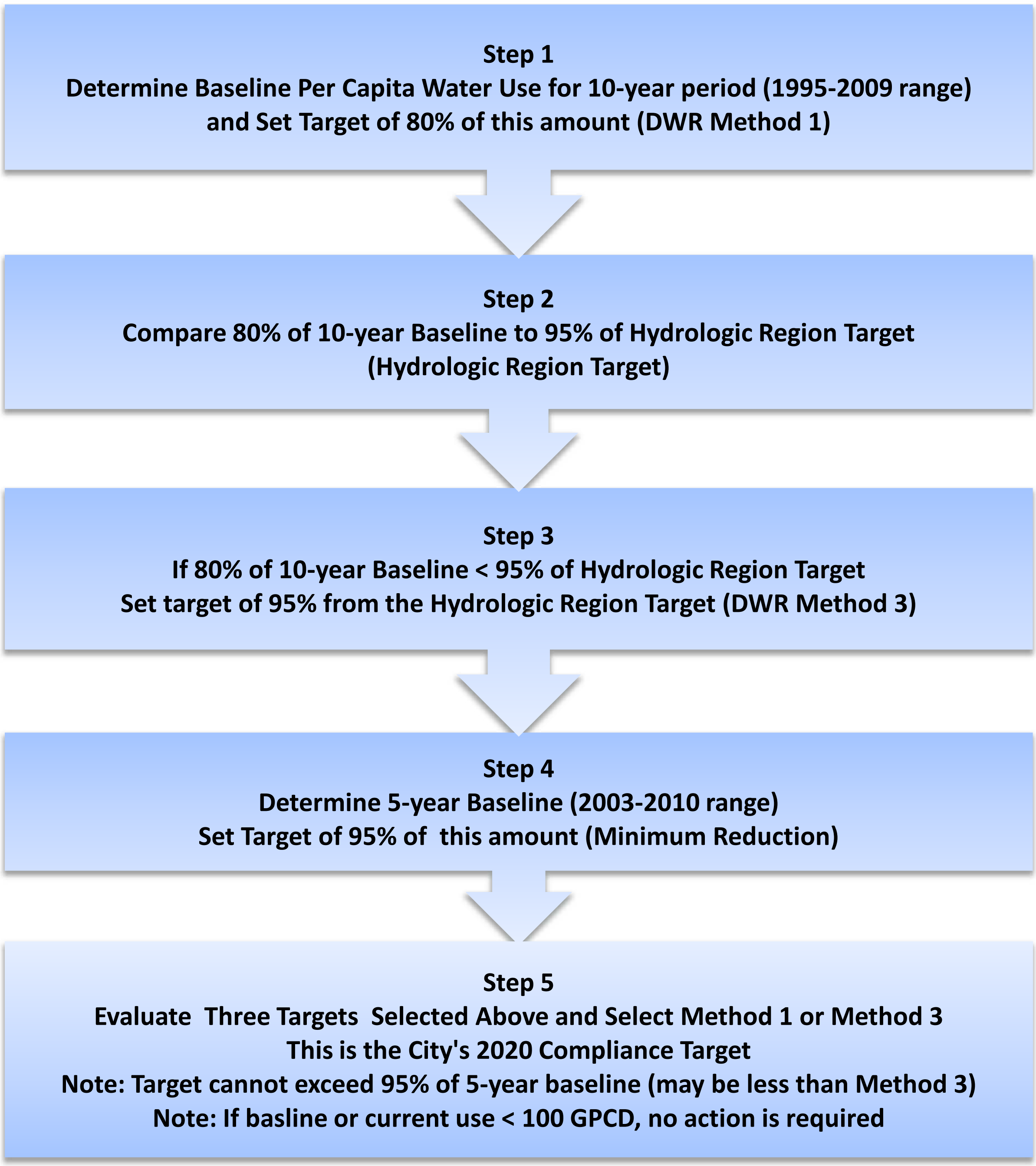

Figure 4.8: Procedure for Determining 2020 Water Use Target

to avoid placing any undue hardship on water agencies that have already been implementing water conservation measures for some time. The basic procedure for determining the applicable water reduction target is illustrated below by **Figure 4.8** above. If an agency's 10-year baseline is slightly higher than the Hydrologic Region's Target, that agency still must achieve a 5% reduction from its 5-yr. baseline. If an agency has a per capita water use of 100 GPCD or less, that agency will not have to adhere to any reduction targets as that agency is already water efficient.

SBx7-7 Targets

Due to the options available to water agencies, some neighbor agencies within the South Coast HR with moderate water usages, such as Los Angeles, (baseline of 150.6 GPCD) will not have to adhere to stringent reduction requirements. **Table 4.4** below shows an example of these options available to the City of Los Angeles:

Table 4.4
Reduction Example for Los Angeles
(Baseline = 150.6 GPCD)

143.07	120.5	141.5
	2020 Per Capita Target:	**141.5**
	Interim (2015) Target:	**146.1**

As indicated by the above table, the City of Los Angeles cannot select a minimum reduction requirement of 143.07 GPCD (5% from its baseline) as this amount is greater than 141.5 GPCD (5% reduction from the South Coast HR's regional target). However, since Los Angeles's 20% reduction target (120.5 GPCD) is less than the minimum reduction requirement that is required by DWR (141.5 GPCD), it is feasible to select 141.5 GPCD as its 2020 water use target.

Like the City of Los Angeles, water consumption characteristics in the City are low to moderate due to socio-economic conditions and a commitment to efficient water use. This indicates that the City will not have to adhere to the strict provisions of SBx7-7.

To determine the City of Lynwood's historic per capita water use and to set 10-yr. and 5-yr. baselines, water use data was gathered from 1996-2010 and the City's baseline was determined as shown below in **Table 4.5:**

Table 4.5
City of Lynwood
Historic GPCPD Water Use

2010	5,821	78
2009	5,955	81
2008	6,596	90
2007	6,134	84
2006	6,124	83
2005	6,442	88
2004	6,791	93
2003	6,708	92
2002	6,745	93
2001	6,713	94
2000	6,771	96
1999	6,704	97
1998	6,991	103
1997	7,265	109
1996	7,226	109
1995	7,107	107
10 yr. Baseline (1995-2004) (SB7: 10608.20)		**99**
5 yr. Baseline (2003-2007) (SB7: 10608.22)		**88**
South Coast HR:		**180**

As indicated by Table 4.5 above, the City's 10-year and 5-year baseline water use is under 100 GPCD. The City's current (2010) water use is also under 100 GPCD. Therefore, the City is already in compliance with the provisions of SBx7-7 and is not required to reduce consumption.

Per SBx7-7 legislation and DWR's *Methodologies* guidebook, the legal stipulations applicable to the City are shown below in **Table 4.5**:

Table 4.7
City of Lynwood
SBx7-7 2020 Water Use Targets

N/A	N/A	N/A
	2020 Per Capita Target:	**N/A**
	Interim (2015) Target:	**N/A**
	2009 Per Capita Water Use:	**81**
	Current (2010) Per Capita Water Use:	**78**

As indicated by the above table, the City is already in compliance with SBx7-7 and is neither required to establish nor adhere to 2020 compliance targets in order to be eligible for State grants and loans. In the City's 2015, the City will need to document that consumption rates are still under 100 GPCD.

