

APPENDIX K

WATER SUPPLY ASSESSMENT

Water Supply Assessment Hillwood Gateway South Building 4 Project

Background

Senate Bills 610 and 221 amended state law, effective January 1, 2002, to improve the linkage between certain land use decisions made by cities and counties and water supply availability. Both statutes require detailed information regarding supply availability and reliability with respect to certain developments to be included in the administrative record to serve as evidentiary basis for an approval action by the city or county on such projects.

Under SB 610, water supply assessments must be furnished to local governments for inclusion in any environmental documentation for certain types of projects, as defined in Water Code § 10912[a] and subject to the California Environmental Quality Act (CEQA).

A fundamental source document for compliance with SB 610 is the Urban Water Management Plan (UWMP). If the UWMP is properly prepared, it can be used by the water supplier to meet the standards set forth in SB 610.

The City of San Bernardino Municipal Water Department (SBMWD) is the water supplier that is responsible for preparing water supply assessments for the City of San Bernardino (City). The Board of Water Commissioners of SBMWD approved the 2015 UWMP in June 2016; this document is the primary source of reference for this water supply assessment.

On March 16, 2017, a letter was received by SBMWD requesting that the Department prepare a water supply assessment pursuant to the provisions of the Water Code § 10910 et seq. for the Hillwood Gateway South Building 4 Project (Project) (see Appendix A). The Project applicant, Hillwood Investments (Hillwood), submitted the project for proposed development to the City's Community Development Department.

Project Description

The Hillwood Gateway South Building 4 Project is a light industrial warehouse project proposed to be developed on approximately 62.02 acres of land. The Project will consist of one warehouse type building with a total of 1,063,852 square feet, including 5,000 square feet of office and 1,171 parking stalls for autos and trailers. The proposed Project is bounded by Waterman Avenue to the east, the Santa Ana River to the south, Twin Creek Channel to the west and is 500 feet south of Dumas Street in the City of San Bernardino.

The proposed use of the site, "Warehouse", is not allowed according to the current City of San Bernardino General Plan and Zoning designations for the majority of the site ("PCR" Public/Commercial Recreation). There is a small portion of the north end of the site that has a General Plan designation of "Industrial" and Zoning designation of "I-L"

Industrial Light. This area will keep its current designations and the rest of the site will adopt the same designations via a General Plan Amendment and Zone Change.

Water Demand Projections

According to Water Code §10910(c)(2), if the projected water demand associated with the proposed project was accounted for in the most recently adopted UWMP, the water supplier may use the demand projections from the UWMP in preparing the water supply assessment.

For its 2015 UWMP, SBMWD used the projected rate of population growth from the Southern California Association of Governments (SCAG) 2012 Integrated Growth Forecast and applied these projections to the historical 2015 water use as the basis for water demand projections. For the 2015 Water Facilities Master Plan, SBMWD used the SCAG population projections, as well as the 2005 General Plan, 2014 Updated Housing Element, potential service area developments, updated water duty factors, and adjustments for economic conditions and future conservation efforts. These water demand projections are generally consistent. Therefore, water demands for any proposed project that is consistent with the General Plan (and more specifically the land use districts or zoning) would be included in the total water demand projections of the 2015 UWMP and the 2015 Water Facilities Master Plan.

Existing current demand is approximately 0.005 million gallons per day (mgd), or 3.5 gallons per minute (gpm). Water demand for the proposed project was determined using water coefficients and site acreage. Specifically, the indoor water demand for the project was estimated using a water coefficient for light industrial land use multiplied by the site acreage, which resulted in a demand of 88 gpm or 142 acre-feet per year (ac-ft/yr). Outdoor demand was determined by the project Landscape Architect, with a demand of approximately 40 gpm or 65 ac-ft/yr. Total estimated water demand is 128 gpm or 207 ac-ft/yr. Therefore, the project is anticipated to increase water demand by approximately 0.179 mgd over existing conditions. The net daily water demand increase represents an annual demand increase of approximately 201 ac-ft/yr. Demand projections for the project are summarized in Appendix B. Calculations of these demands are generally consistent with the 2015 UWMP and the 2015 Water Facilities Master Plan.