SBx7-7 Impacts

By maintaining low consumption rates and achieving 100% local sustainability, the City can participate in Statewide efforts to conserve Sacramento-San Joaquin Bay-Delta Water and to protect the ecological habitat of the region. Although ecological motives are debatable, ensuring a reliable supply of water for human use is a top priority. Through conservation measures and the use of renewable, local groundwater supplies, the City can reduce demand for Bay-Delta water.

With increased public awareness of conservation requirements, it is likely that the public will begin to understand the importance of water conservation and will begin to use water even more efficiently.

Figure 4.9: Bay-Delta Water Must Be Preserved

4.7 PROJECTED WATER DEMAND

Future water use projections must consider significant factors on water demand, such as development and/or redevelopment, and climate patterns, among other less significant factors which affect water demand. Although redevelopment is expected to be an ongoing process, it is not expected to significantly impact water use since the City is already in a "built-out" condition. Rainfall, however, will continue to be a major influence on demand as drought conditions will increase demand at a time when these supplies are limited and may therefore result in water use restrictions in accordance with the City's Water Conservation Program (Ordinance 1618). As the City's population continues to grow and as water conservation measures continue to be implemented, the City should experience moderate increases in its water consumption due mostly to population increases. Per capita consumption rates, however, should be expected to remain under 100 gpcd (in accordance with water use trends in the City). **Table 4.6** shows projected potable demand and projected recycled demand for normal year conditions for 2015-2035:

Table 4.6
Projected Water Consumption

2015	6,359
2020	6,514
2025	6,674
2030	6,837
2035	7,005

Demand and Supply projections are compared for normal, single dry, and multiple dry water years and included as part of the City's reliability analysis in **Section 5: Reliability Planning**.

SECTION 5: RELIABILITY PLANNING

5.1 INTRODUCTION

Drought conditions continue to be a critical issue for Southern California's water supply. As the population of Southern California continues to increase and as environmental regulations restrict imported and local water supplies, it is important that each agency manage its water consumption in the face of drought. Even during times of seasonal drought, each agency ought to anticipate a surplus of supply. This can be accomplished through conservation and supply augmentation, and additionally through prohibitions under penalty of law during times of seasonal or catastrophic shortage in accordance with local ordinances.

This section discusses local and regional efforts to ensure a reliable supply of water and compares projected supply to projected demand. Demand and supply projections are provided in **Tables 5.4- 5.10**.

5.2 HISTORIC DROUGHTS

Climate data has been recorded in California since 1858. Since then, California has experienced several periods of severe drought: 1928-34, 1976-77 and 1987-91, and most recently in 2007-2009. California has also experienced several periods of less severe drought. The year 1977 is considered to be the driest year of record in the Four Rivers Basin by DWR. These rivers flow into the Delta and are the source of water for the SWP. Southern California sustained few adverse impacts from the 1976-77 drought, but the 1987-91 drought created considerably more concern.

As a result of previous droughts, the State legislature has enacted, among other things, the Urban Water Management Planning Act, which requires the preparation of this plan. Subsequent amendments to the Act have been made to ensure the plans are responsive to drought management. In 1991. several water agencies came together to form the California Urban Water Conservation Council (CUWCC) to manage the impacts of drought through the promotion of water conservation.

Figure 5.1: Lake Oroville: Drought Conditions

The recent drought of 2007-2009 has resulted in significant impacts on the State's water supplies. The Water Conservation Act of 2009 (SBx7-7) was signed into law by Gov. Schwarzenegger which requires mandatory water conservation up to 20% by 2020.

At the local level, water agencies have enacted their own ordinances to deal with the impacts of drought. In 1999, the City enacted an Water Conservation Plan Ordinance, which manages the City's water supply during droughts. Compliance ranges from voluntary to mandatory depending on the drought severity.

5.3 REGIONAL SUPPLY RELIABILITY

As a result of continued challenges to its water supplies, MWD understands the importance of reliable water supplies. MWD strives to meet the water needs of Southern California by developing new projects to increase the capacity of its supplies while encouraging its member agencies to develop local supply project to meet the needs of its customers. Also, MWD is committed to developing and maintaining high-capacity storage reservoirs, such as Diamond Valley Lake, to meet the needs of the region during times of drought and emergency.

Figure 5.2: MWD's 800,000 AF Diamond Valley Lake

MWD operates Diamond Valley Lake, an 800,000 AF reservoir, to avoid the repercussions of reduced supplies from the SWP and CRA. In addition, MWD operates several additional storage reservoirs in Riverside, San Bernardino, and San Diego Counties to store water obtained from the SWP and the CRA. Storage reservoirs like these are a key component of MWD's supply capability and are crucial to MWD's ability to meet projected demand without having to implement the Water Supply Allocation Plan (WSAP). This is crucial since the SWP and CRA have become more restricted which could render the City's supplies more vulnerable to shortage.

Colorado River Aqueduct Reliability

Water supply from the CRA continues to be a critical issue for Southern California as MWD competes with several agricultural water agencies in California for unused water rights to the Colorado River. Although California's allocation has been established at 4.4 million acre-feet (MAF) per yer, MWD's allotment stands at 550,000 AFY with additional amounts which increase MWD's allotment to 842,000 AFY if there is any unused water from the agricultural agencies.

MWD recognizes that due to competition from other states and other agencies within California has decreased the CRA's supply reliability. In 2003, the Quantification Settlement Agreement (QSA) was signed which facilitated the transfer of water from agricultural agencies to urban uses.

State Water Project Reliability

The reliability of the SWP impacts Metropolitan's member agencies' ability to plan for future growth and supply. DWR's Bulletin 132-03, December 2004, provides certain SWP reliability information, and in 2002, the DWR Bay-Delta Office prepared a report specifically addressing the reliability of the SWP.35 This report, The State Water Project Delivery Reliability Report, provides information on the reliability of the SWP to deliver water to its contractors assuming historical precipitation patterns.

On an annual basis, each of the 29 SWP contractors including Metropolitan request an amount of SWP water based on their anticipated yearly demand. In most cases, Metropolitan's requested supply is equivalent to its full Table A Amount. After receiving the requests, DWR assesses the amount of water supply available based on precipitation, snow pack on northern California watersheds, volume of water in storage, projected carry over storage, and Sacramento-San Joaquin Bay Delta regulatory requirements. For example, the SWP annual delivery of water to contractors has ranged from 552,600 AFY in 1991 to 3.5 MAF in 2000. Due to the uncertainty in water supply, contractors are not typically guaranteed their full Table A Amount, but instead a percentage of that amount based on the available supply.

Each December, DWR provides the contractors with their first estimate of allocation for the following year. As conditions develop throughout the year, DWR revises the allocations.

Figure 5.3: State Water Project (SWP)

Due to the variability in supply for any given year, it is important to understand the reliability of the SWP to supply a specific amount of water each year to the contractors.

5.4 CURRENT RESERVOIR LEVELS

Statewide, storage reservoir levels rise and fall due to seasonal climate changes which induce increase in demand. During periods of drought, reservoir levels can drop significantly and can limit the amount of supplies available. As a result, both DWR and MWD monitor their reservoir levels regularly. In 2009, conditions of several key reservoirs indicated drought conditions. Currently, reservoir levels are high as indicated by **Figures 5.4** and **5.5**:

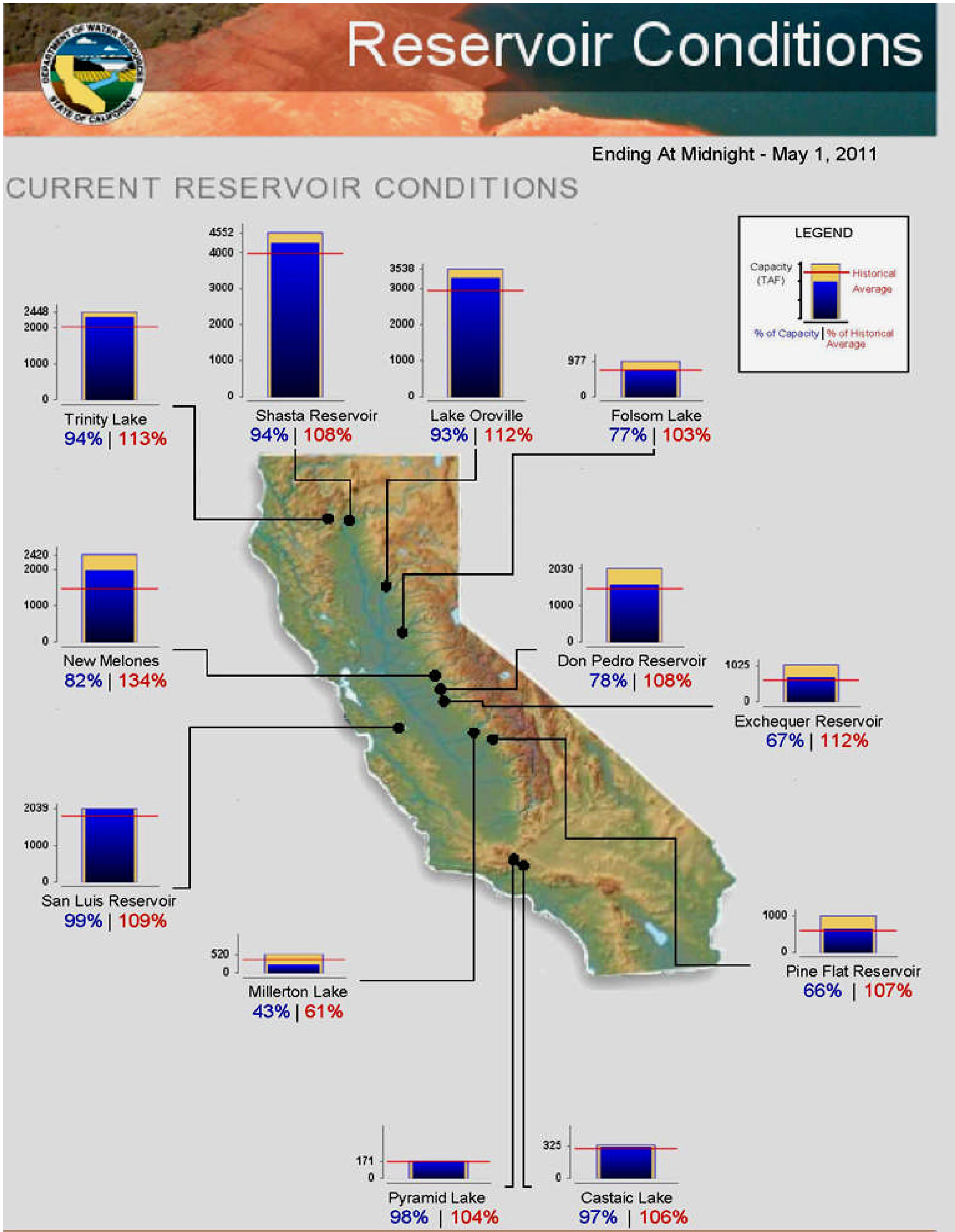

Figure 5.4: California State Reservoir Levels

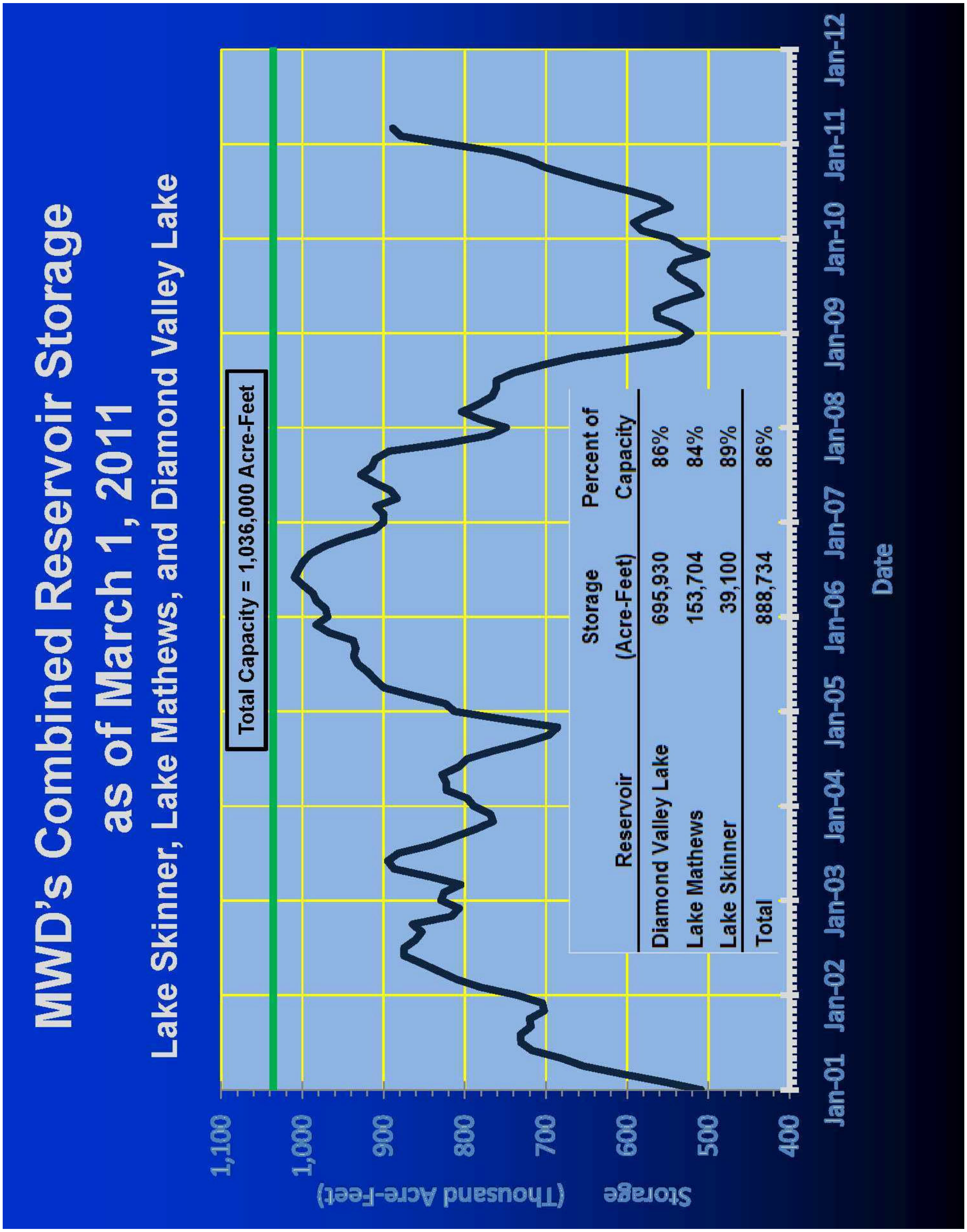

Figure 5.5: MWD Reservoir Levels

5.4 SUPPLY VS. DEMAND

As the City obtains its water sources from local groundwater, imported water, and recycled water, the City's water supply reliability is based on the capacity and vulnerability of its infrastructure in addition to the seasonal demand changes brought about by periods of drought. MWD's reliability of supply has direct impact on the City. Population growth will also continue to be a factor in future reliability projections. Since the City is pursuing 100% local groundwater sustainability, having continued access to imported water increases the City's supply reliability.