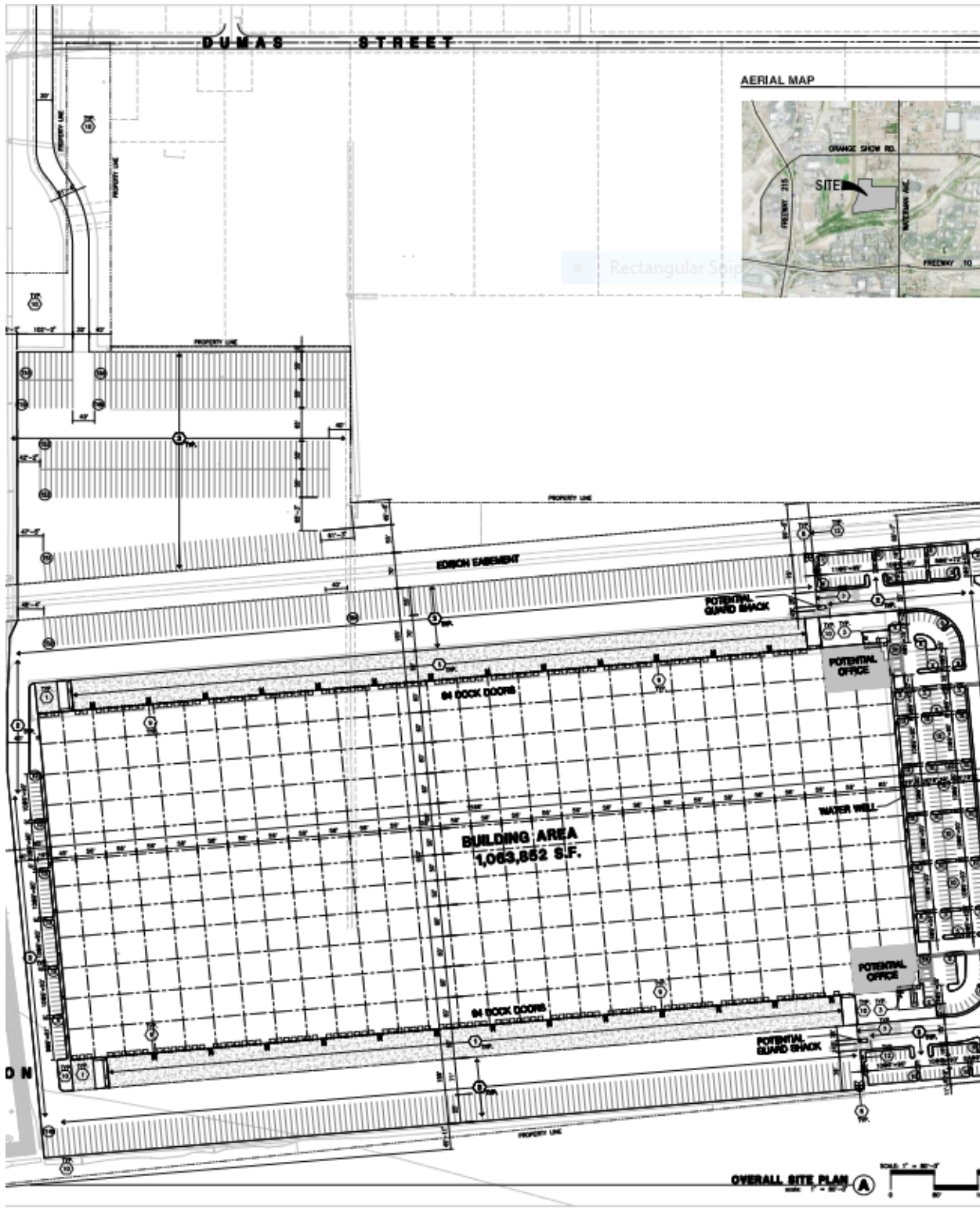
The Project location and site plan are shown on Figure 1.

The majority of the project parcels fall within the Public/Commercial Recreation General Plan and Zoning designation. One parcel has a General Plan designation of Industrial and a Zoning designation of Industrial Light. The relevant land use districts in the City's 2005 General Plan referred to as:

- PCR (Public/Commercial Recreation) – This land use district intensive recreational uses, such as golf courses, sports complexes, and fair grounds as approved through the public review process.
- IL (Industrial Light) – This land use district allows a variety of light industrial uses, including warehousing/distribution, assembly, light manufacturing, research and

development, mini storage, repair facilities conducted within enclosed structures, as well as supporting retail and personal uses.

Figure 1
Project Location and Site Plan



Climate Conditions

The climate of the City is considered arid west. Table 1 summarizes the climate for the City.

Table 1
Average Climate Data for SBMWD Service Area

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Standard Monthly Average ETo (inches) ¹	2.52	2.93	4.39	5.44	6	6.8	7.37	7.09	5.51	3.99	2.89	2.36	57.29
Average Rainfall (inches) ²	3.5	3.7	3.27	0.94	0.39	0.08	0.04	0.24	0.39	0.71	1.18	1.93	16.37
Average Temperature (F) ²	54.5	56.5	58	63	67.5	73.5	79.5	80	76	68.5	59	54.5	-

1. - Obtained from CIMIS Station 44 at UCR as of March 31, 2017

2. - www.usclimatedata.com/san-bernardino/california/united-states/usca0978

Population Projections within SBMWD Service Area

Table 2 presents the population projection for the SBMWD service area. A population growth rate for the area served by SBMWD was defined based on SCAG projected populations for years 2015, 2020, and 2035, as contained in the 2015 Integrated Growth Forecast. It should be noted that the service area is different than that of the City's boundary. Based on GIS data, SBMWD serves 90 percent of the City of San Bernardino and the remaining service area consists of unincorporated San Bernardino County. The population growth rate provided by SCAG was applied to the 2015 existing population in the City of San Bernardino to project population through year 2040. Because SBMWD serves 90 percent of the City, it is assumed that the population served by SBMWD will be 90 percent of the City's population projection.

Table 2
Population Projections for SBMWD Service Area

	2015	2020	2025	2030	2035	2040
Population ¹	199,657	206,173	212,990	220,031	227,306	234,821

¹Source: SBMWD Urban Water Management Plan, 2015

Projected Water Use

The Water Conservation Bill of 2009 (also referred to as SBX7-7) was enacted as part of the November 2009 Comprehensive Water Package. The Water Conservation Bill of 2009 provides the regulatory framework to support a statewide reduction in urban per capita water use. Each retail water supplier must demonstrate compliance with SBX7-7 by determining its existing baseline water consumption and then establish a future water use target in gallons per capita per day and report that information in its 2010 UWMP.

Should SBMWD's recycled water program develop prior to year 2020, SBMWD would achieve its interim and compliance water use SBX7-7 targets without any additional conservation actions. However, because the recycled water program is in the planning stages, as described later, SBMWD is still planning to undertake additional conservation actions to ensure compliance with SBX7-7.

In January 2014, the Governor of California declared a State of Emergency throughout the State due to severe drought conditions and subsequently issued Executive Orders B-26-14, B-28-14, and then B-29-15. Executive Order B-29-15 mandates that the State Water Resources Control Board (Water Board) shall impose restrictions to achieve a statewide 25 percent reduction in potable urban water usage through October 2016. These restrictions require water suppliers throughout California to reduce usage as compared to amounts used in 2013. This regulation is intended to be temporary, and was not intended to replace SBX7-7.