Regional Supply Reliability

Southern California is expected to experience an increase in regional demands in the years 2015 through 2035 as a result of population growth. Although increases in demand are expected, they are limited due to the requirements of SBx7-7 which provides a cap on water consumption rates (i.e. per capita water use). It can be reasonably expected that the majority of agencies will be at or near their compliance targets by 2020 and thereafter as conservation measures are more effectively enforced.

Tables 2.9-2.11 of MWD's 2010 RUWMP (see Appendix G) shows supply reliability projections for average and single dry years through the year 2035. The data in these tables is important to effectively project and analyze supply and demand over the next 25 years for many regional agencies. It is noteworthy that Projected Supplies During a Single Dry Year and Multiple Dry Years indicates MWD's projected supply will exceed its projected single dry year and multiple dry year demands in all years. Likewise, for average years, MWD supply exceeds projected demands for all years. The data contained in these tables has an indirect effect on the City's imported supply capacity and thus this data will also be used to develop the City's projected supply and demand over the next 25 years. **Tables 5.2** and **5.3** show MWD's supply reliability

City Supply Reliability

To project future supply and demand comparisons, it will be assumed that demand will increase annually based on population growth and a constant of 84 GPCD in accordance with recent water use trends. **Table 5.1** contains the projected populations that will be used to project demand:

Table 5.1
City of Lynwood
Service Area Population Projections

Year	Population
2015	67,580
2020	69,234
2025	70,929
2030	72,665
2035	74,444
Demand = Population x GPCD Rate	

During times of drought, demand will increase at a time when supply will decrease. To project demands during drought periods, the following factors measured from actual demand data from 2002-2004 will be assumed:

- **Single Dry Year Demand Increase**: 103% of Normal
- **Multiple Dry Year Demand Increases (Years 1, 2, & 3)**: 102%, 101%, 103% of Normal

Table 5.2
MWD Regional Imported Water Supply Reliability Projections
Average and Single Dry Years

Row	Region Wide Projections	2015	2020	2025	2030	2035
Supply Information						
A	Projected Supply During an Average Year[1]	3,485,000	3,810,000	4,089,000	3,947,000	3,814,000
B	Projected Supply During a Single Dry Year[1]	2,.457,000	2,782,000	2,977,000	2,823,000	2,690,000
C = B/A	Projected Supply During a Single Dry Year as a % of Average Supply	**70.5%**	**73.0%**	**72.8%**	**71.5%**	**70.5%**
Demand Information						
D	Projected Demand During an Average Year	2,006,000	1,933,000	1,985,000	2,049,000	2,106,000
E	Projected Demand During a Single Dry Year	2,171,000	2,162,000	2,201,000	2,254,000	2,319,000
F = E/D	Projected Demand During a Single Dry Year as a % of Average Demand	**108.2**	**111.8**	**110.9**	**110.0**	**110.1**
Surplus Information						
G = A-D	Projected Surplus During an Average Year	1,479,000	1,877,000	2,104,000	1,898,000	1,708,000
H = B-E	Projected Surplus During a Single Dry Year	286,000	620,000	776,000	569,000	371,000
Additional Supply Information						
I = A/D	Projected Supply During an Average Year as a % of Demand During an Average Year	**173.7**	**197.1**	**206.0**	**192.6**	**181.1**
J = A/E	Projected Supply During an Average Year as a % of Demand During Single Dry Year	**160.5**	**176.2**	**185.8**	**175.1**	**164.5**
K = B/E	Projected Supply During a Single Dry Year as a % of Single Dry Year Demand (including surplus)	**113.2**	**128.7**	**135.3**	**125.2**	**116.0**

Table 5.3
MWD Regional Imported Water Supply Reliability Projections
Average and Multiple Dry Years

Row	Region Wide Projections	2015	2020	2025	2030	2035
Supply Information						
A	Projected Supply During an Average Year[1]	3,485,000	3,810,000	4,089,000	3,947,000	3,814,000
B	Projected Supply During Multiple Dry Year Period*	2,248,000	2,417,000	2,520,000	2,459,000	2,415,000
C = B/A	Projected Supply During Multiple Dry Year as a % of Average Supply	**64.5**	**63.4**	**61.6**	**62.3**	**63.3**
Demand Information						
D	Projected Demand During an Average Year	2,006,000	1,933,000	1,985,000	2,049,000	2,106,000
E	Projected Demand During Multiple Dry Year Period[2]	2,236,000	2,188,000	2,283,000	2,339,000	2,399,000
F = E/D	Projected Demand During Multiple Dry Year Period as a % of Average Demand	**111.5**	**113.2**	**115.0**	**114.2**	**113.9**
Surplus Information						
G = A-D	Projected Surplus During an Average Year	1,479,000	1,877,000	2,104,000	1,898,000	1,708,000
H = B-E	Projected Surplus During Multiple Dry Year Period	12,000	229,000	237,000	120,000	16,000
Additional Supply Information						
I = A/D	Projected Supply During an Average Year as a % of Demand During an Average Year	**173.7**	**197.1**	**206.0**	**192.6**	**181.1**
J = A/E	Projected Supply During an Average Year as a % of Demand During Multiple Dry Year	**155.9**	**174.1**	**179.1**	**168.7**	**159.0**
K = B/E	Projected Supply During a Multiple Dry Year as a % of Multiple Dry Year Demand (including surplus)	**100.5**	**110.5**	**110.4**	**105.1**	**100.7**

Table 5.4
City of Lynwood Water Supply Availability & Demand Projections
Normal Water Year

Water Sources	2015	2020	2025	2030	2035
Available Supply					
Imported Water	3,000	3,741	4,270	4,339	4,413
Groundwater	5,337	5,337	5,337	5,337	5,337
Total Supply	**8,337**	**9,078**	**9,607**	**9,676**	**9,750**
% of Normal Year	100%	100%	100%	100%	100%
Demand					
Imported Water	1,727	1,898	2,073	2,253	2,437
Groundwater	5,337	5,337	5,337	5,337	5,337
Total Demand	**7,064**	**7,235**	**7,410**	**7,590**	**7,774**
% of 2005-2009 Avg. Demand (6,151)	114.84%	117.62%	120.47%	123.39%	126.39%
Supply/Demand Comparison					
Supply/ Demand Difference	1,273	1,843	2,197	2,086	1,976
Difference as % of Supply	15.27%	20.30%	22.87%	21.56%	20.27%
Difference as % of Demand	18.02%	25.47%	29.65%	27.49%	25.42%

Table is intended only to show City will be able to meet demand for all years per the following*:

1. Total Demand based on 84 GPCD (2005-2010 average) multiplied by population projections

2. Imported Water Supply represents supply available to City, if needed, based on Imported demand multiplied by Table 5.2 Row I

3. Groundwater Supply/Demand based on City's adjudicated right of 5,337 AFY

4. Recycled Water accounts for less than 0.1% of the City's overall supply/water use and is not considered to be a significant factor of the City's water system

*This Table not intended to be a projection of City's actual groundwater production. City intends to lease additional groundwater rights with other agencies in future years.