Since the inception of the emergency conservation regulation, the Water Board issued some allowable adjustments to the overall conservation requirements based on climate, growth, and new water supplies. The Water Board further revised conservation requirements by allowing water suppliers to set their conservation standards through a Water Board defined "stress-test" that took into account previous years' supplies and projected future demands. As a result of these adjustments, SBMWD's mandated conservation standard was set at 0 percent; however, SBMWD implemented a self-imposed 15% conservation standard. Most recently, the Governor issued Executive Order B-40-17 which directed the Water Board to rescind the conservation standard requirement. The Water Board has since rescinded the standards, but SBMWD maintains its self-imposed standard as groundwater levels in the basin remain at or near historic lows. The conservation standard has been met through a comprehensive drought monitoring program that includes public awareness, education, and conservation efforts.

Table 3 summarizes the total water demand projections for SBMWD, as depicted in the 2015 UWMP. As discussed previously, water demand projections in the 2015 UWMP were based on ultimate build-out conditions presented in the City's General Plan. It should be noted that the projection totals are without conservation.

Table 3
Annual SBMWD Water Demands (Acre-Feet)¹

Customer Class	Year					
	2015	2020	2025	2030	2035	2040
Residential	21,176	24,686	25,502	26,345	27,216	28,116
Commercial/Institutional/Municipal	6,083	7,091	7,325	7,567	7,818	8,076
Landscape	4,954	4,200	2,800	2,800	2,800	2,800
Fire Service	29	33	35	36	37	38
Waterman+Baseline Neighborhood Transformation Plan	NA	689	1,378	1,378	1,378	1,378
Unaccounted/system loss	3,424	3,670	3,754	3,913	4,075	4,241
Total	35,666	40,369	40,794	42,039	43,324	44,649

¹ Source: SBMWD Urban Water Management Plan, 2015. Excludes sales to other agencies.

Existing Water Supply

SBMWD's current water supply consists solely of water extracted from the underlying underground aquifer, the Bunker Hill Groundwater Basin (BHG Basin). SBMWD produces its water supply from 54 groundwater wells located throughout its service area. The wells range from 50 to 1,300 feet in depth and have production capacities ranging from 50 to 3,500 gpm. Table 4 presents historical groundwater pumping for SBMWD.

Table 4
SBMWD Groundwater Pumped (Acre-Feet)

	2008	2009	2010	2011	2012	2013	2014	2015	2016
Groundwater Pumped	56,310	52,357	47,654	48,767	48,758	45,835	44,131	36,036	35,541
% of Total Water Supply	100%	100%	100%	100%	100%	100%	100%	100%	100%

Groundwater Management

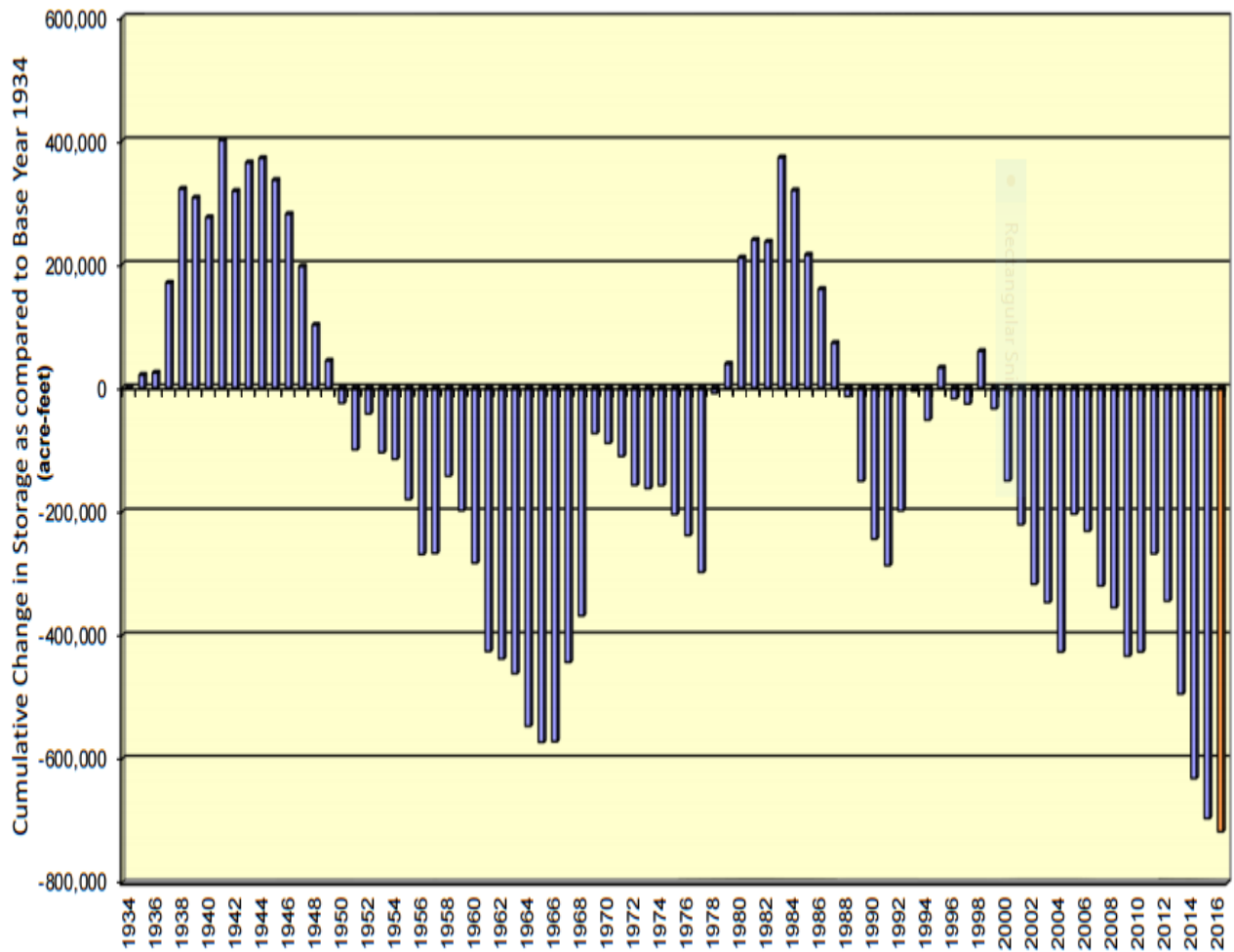
Management of the BHG Basin is coordinated through the San Bernardino Valley Municipal Water District (Valley District or District), which was formed in 1954 to plan long-range water supply for the San Bernardino Valley including the BHG Basin. Valley District is a State Water Project (SWP) contractor that was incorporated under the Municipal Water District Act of 1911 (California Water Code Section 7100 et. seq., as amended). The District's responsibility for long-range water supply planning includes importing supplemental water and management of the groundwater basins within its boundaries. It has specific responsibilities for monitoring groundwater supplies in the San Bernardino and Colton-Rialto basins and maintaining flows at Riverside Narrows on the Santa Ana River.