Table 5.5
City of Lynwood Water Supply Availability & Demand Projections
Single Dry Year*

Water Sources	2015	2020	2025	2030	2035
Available Supply					
Imported Water	2,195	2,722	3,106	3,106	3,097
Groundwater	5,337	5,337	5,337	5,337	5,337
Total Supply	**7,532**	**8,059**	**8,443**	**8,443**	**8,434**
Normal Year Supply	8,337	9,078	9,607	9,676	9,750
% of Normal Year	90%	89%	88%	87%	87%
Demand					
Imported Water	1,939	2,115	2,295	2,481	2,670
Groundwater	5,337	5,337	5,337	5,337	5,337
Total Demand	**7,276**	**7,452**	**7,632**	**7,818**	**8,007**
Normal Year Demand	7,064	7,235	7,410	7,590	7,774
% of Normal Year	103%	103%	103%	103%	103%
Supply/Demand Comparison					
Supply/Demand Difference	256	607	810	625	427
Difference as % of Supply	3.40%	7.53%	9.60%	7.40%	5.07%
Difference as % of Demand	3.52%	8.15%	10.62%	8.00%	5.34%

Table is intended only to show City will be able to meet demand for all years per the following*:

1. Total Demand based on 84 GPCD (2005-2010 average) multiplied by population projections

2. Single Dry Year Imported Water Supply represents supply available to City, if needed, based on Table 5.2 Row K

3. Groundwater Supply/Demand based on City's adjudicated right of 5,337 AFY

4. Recycled Water accounts for less than 0.1% of the City's overall supply/water use and is not considered to be a significant factor of the City's water system

*This Table not intended to be a projection of City's actual groundwater production. City intends to lease additional groundwater rights with other agencies in future years.

Table 5.6
City of Lynwood Water Supply Availability & Demand Projections
Multiple Dry Years (2011-2015) *

Water Sources	2011	2012	2013	2014	2015
Available Supply					
	Normal Years		**Multiple Dry Years**		
Imported Water	1,550	1,608	1,105	1,068	1,245
Groundwater	6,037	6,037	6,037	6,037	6,037
Total Supply	**7,587**	**7,645**	**7,142**	**7,105**	**7,282**
Normal Year Supply	7,587	7,645	7,703	7,762	7,820
% of Normal Year	100%	100%	93%	92%	93%
Demand					
	Normal Years		**Multiple Dry Years**		
Imported Water	893	926	1,099	1,063	1,238
Groundwater	6,037	6,037	6,037	6,037	6,037
Total Demand	**6,930**	**6,963**	**7,136**	**7,100**	**7,275**
Normal Year Demand	6,930	6,963	6,996	7,030	7,064
% of Normal Year	100%	100%	102%	101%	103%
Supply/Demand Comparison					
	Normal Years		**Multiple Dry Years**		
Supply/Demand Difference	658	682	5	5	6
Difference as % of Supply	8.67%	8.93%	0.08%	0.07%	0.09%
Difference as % of Demand	9.49%	9.80%	0.08%	0.07%	0.09%

Table is intended only to show City will be able to meet demand for all years per the following*:

1. Total Demand based on 84 GPCD (2005-2010 average) multiplied by population projections

2. Multiple Dry Year Imported Water Supply represents supply available to City, if needed, based on Table 5.3 Row K

3. Groundwater Supply/Demand based on City's adjudicated right of 5,337 AFY

4. Recycled Water accounts for less than 0.1% of the City's overall supply/water use and is not considered to be a significant factor of the City's water system

*This Table not intended to be a projection of City's actual groundwater production. City intends to lease additional groundwater rights with other agencies in future years.

Table 5.7
City of Lynwood Water Supply Availability & Demand Projections
Multiple Dry Years (2016-2020) *

Water Sources	2016	2017	2018	2019	2020
Available Supply					
	Normal Years		**Multiple Dry Years**		
Imported Water	3,470	3,537	2,179	2,138	2,337
Groundwater	5,337	5,337	5,337	5,337	5,337
Total Supply	**8,807**	**8,874**	**7,516**	**7,475**	**7,674**
Normal Year Supply	8,807	8,874	8,942	9,009	9,077
% of Normal Year	100%	100%	84%	83%	85%
Demand					
	Normal Years		**Multiple Dry Years**		
Imported Water	1,760	1,795	1,972	1,935	2,115
Groundwater	5,337	5,337	5,337	5,337	5,337
Total Demand	**7,097**	**7,132**	**7,309**	**7,272**	**7,452**
Normal Year Demand	7,097	7,132	7,166	7,200	7,235
% of Normal Year	100%	100%	102%	101%	103%
Supply/Demand Comparison					
	Normal Years		**Multiple Dry Years**		
Supply/Demand Difference	1,709	1,743	207	203	222
Difference as % of Supply	19.41%	19.64%	2.76%	2.72%	2.89%
Difference as % of Demand	24.09%	24.43%	2.83%	2.79%	2.98%

Table is intended only to show City will be able to meet demand for all years per the following*:

1. Total Demand based on 84 GPCD (2005-2010 average) multiplied by population projections

2. Multiple Dry Year Imported Water Supply represents supply available to City, if needed, based on Table 5.3 Row K

3. Groundwater Supply/Demand based on City's adjudicated right of 5,337 AFY

4. Recycled Water accounts for less than 0.1% of the City's overall supply/water use and is not considered to be a significant factor of the City's water system

*This Table not intended to be a projection of City's actual groundwater production. City intends to lease additional groundwater rights with other agencies in future years.

Table 5.8
City of Lynwood Water Supply Availability & Demand Projections
Multiple Dry Years (2021-2025) *

Water Sources	2021	2022	2023	2024	2025
Available Supply					
	Normal Years		**Multiple Dry Years**		
Imported Water	3,981	4,053	2,373	2,331	2,534
Groundwater	5,337	5,337	5,337	5,337	5,337
Total Supply	**9,318**	**9,390**	**7,710**	**7,668**	**7,871**
Normal Year Supply	9,318	9,390	9,462	9,535	9,608
% of Normal Year	100%	100%	81%	80%	82%
Demand					
	Normal Years		**Multiple Dry Years**		
Imported Water	1,932	1,967	2,149	2,111	2,295
Groundwater	5,337	5,337	5,337	5,337	5,337
Total Demand	**7,269**	**7,304**	**7,486**	**7,448**	**7,632**
Normal Year Demand	7,269	7,304	7,339	7,375	7,410
% of Normal Year	100%	100%	102%	101%	103%
Supply/Demand Comparison					
	Normal Years		**Multiple Dry Years**		
Supply/Demand Difference	2,048	2,085	224	220	239
Difference as % of Supply	21.98%	22.21%	2.90%	2.86%	3.03%
Difference as % of Demand	28.18%	28.55%	2.99%	2.95%	3.13%

Table is intended only to show City will be able to meet demand for all years per the following*:

1. Total Demand based on 84 GPCD (2005-2010 average) multiplied by population projections

2. Multiple Dry Year Imported Water Supply represents supply available to City, if needed, based on Table 5.3 Row K

3. Groundwater Supply/Demand based on City's adjudicated right of 5,337 AFY

4. Recycled Water accounts for less than 0.1% of the City's overall supply/water use and is not considered to be a significant factor of the City's water system

*This Table not intended to be a projection of City's actual groundwater production. City intends to lease additional groundwater rights with other agencies in future years.