The BHG Basin contains in excess of 5 million acre feet (ac-ft) of high-quality water of which approximately 1.5 million ac-ft of water is extractable. The BHG Basin is replenished naturally by local precipitation and by stream flow from rain and snow melt in the San Bernardino Mountains watershed. Water can also be artificially recharged by rerouting stream flows to recharge percolation basins and thorough SWP turnouts.

Prior to 1963, the lack of native surface water and imported water for many years led to groundwater overdraft within the District's boundaries. In more recent years, increased groundwater recharge has led to high groundwater levels in the lower (southern) portion of the BHG Basin, also known as the pressure zone, where the aquifer is confined and artesian. While groundwater levels in the pressure zone are being managed through increased pumping, they may cause artesian flow in local wells, infrastructure infiltration, and the potential for liquefaction during seismic events. Within the past 70 years, a high groundwater condition has occurred at least three (3) times in the area south and east of the intersection of Mill Street and "D" Street in the City. A high groundwater condition occurs when the groundwater elevation exceeds the ground surface elevation. SBMWD participates with other local water agencies in a dewatering program to lower the water levels in the confined pressure zone. Valley District has sold extracted high groundwater water to downstream water agencies and will likely do so again if high groundwater conditions reoccur.

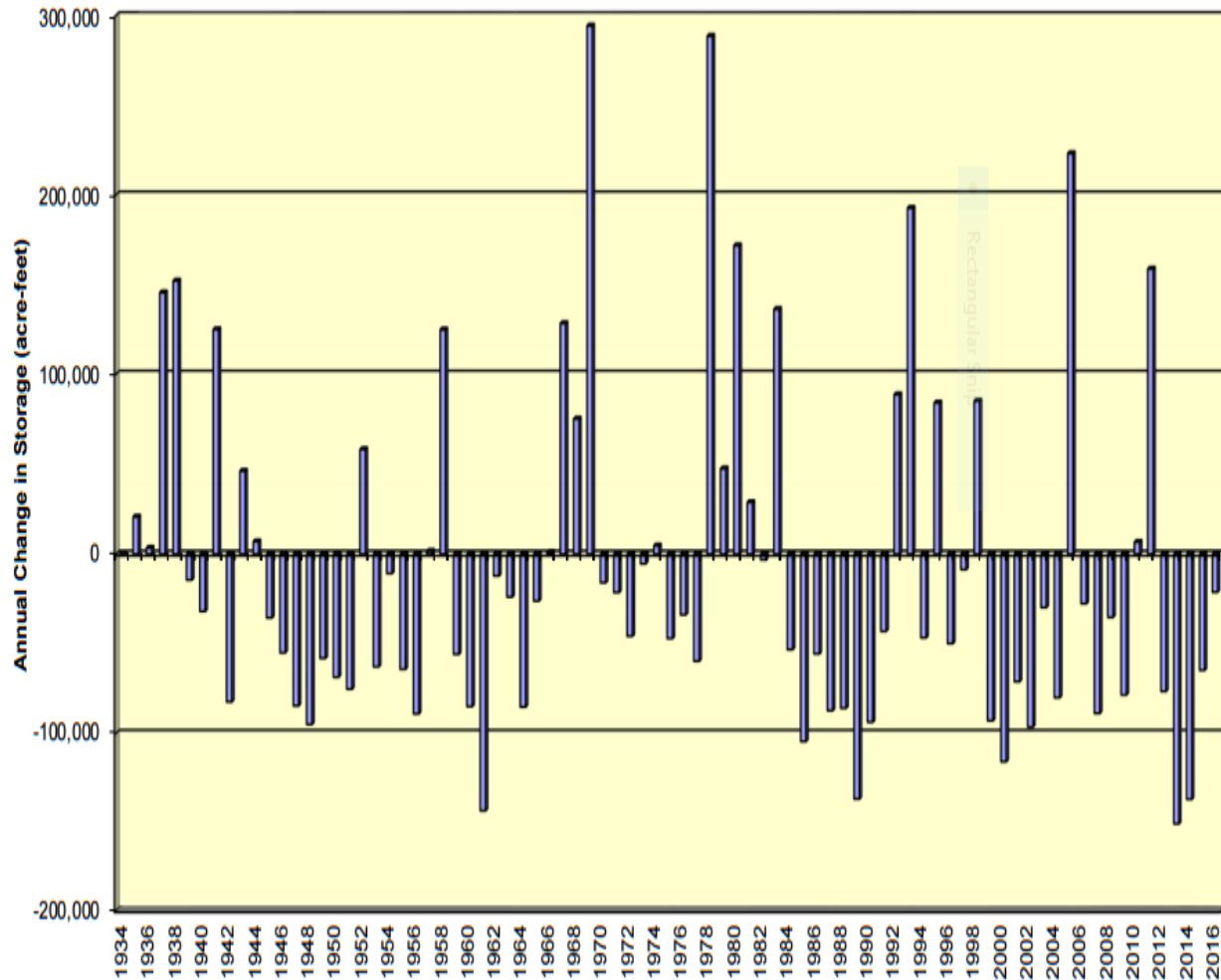
Since 1970, Valley District has been calculating the change in groundwater storage within the San Bernardino Basin Area (SBBA), which includes the BGH Basin and the Lytle Creek Sub-Basin, using a specific yield model. This model calculates both the cumulative change in groundwater storage and the annual change in storage. The cumulative change in groundwater storage is a measurement of groundwater lost or gained in the SBBA compared to the base year of 1934. The year 1934 was selected by the District as the base year to correspond with the California Department of Water Resources (DWR) base period of 1934-35 through 1959-60. The cumulative change in storage since 1934 for the SBBA is approximately negative 717,000 acre-feet (ac-ft) as illustrated in Figure 2. This figure indicates a new historic low for the basin, as of the year 2016. However, conditions have been similar in the past, nearing negative 600,000 ac-ft in the mid-1960s. The decrease in cumulative change in storage since 1998 has resulted from an increased reliance on groundwater production combined with below average precipitation. Drier winter months have led to a heavier reliance on pumping during the winter than in the past.

Figure 2
Cumulative Change in Storage for the San Bernardino Basin Area



The annual change in storage is the change in storage from the prior year. In 2016, despite conservation efforts across the SBBA, the amount of storage in the basin declined by approximately 21,000 ac-ft as illustrated in Figure 3. The decrease in annual storage can be mainly attributed to the ongoing severe drought condition and the resulting reduction in precipitation and natural recharge.

Figure 3
Annual Change in Storage for the San Bernardino Basin Area



In 2014, the verified extractions for the SBBA by other than plaintiff’s agencies within the District’s jurisdiction were 152,260 ac-ft. This is less than the adjusted annual right of 167,238 ac-ft by 14,978 ac-ft, and will be added to Valley District’s accumulated credits. The accumulated credits result from extractions that are less than Valley District’s adjusted right, during previous years. The accumulated credits can then be applied during years when the verified extractions exceed the adjusted annual right of 167,238 ac-ft.

Water quality extracted from the BHG Basin by SBMWD is of excellent mineral quality with total dissolved solids (TDS) averaging less than 350 milligrams per liter (mg/L).

Groundwater Judgments

Groundwater management issues (mainly export) in the BHG Basin are primarily governed by the judgment in *Western Municipal Water District et al. v. East San Bernardino County Water District et al.*, entered on April 17, 1969 (Western Judgment). Other adjudications affecting the management of this basin include *City of San Bernardino v. City of Riverside*, County of San Bernardino Case No. 13754; *Orange County Water District v. City of Chino*, County of Orange Case No. 117628 (the Orange

County Judgment); and a Consent Decree (Decree) entered in City of San Bernardino v. United States of America, United States District Court Central District, CV 96-8867 and CV 96-5205 (consolidated) among the US Environmental Protection Agency, the US Department of the Army, the City of San Bernardino, and the California Department of Toxic Substances Control. An Integrated Regional Water Management Plan of the Upper Santa Ana River Watershed was first adopted in 2008. In January 2015, an updated and more comprehensive IRWMP was approved. An Integrated Regional Water Management Plan of the entire Santa Ana River Watershed, the “One Water One Watershed” (OWOW) Plan, was originally adopted in December 2010. The updated plan, OWOW 2.0 Plan, was adopted in February 2014.

Under the Western Judgment, the District has the responsibility to ensure that adequate quantities of water are available for extractions in the SBBA above the basin safe yield of 232,100 ac-ft/yr. As defined, this includes both the BHG Basin and the Lytle Creek Sub-Basin. Within Valley District’s boundaries, the adjusted right is 167,238 ac-ft/yr, with the remainder of the water rights assigned to plaintiff agencies outside of its service area. If water agencies within Valley District’s service area exceed the allotted groundwater production, the District is required to augment the supply sources by spreading imported water from the SWP and/or obtaining water from other sources. Under the Western Judgment, the production rights of individual agencies within the District’s service area are not allocated. The Western Judgment also sets the maximum amount of water that can be exported from the Basin. A copy of the Western Judgment can be found in the 2015 RUWMP.

The City of San Bernardino v. the City of Riverside Judgment (1922) and subsequent amendments set the maximum amount of water that can be pumped by both cities from the Antil region and, to some extent, limits the geographic areas in which both parties may pump.

The 1969 Orange County Judgment was a physical solution adopted by the court to resolve claims of inter-basin allocation of obligations and rights in the Santa Ana Watershed. Essentially, the Lower Area (below Prado Dam) is ensured annual delivery of a base flow at Prado Dam of 42,000 ac-ft plus all storm flow reaching Prado Dam. Valley District, Chino Basin Municipal Water District (now Inland Empire Utilities Agency), and Western Municipal Water District guarantee that those flows are met, with Valley District being responsible for delivery of approximately 16,000 ac-ft/yr to the Riverside Narrows. SBMWD, through an agreement with Valley District, is obligated to discharge the 16,000 ac-ft/yr from its wastewater tertiary treatment facility (RIX facility).

The Consent Decree (Decree) among the US Environmental Protection Agency, the US Department of the Army, the City of San Bernardino, and the California Department of Toxic Substances Control settled a lawsuit filed by the City of San Bernardino against Federal defendants. The Decree requires the City of San Bernardino to develop a groundwater management plan for a management zone that is a subset of City limits to ensure the integrity and effectiveness of the interim remedial action implemented in the Newmark Groundwater Contamination Superfund Site. The groundwater management plan must regulate the amount of new pumping in the management zone, as well as spreading activities. As a result, the City of San Bernardino has developed a groundwater management program that regulates new wells within the management

area and spreading, such that these activities would not adversely affect the Newmark remedy. In 2008, the Upper Santa Ana Water Resources Association adopted an Integrated Regional Water Management Plan to address major water management issues for the communities of the Upper Santa Ana River Watershed. Valley District, as the regional wholesale water agency, led the planning effort and received a grant from DWR to prepare the plan. The main benefit of the plan was the development of a process for managing the local and imported water sources in the SBBA. A secondary benefit is to identify regional projects and to receive grant funding for these projects. The plan was carefully developed through the participation of water managers and stakeholders and has two main management objectives: the first is to improve water reliability during drought periods and reduce liquefaction, and the second is to protect water quality and maximize conjunctive use opportunities. The IRWMP serves as the guide for long-term water resources planning in the Upper Santa Ana River Watershed.