Table 5.9
City of Lynwood Water Supply Availability & Demand Projections
Multiple Dry Years (2026-2030)*

Water Sources	2026	2027	2028	2029	2030
Available Supply					
	Normal Years		**Multiple Dry Years**		
Imported Water	4,061	4,130	2,449	2,409	2,607
Groundwater	5,337	5,337	5,337	5,337	5,337
Total Supply	**9,398**	**9,467**	**7,786**	**7,746**	**7,944**
Normal Year Supply	9,398	9,467	9,536	9,606	9,676
% of Normal Year	100%	100%	82%	81%	82%
Demand					
	Normal Years		**Multiple Dry Years**		
Imported Water	2,109	2,144	2,331	2,292	2,480
Groundwater	5,337	5,337	5,337	5,337	5,337
Total Demand	**7,446**	**7,481**	**7,668**	**7,629**	**7,817**
Normal Year Demand	7,446	7,481	7,517	7,553	7,590
% of Normal Year	100%	100%	102%	101%	103%
Supply/Demand Comparison					
	Normal Years		**Multiple Dry Years**		
Supply/Demand Difference	1,953	1,986	119	117	126
Difference as % of Supply	20.78%	20.97%	1.53%	1.51%	1.59%
Difference as % of Demand	26.22%	26.54%	1.55%	1.53%	1.62%

Table is intended only to show City will be able to meet demand for all years per the following*:

1. Total Demand based on 84 GPCD (2005-2010 average) multiplied by population projections

2. Multiple Dry Year Imported Water Supply represents supply available to City, if needed, based on Table 5.3 Row K

3. Groundwater Supply/Demand based on City's adjudicated right of 5,337 AFY

4. Recycled Water accounts for less than 0.1% of the City's overall supply/water use and is not considered to be a significant factor of the City's water system

*This Table not intended to be a projection of City's actual groundwater production. City intends to lease additional groundwater rights with other agencies in future years.

Table 5.10
City of Lynwood Water Supply Availability & Demand Projections
Multiple Dry Years (2031-2035) *

Water Sources	2031	2032	2033	2034	2035
Available Supply					
	Normal Years		**Multiple Dry Years**		
Imported Water	4,145	4,212	2,534	2,494	2,688
Groundwater	5,337	5,337	5,337	5,337	5,337
Total Supply	**9,482**	**9,549**	**7,871**	**7,831**	**8,025**
Normal Year Supply	9,482	9,549	9,615	9,682	9,750
% of Normal Year	100%	100%	82%	81%	82%
Demand					
	Normal Years		**Multiple Dry Years**		
Imported Water	2,289	2,326	2,516	2,477	2,670
Groundwater	5,337	5,337	5,337	5,337	5,337
Total Demand	**7,626**	**7,663**	**7,853**	**7,814**	**8,007**
Normal Year Demand	7,626	7,663	7,699	7,736	7,774
% of Normal Year	100%	100%	102%	101%	103%
Supply/Demand Comparison					
	Normal Years		**Multiple Dry Years**		
Supply/Demand Difference	1,856	1,886	18	17	19
Difference as % of Supply	19.58%	19.75%	0.22%	0.22%	0.23%
Difference as % of Demand	24.34%	24.61%	0.22%	0.22%	0.23%

Table is intended only to show City will be able to meet demand for all years per the following*:

1. Total Demand based on 84 GPCD (2005-2010 average) multiplied by population projections

2. Multiple Dry Year Imported Water Supply represents supply available to City, if needed, based on Table 5.3 Row K

3. Groundwater Supply/Demand based on City's adjudicated right of 5,337 AFY

4. Recycled Water accounts for less than 0.1% of the City's overall supply/water use and is not considered to be a significant factor of the City's water system

*This Table not intended to be a projection of City's actual groundwater production. City intends to lease additional groundwater rights with other agencies in future years.

Based on the data contained in **Tables 5.4-5.10**, the City can expect to meet future demands through 2035 for all climatologic classifications. Projected groundwater supply capacities are not expected to be significantly affected during times of low rainfall and over short term dry periods of up to three years. However, during prolonged periods of drought, the City's imported water supply capacities may potentially be reduced significantly due to reductions in MWD's storage reservoirs resulting from increases in regional demand.

5.5 VULNERABILITY OF SUPPLY

Due to the semi-arid nature of the City's climate and as a result of past drought conditions, the City is vulnerable to water shortages due to its climatic environment and seasonally hot summer months. While the data shown in **Tables 5.5** through **5.10** identifies water availability during single and multiple dry year scenarios, response to a future drought would follow the water use efficiency mandates of the City's Water Conservation Plan along with implementation of the appropriate stage of regional plans such as the WSDM Plan (MWD). These programs are discussed in Section 7.

5.6 WATER SUPPLY OPPORTUNITIES

City Projects

The City continually reviews practices that will provide its customers with adequate and reliable supplies. Once the City completes its Well No. 22, the City intends to construct another well (Well No. 23) at a site to be determined. The City will also identify specific means of achieving their sustainability goals from local sources which will likely include alternative water supply projects or the sharing of groundwater rights to meet demand.

Regional Projects (MWD)

MWD is implementing water supply alternative strategies for the region and on behalf of member agencies to ensure available water in the future. Some of these strategies include:

- Conservation
- Water recycling & groundwater recovery
- Storage/groundwater management programs within the region
- Storage programs related to the SWP and the Colorado River
- Other water supply management programs outside of the region

MWD has made investments in conservation and supply augmentation as part of its long-term water management strategy. MWD's approach to a long-term water management strategy was to develop an Integrated Resource Plan (IRP) to include many supply sources. A brief description of the various programs implemented by MWD to improve reliability is included **Table 5.11** below:

Table 5.11
MWD IRP Resource Status

Target	Programs and Status
Conservation	**Current:** Conservation Credits Program -Residential; Non-residential Landscape Water Use Efficiency;, Commercial, Industrial, and Institutional Programs -Grant Programs In Development or Identified -Innovative Conservation Program
Recycling **Groundwater Recovery** **Desalination**	**Current:** LRP Program In Development or Identified -Additional LRP Requests for Proposals -Seawater Desalination Program -Innovative Supply Program
In Region Dry-Year Surface Water Storage	**Current:** Diamond Valley Reservoir, Lake Mathews, Lake Skinner -SWP Terminal Reservoirs (Monterey Agreement)
In Region Groundwater Conjunctive Use	**Current:** North Las Posas (Eastern Ventura County) -Cyclic Storage -Replenishment Deliveries -Proposition 13 Programs (short listed) **In Development or Identified:** Raymond Basin GSP -Proposition 13 Programs (wait listed) -Expanding existing programs -New groundwater storage programs
SWP	**Current:** SWP Deliveries -San Luis Carryover Storage (Monterey Agreement) -SWP Call Back with DWCV Table A transfer **In Development or Identified:** Sacramento Valley Water Management Agreement -CALFED Delta Improvement Program (Phase 8 Agreement)
Colorado River Aqueduct	**Current:** Base Apportionment -IID/MWD Conservation Program -Coachella and All American Canal Lining Programs -PVID Land Management Program **In Development or Identified:** Lower Coachella Storage Program -Hayfield Storage Program -Chuckwalla Storage Program -Storage in Lake Mead
CVP/SWP Storage & Transfers **Spot Transfers & Options**	**Current:** Arvin Edison Program -Semitropic Program -San Bernardino Valley Municipal Water District Program -Kern Delta Program **In Development or Identified:** Mojave Storage Program -Other Central Valley Transfer Programs

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SECTION 6: CONSERVATION MEASURES

6.1 INTRODUCTION

As a result of diminished existing supplies and difficulty in developing new supplies, water conservation is important to Southern California's sustainability. Therefore, the City acknowledges that efficient water use is the foundation of its current and future water planning and operations policies.