The IRWMP for the entire Santa Ana Watershed is known as the OWOW Plan. The plan attempts to encompass all sub-regions, political jurisdictions, water agencies, and non-governmental stakeholders (including private sector, environmental groups, and the public at large) in the watershed. The OWOW Plan also views all types of water (imported, local surface and groundwater, stormwater, and wastewater effluent) as components of a single water resource which is linked to the land use and habitat, and tries to limit impacts to natural hydrology while striving towards sustainability.

The OWOW 1.0 Plan, adopted in December 2010, was developed by a diverse group of stakeholders led by a Steering Committee composed of public officials from counties and cities in the watershed, representatives from the environmental, regulatory and business communities, and representatives from the Santa Ana Watershed Authority (SAWPA). The Steering Committee was supported by technical experts grouped into ten disciplines (known as Pillars), ranging from water supply and quality, to climate change, and environmental justice.

The OWOW 2.0 Plan, adopted in February 2014, reflects a collaborative planning process that addresses all aspects of water resources within the watershed. The plan represents collaboration across jurisdictions, political boundaries involving multiple agencies, stakeholders, individuals, and groups working in unison to address the issues and differing perspectives of all the entities involved through mutually-beneficial solutions. The plan includes planning of future water demands and supplies over a 20-year time horizon within the watershed as a hydrologic and interconnected system. The plan reflects new and innovative approaches to meet growing demands in the region by leading with a water demand reduction strategy, rather than relying solely on imported water deliveries.

Recycled Water

Wastewater in the region is coordinated with several neighboring communities, with SBMWD treating wastewater from the City of San Bernardino, City of Loma Linda, East Valley Water District, and portions of unincorporated San Bernardino County. Wastewater is collected and treated at the San Bernardino Water Reclamation Plant using secondary treatment. After secondary treatment, non-disinfected effluent from the plant is sent to the Rapid Infiltration Extraction Tertiary Treatment Facility (RIX) for tertiary treatment. RIX is jointly owned by SBMWD and the City of Colton. Currently, all

RIX effluent, which meets California Title 22 standards, is discharged into the Santa Ana River. SBMWD is not using any of the RIX effluent for landscape irrigation in its service area because of the location of the RIX facility and cost of distribution. However, it should be noted that the use of recycled water is an integral component in the overall management of the BHG Basin through the implementation of the IRWMP.

Although a recycled water program has not yet been implemented, SBMWD is actively undertaking design and environmental studies for the Clean Water Factory, a project that will treat effluent from the San Bernardino Water Reclamation Plant to a quality approved for recharge by the Water Board and the Santa Ana Regional Water Quality Control Board (RWQCB).

The Clean Water Factory will convey recycled water to the northern portion of the SBMWD service area for recharge at the Waterman Basins and the East Twin Creek Spreading Grounds. Recycled water spread at these locations will artificially recharge the BHG Basin, increasing sustainability within the Upper Santa Ana River Watershed.

Planned Water Supply

Both the SBMWD and Valley District are planning to develop a number of water supply projects in order to meet the region’s growing water demands. These include new wells, recycled water, and groundwater recharge.

SBMWD’s Planned Supplies

The 2015 Water Master Plan documents projected water demands within the existing service area and identifies supply sources to meet them. The Water Master Plan develops a long-range water supply plan and capital improvement plan to reliably meet the needs of SBMWD’s service area to build out conditions.

Table 5 summarizes the planned water supplies for SBMWD through 2040. SBMWD will continue to rely on the BHG Basin to fulfill the majority of its future supply needs. SBMWD will continue to evaluate recycled water opportunities, based on potential demands and cost.

Table 5
Planned Water Supply (Acre-Feet)¹

Water Supply Sources	2015	2020	2025	2030	2035	2040
Groundwater	36,035	52,671	54,730	56,866	59,082	59,082
Recycled Water	0	5,600	9,300	18,600	25,000	5,600
Total	36,035	58,271	64,030	75,466	84,082	64,682

¹Source: SBMWD Urban Water Management Plan, 2015

SBVMWD Water Supplies

In the Mid 1990s, Valley District completed a Regional Water Facilities Master Plan (Master Plan) for the BHG Basin that identified a number of transmission facilities to move groundwater from the pressure zone to various locations in the valley. The recently completed IRWMP builds on the previous study and includes an analysis of local water retailers' current and projected build-out water demands. The study identified over 100 local and regional capital projects to conjunctively manage water resources in the San Bernardino Basin. Projects identified include new surface water treatment facilities, groundwater storage and extraction facilities, water conservation, flood control utilization, and water conveyance facilities, including regional and local transmission facilities, pump station, and reservoir facilities. Some of the main projects that will increase the long-term reliability of water resources in the area include:

- Enhanced Groundwater Recharge Project. The objective of this project is to construct more basins along the Santa Ana River to maximize capture of this water before it is naturally conveyed downstream. The City Creek Turnout is the first phase of this project that has been planned, designed, and is currently beginning construction. Once constructed it is estimated that this project will spread approximately 8,688 ac-ft/yr of State Water Project (SWP) water.
- Central Feeder Pipeline. This project consists of the construction of approximately 56,000 ft. of pipeline ranging in size from 54 to 78 inches. The project ties into the existing Baseline Feeder south extension to the proposed Citrus reservoir in the Mentone area. This pipeline will be used to convey water from the pressure zone to the east end of the valley. Phase 1 is complete and additional phases may not be necessary.
- Recycled Water Use. The construction of a number of wastewater treatment plants are being considered to have the recycled water source closer to its end use.

Reliability of Water Supply

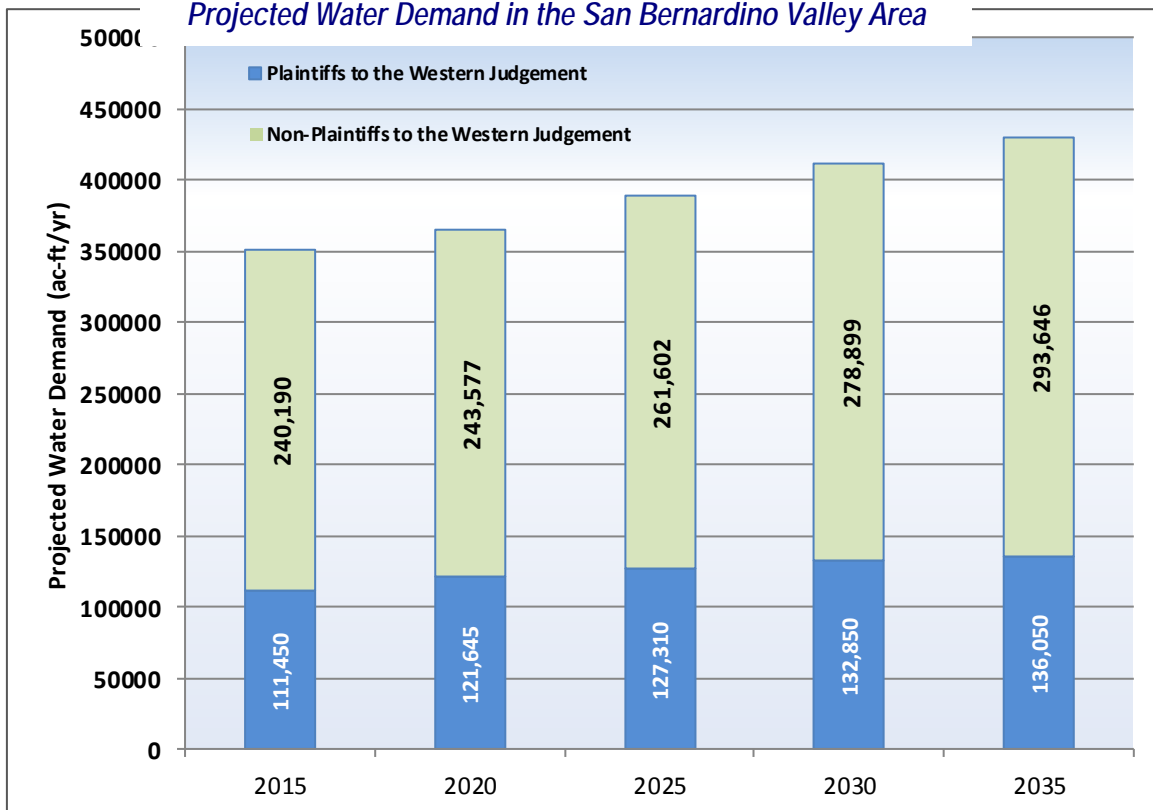
The reliability of the SBMWD water supply is dependent on two factors: the adequacy of system capacity (wells, pipelines, pump stations, etc.) and the availability of water supply from the BHG Basin, where groundwater is produced. Water supply assessments must demonstrate supply reliability under normal, single-dry year, and multiple-dry year weather scenarios. The availability of water supply from the BHG Basin is highly dependent of the regional management of water sources in the area by Valley District.

Under the Western Judgment, the SBMWD can extract as much water as needed from the BHG Basin to meet its current and projected demands, as Valley District has the responsibility to ensure that adequate quantities of water are available for extractions above the SBBA basin natural safe yield of 232,100 ac-ft/yr. Pumping rights can be adjusted by the Watermaster for new conservation. Therefore, the reliability of supply

sources to the SBMWD is highly dependent on the reliability of imported water sources and Valley District’s ability to meet its obligation under the Western Judgment.

The Western Judgment fixes the maximum amount of groundwater that can be exported from the SBBA by the plaintiffs at 64,862 ac-ft/yr. Within Valley District’s boundaries, the adjusted right is 167,238 ac-ft/yr; the amount that the non-plaintiff agencies can extract from the SBBA (BHG Basin and the Lytle Creek Sub-Basin) before Valley District has to obtain additional water sources to maintain the long-term safe yield of the basin. Figure 4 illustrates projected water demands from the San Bernardino Valley area by both plaintiffs and non-plaintiffs. This figure illustrates water demands by non-plaintiffs increasing from 240,200 ac-ft/yr in 2015 to an estimated 293,700 ac-ft/yr by the year 2035. These projected demands are expected to be met by utilizing the available water supplies of the individual water utilities, including groundwater from the SBBA.

*Figure 4
Projected Water Demand in the San Bernardino Valley Area*



(Source: IRWMP, 2015 Table 3-2)

Valley District's Local Water Supply Sources

The IRWMP identifies three (3) main sources of local water available to Valley District: groundwater, surface supply, and new/reclaimed supply. Below is a list, brief summary of local water supply sources available to meet projected water demands through 2035.