To conserve California's water resources, several public water agencies, and other interested parties of the California Urban Water Conservation Council (CUWCC) drafted the Memorandum of Understanding Regarding Urban Water Conservation (MOU) in 1991. The MOU establishes 14 Best Management Practices (BMPs) which are defined roughly as policies, programs, practices, rules, regulations, or ordinances that result in the more efficient use or conservation of water.

The 14 BMPs coincide with the 14 Demand Management Measures (DMMs) defined in the UWMP Act. The BMPs are intended to reduce long-term urban demands from what they would have been without their implementation and are in addition to programs which may be instituted during occasional water supply shortages.

6.2 DMM IMPLEMENTATION

The City encourages its customers to practice water-wise conservation methods and is committed to maximizing its local water resources. Although the City is not a member of the CUWCC, the City works in conjunction with CBMWD which has been a member since 1992. The City recognizes that these measures are important for the reliability of its water sources and has made continued efforts to comply with all DMMs required by the Act. These efforts have enabled the City to maintain total water consumption over the past 15 years in spite of increases in population throughout its service area.

Figure 6.1: Water Waste is Prohibited by City Code

In accordance with the UWMP Act, the 14 DMMs are abbreviated as follows:

1. Water Survey Programs
2. Residential Plumbing Retrofit
3. Water Audits/Leak Detection
4. Metering with Commodity Rates
5. Large Landscape Conservation
6. H-E Washing Machine Rebates
7. Public Information Programs
8. School Education Programs
9. Commercial/Industrial Conservation
10. Wholesale Agency Programs
11. Conservation Pricing
12. Water Conservation Coordinator
13. Water Waste Prohibition
14. Ultra-Low-Flush Toilet Replacement

The City's commitment to these measures is described in **Table 6-1** as follows:

Table 6.1
Summary of Demand Management Measures
(CUWCC Best Management Practices)

DMM No. 1: Water Survey Programs for Single and Multi-Family Residential Customers		The City's water surveys are aimed at developing residential customer water use efficiency for both landscape and indoor water use.
DMM No. 2: Residential Plumbing Retrofit		The City's residential plumbing retrofit programs involve providing customers with water efficient plumbing devices such as low-flow showerheads.
DMM No. 3: System Water Audits, Leak Detection, and Repair		Conducted by water operations/maintenance staff, these programs aim at reducing water losses through a water agency's mains.
DMM No. 4: Metering With Commodity Rates		Providing water meters and charging for service is a key component to the City's water conservation policies.
DMM No. 5: Large Landscape Conservation Programs and Incentives		Smart timers and drip irrigation systems are among the devices used in the City to achieve landscape water use efficiency.
DMM No. 6: High-Efficiency Washing Machine Rebate Programs		Through this program, the City's customers can receive a rebate towards the purchase of a high-efficiency washing machine.
DMM No. 7: Public Information Programs	CALIFORNIA WATER AWARENESS CAMPAIGN	These programs provides the public information to promote water conservation and water conservation-related benefits.

Table 6.1 (cont.)
Summary of Demand Management Measures
(CUWCC Best Management Practices)

DMM No. 8:
School Education Programs

The City partners with MWD to provide children an opportunity learn the importance of water conservation

DMM No. 9:
Conservation Programs for Comm./Indust./Institutional Accounts

Through this program, the City assists water using establishments in upgrading their plumbing devices.

DMM No. 10:
Wholesale Agency Programs

Through this program, MWD provides the City with resources to advance water conservation efforts and effectiveness

DMM No. 11:
Conservation Pricing

Through this program, the City provides economic incentives to customers to use water efficiently.

DMM No. 12:
Water Conservation Coordinator

Through this program, the City establishes a conservation coordinator who oversees the City's water conservation measures.

DMM No. 13:
Water Waste Prohibition

The City has ordinances in place which prohibit the waste of water and penalizes wasteful water use.

DMM No. 14:
Residential Ultra Low Flush Toilet Replacement Program

Through this program, the City assists customers in replacing their existing toilets with water efficient models.

SECTION 7: CONTINGENCY PLANNING

7.1 INTRODUCTION

Water supplies may be interrupted or reduced significantly in a number of ways including droughts, earthquakes, and power outages which hinder a water agencies ability to effectively delivery water. Drought impacts increase with the length of a drought, as carry-over supplies in reservoirs are depleted and water levels in groundwater basins decline. The ability to manage water supplies in times of drought or other emergencies is an important part of water resources management for a community. Although the City's water supply is produced locally, the City's response to an emergency will be a coordinated effort of its own staff in conjunction with other local and regional water agencies

During water shortage emergencies, the City will implement its water conservation plan, which imposes up to a 40 percent mandatory reduction in water use (to maintain a minimum 60 percent supply). The City will also work in conjunction with MWD to implement water shortage plans and supply allocations on a regional level.

7.2 CITY RESPONSE PLAN

In 2009, the Lynwood City Council adopted a Water Conservation Ordinance (Ordinance 1618), which establishes three stages of water shortage severity based on predicted or actual water supply reductions. The City implements certain initiatives to optimize water supply during water shortages or drought conditions. In the event of a water shortage, the City Council will implement the appropriate water conservation stage by resolution.

The objectives of the response plan are to:

1. Prioritize essential uses of available water
2. Avoid irretrievable loss of natural resources
3. Manage current water supplies to meet ongoing and future needs
4. Maximize local municipal water supplies
5. Eliminate water waste city-wide
6. Create equitable demand reduction targets; and
7. Minimize adverse financial effects

The following priorities for use of available water are listed in order from highest to lowest priority:

1. Health and Safety including: consumption and sanitation for all water users; fire suppression; hospitals, emergency care, nursing and other convalescent homes and other similar health care facilities; shelters and water treatment
2. Institutions, including government facilities and schools such as public safety facilities, essential government operations, public pools and recreation areas
3. All non-essential commercial and residential water uses
4. Landscaped areas of significance, including parks, cemeteries, open spaces, government-facility landscaped areas and green belt areas
5. New water demand

Stages of Action

The City has a legal responsibility to provide for the health and safety water needs of the community. The City will manage water supplies to minimize the social and economic impacts of water shortages. The Water Conservation Ordinance is designed to provide a minimum of 60 percent of normal supply during a severe or extended water shortage. The City's two potable water sources are local groundwater and Metropolitan deliveries through Central Basin MWD. Rationing stages may be triggered by a shortage in one source or a combination of sources, and shortages may trigger a stage at any time. **Table 7.1** shows the stages of action the City will take in the case of an emergency water shortage, as declared by Ordinance No. 1618.

Table 7.1
Water Shortage Reduction Targets

Level 1	Voluntary	10%
Level 2	Mandatory	15%
Level 3	Mandatory	40%

The City Council may declare by resolution that a Level 1, 2, or 3 Water Supply Shortage exists and that the actions outlined in the Conservation Ordinance are necessary. The type of event which may prompt the City Council to declare a Level 1, 2, or 3 Water Supply Shortage may include, among other factors, drought, state or local emergency, a natural disaster that critically impacts the water treatment or water distribution system, a localized event that critically impacts the water supply, water quality, water treatment or water distribution system, the City's wholesale water agency requests extraordinary water conservation efforts in order to avoid mandatory water allocations in accordance with the Water Supply Allocation Plan (WSAP).

Metropolitan WSDM Plan

In addition to the provisions of the City's Conservation Ordinance, the City will also work in conjunction with MWD to implement conservation measures within the framework of MWD's Water Surplus and Drought Management (WSDM) Plan. The WSDM Plan was developed in 1999 by MWD with assistance and input with its member agencies. The plan addresses both surplus and shortage contingencies.

The WSDM Plan guiding principle is to minimize adverse impacts of water shortage and ensure regional reliability. The plan guides the operations of water resources (local resources, Colorado River, SWP, and regional storage) to ensure regional reliability. It identifies the expected sequence of resource management actions MWD will take during surpluses and shortages of water to minimize the probability of severe shortages that require curtailment of full-service demands. Mandatory allocations are avoided to the extent practicable, however, in the event of an extreme shortage an allocation plan will be implemented in accordance with the principles of the WSAP.

Figure 7.1: Severe Droughts Highlight the Importance of Conservation Ordinances

7.3 THREE-YEAR MINIMUM SUPPLY

Due to the surface inflows from natural percolation and the local rivers and streams, subsurface inflows from adjacent basins, and artificial recharge activities, (including the Rio Hondo and San Gabriel spreading grounds), the Central Basin has moderate dry season groundwater supply protection. Additionally, due to the leasing of groundwater rights form other agencies, the City may exceed its annual adjudicated right of 5,337 AFY. This has significant water supply reliability benefits for the City during dry seasons that may occur during the course of the City's lease. Furthermore, since the City will continue to have access to imported water, the City may import water to meet demand, if necessary. Imported water supplies, like groundwater, are subject to demand increases and reduced supplies during dry years. However, MWD modeling in its 2010 Regional UWMP, as referenced in **Tables 5.2** through **5.10** in **Section 5**, results in 100 percent reliability for full-service demands through the year 2035 for all climatic conditions. Based on the conditions described above, the City anticipates the ability to meet water demand for all climatic conditions for the near future. **Table 7.2** displays the minimum water supply available to the City based on a three-year dry period for the next three years:

Table 7.2
Projected 3-yr Minimum Water Supply (AF)

Imported	1,601	1,634	1,808
Ground	6,037	6,037	6,037
Total	**7,638**	**7,671**	**7,845**

Based on the above analysis, the City should expect 100% supply reliability during a three year drought period over the next three years.

Under the worst-case supply scenario, MWD would curtail deliveries of potable water to the City by about 30 percent for three years consecutively, according to Stage VI of the mandatory rationing schedule found in the Metropolitan modified 1995 Incremental Interruption and Conservation Program. This level of curtailment would be quite significant for the City and would mean significant shortages if groundwater supply is reduced. These shortages would be managed through the City's Emergency Water Conservation Program.

7.4 CASTROPHIC INTERRUPTIONS

A water shortage emergency could be a catastrophic event such as result of drought, failures of transmission facilities, a regional power outage, earthquake, flooding, supply contamination from chemical spills, or other adverse conditions.

During a disaster, the City will work cooperatively with Metropolitan through their Member Agency Response System (MARS) to facilitate the flow of information and requests for mutual-aid within Metropolitan's 5,100-square mile service area. In the event of groundwater supply loss, all supply could be imported from Metropolitan, and it is confirmed that the necessary capacity is available to do so.

Additional emergency services in the State of California include the Master Mutual Aid Agreement, California Water Agencies Response Network (WARN) and Plan Bulldozer. The Master Mutual Aid Agreement includes all public agencies that have signed the agreement and is planned out of the California Office of Emergency Services. WARN includes all public agencies that have signed the agreement to WARN and provides mutual aid assistance. It is managed by a State Steering Committee. Plan Bulldozer provides mutual aid for construction equipment to any public agency for the initial time of disaster when danger to life and property exists.

7.5 PROHIBITIONS

Mandatory Prohibitions

In accordance with the Water Conservation Ordinance, the City has enacted several water use restrictions which are enacted during times of shortage as part of the City's Municipal Code. Restrictions are based on severity of shortage include, but are not limited to, the following:

- Limits on Watering Days
- No filling of ornamental lakes/ponds
- No washing down of driveways
- No filling of swimming pools
- Limits on washing of vehicles

The City's prohibitions on water use during Levels 1 to 3 can be found in the City municipal code.

Penalties or Charges

Violation of the regulations and restrictions on water use in accordance with Ordinance 1618 will result in penalties punishable by fees and additional water restrictions:

- **First Violation:**
  City will deliver written notice of violation via mail.
- **Second Violation**
  The City will issue a fine of $100 or as established by Resolution of City Council, whichever is greater.
- **Third Violation:**
  The City will issue a fine of $250 or as established by Resolution of City Council, whichever is greater.
- **Fourth and Subsequent Violation:**
  The City will issue a fine of $500 or as established by Resolution of City Council, whichever is greater. In addition, the City may install a flow restriction device restricting flow to one gallon per minute for water services for not less than 48 hours.

7.6 FISCAL IMPACTS

As water consumption decreases, the revenue generated through water sales also decreases. To continue operation, the City must generate sufficient revenue when faced with decreasing water sales revenue. Based on the City's total water revenue and operating expenses, demand reductions will result in negative net cash provided by operating activities. As a result, rate increases may be imposed.

Other than rate increases, other measures to overcome impacts of reduced water supply and consequential revenue shortfall will include the following:

1. Reduce the current fiscal year operation and maintenance expenses.
2. Reduce future projected operation and maintenance expenses.
3. Prioritize and defer selected capital construction projects.
4. Increase the fixed readiness-to-serve charge to establish a substantial firm revenue base.
5. Increase commodity charge and water adjustment rate to cover revenue requirements.

A combination of the measures outlined above may be used to offset or diminish the effects of lost revenues. Capital construction projects may be deferred, as appropriate. The base water rate could be increased to cover the general operation, maintenance, system upgrades, and capital expenditures. An increase in the base rate would be temporarily employed and then return to pre-shortage rates when conditions improve.

7.7 COUNCIL ORDINANCE

On the 15th of September, 2009, the City Council adopted Ordinance No. 1618, which replaced Section 14-11 (Water Conservation) of the Lynwood Municipal Code in its entirety. The Ordinance addresses water conservation, establishes a water conservation program, and the stages for declaring emergency conditions. The Ordinance establishes a phased approach to water conservation and enforcement, and consists of three conservation phases in increasing order of severity. Ordinance No. 1618 is included in Appendix G.

Additionally, during an extended water shortage, the City Council will adopt by resolution the water shortage stage.

7.8 MECHANISMS TO DETERMINE ACTUAL REDUCTIONS IN WATER USE

The City may use multiple measures to determine the actual water consumption reductions, as follows:

- Normalized/averaged water use baseline
- More frequent review of production
- More frequent meter reading at customer location
- More frequent leak detection and repair.
- More frequent meter checking and repair
- System water audit
- Automated sensors and telemetry
- Monitor utility actions
- Penalties for customers

Possible leak detection at customer's premises through Automated Meter Reading system.