- SBBA Surface Water refers to surface water from local mountain streams available for potable use. Surface water is currently used by the East Valley Water District, West Valley Water District, and the City of Redlands.
- Seven Oaks Supply refers to additional surface water that could be available from the Seven Oaks Dam to spread in the basin for groundwater recharge. Supplies from this project depend on conditions placed on the applications by the State Water Resources Control Board.
- SBBA Groundwater refers to groundwater pumped from the BHG Basin and Lytle Creek Sub-Basin.
- SBBA Return Flows refers to return flows from extractions above the safe yield of the SBBA and from direct deliveries of imported water. The Annual Report of the Western San Bernardino Watermaster for calendar year 2015 estimates a 36 percent return flow from these sources to recharge the groundwater basin.
- Rialto-Colton, Riverside North, and Yucaipa basins include extractions from these basins to be used within Valley District's service area.
- Other Groundwater refers to groundwater extractions from an area between the Chino Basin and Lytle Creek Sub-Basin commonly referred to as "No Man's Land".
- Recycled Water includes direct delivery of recycled water for irrigation and/or industrial use and for groundwater recharge.

The reliability of local supply sources on a long-term basis is considered very high in the SBBA because of the relatively large amount of storage in this basin that allows local water purveyors to meet their demand obligations during extended droughts. Therefore, it is assumed that the total local supplies will be available during average, single dry-year, and multiple dry-year scenarios.

Valley District's Imported Water Supply

The amount of SWP water delivered to State Water Contractors in a given year depends on a number of factors, including the demand for the supply, amount of rainfall, snowpack, runoff, water in storage, pumping capacity from the Delta, and legal/regulatory constraints on SWP operation. Water delivery reliability depends on three general factors: the availability of water, the ability to convey water to the desired point of delivery, and the magnitude of demand for the water. Urban SWP contractors' requests for SWP water, which were low in the early years of the SWP, have been steadily increasing over time.

Since the 2015 RUWMP was prepared in 2016, the DWR has not updated its State Water Project Final Delivery Capability Report. The biennial Report assists SWP

contractors in assessing the reliability of the SWP component of their overall supplies. The 2015 SWP Capability Report updates DWR's estimate of the current (2015) water delivery capability of the SWP. The updated analysis shows that the primary component of the annual SWP deliveries (referred to as Table A deliveries) will be essentially the same under current and future conditions, when compared to the preceding report (State Water Project Delivery Reliability Report 2013). The report discusses factors having the potential to affect SWP delivery reliability:

- Water availability at the source.
- Regulatory restrictions on SWP and Central Valley Project (CVP) operations due to State regulation and federal biological opinions to protect endangered fish such as Delta smelt and spring-run salmon;
- Water rights with priority over the SWP.
- Climate change and sea level rise, which is altering the hydrologic conditions in the State;
- The vulnerability of Delta levees to failure due to floods and earthquakes.

“Water delivery reliability” is defined as the annual amount of water that can be expected to be delivered with a certain frequency. SWP delivery reliability is calculated using computer simulations based on 82 years of historical data.

The 2015 SWP Capability Report recognizes continuing challenges to the ability of the SWP to deliver full contractual allotments of SWP water. For current conditions, the noted factors that have the most significant impact on these reductions are both the inherently variable availability of water at the source, and the restrictive operational requirements contained in the federal biological opinions. Deliveries estimated for the 2015 Report expressly account for the operational restrictions of the biological opinions issued by the U.S. Fish and Wildlife Service in December 2008 and the National Marine Fisheries Service in June 2009 governing the SWP and Central Valley Project operations.

For future conditions, the 2015 SWP Capability Report conservatively assumes that the restrictions imposed by the biological opinions will still be in place, and includes the potential effects of climate change to estimate future deliveries. The changes in run-off patterns and amounts are included along with the noted rise in sea level. Sea level rise has the potential to require more water to be released to repel salinity from entering the Delta in order to meet the water quality objectives established for the Delta.

These updated analyses in the 2015 SWP Capability Report indicate that the SWP, using existing facilities operated under current regulatory and operational constraints and future anticipated conditions, and with all contractors requesting delivery of their full Table A amounts in most years, could deliver 45 percent of Table A amounts on a long-term average basis.

An ongoing planning effort to increase long-term supply reliability for both the SWP and CVP is taking place through the Bay Delta Conservation Plan (BDCP) and the Delta Plan (now called California WaterFix). The co-equal goals of the BDCP are to improve water supply and restore habitat in the Delta. The BDCP is being prepared through a

collaboration of state, federal, and local water agencies, state and federal fish agencies, environmental organizations, and other interested parties. Several “isolated conveyance system” alternatives are being considered in the BDCP which would divert water from North of the Delta and convey it “around” the Delta to a point where water is pumped for the SWP and CVP. The new conveyance facilities would allow for greater flexibility in balancing the needs of the estuary with reliable water supplies. In December 2010, DWR released a “Highlights of the BDCP” document which summarizes the activities and expected outcomes of the BDCP. The results of preliminary analysis included in the document indicate the proposed conveyance facilities may increase the combined average long-term water supply to the SWP and CVP from 3.5 million ac-ft/yr to 5.9 million ac-ft/yr. This would represent an increase in reliability for State Water Project contractors from 45 percent (Table A current amount) to 75 percent. The draft BDCP and its associated EIR/S were released for public review in late 2013, and public comments were received in mid-2014. The EIR/S was finalized in December 2016.

The final Delta Plan was adopted by the Delta Stewardship Council on May 16, 2013. The Delta Plan contains a set of 14 regulatory policies that will be enforced by the Delta Stewardship Council’s appellate authority and oversight. These 14 regulations to be implemented into the Delta Plan were approved by the State Office of Administrative Law (OAL) on September 1, 2013, and became legally enforceable regulations. 73 non-regulatory recommendations are also included in the Delta Plan which were deemed essential to achieving the coequal goals.

The Delta Stewardship Council also initiated the Delta Levees Investment Strategy (DLIS) in 2014 with a goal to combine economics, engineering, and decision-making techniques in order to identify funding priorities, and assemble a comprehensive investment strategy for the Delta Levees.

In addition to the overall long-term average presented in the 2015 SWP Capability Report, it also includes Delivery Reliability Reports (DRRs) for each of the individual SWP contractors based upon the unique conditions that impact each contractor. The DRR for Valley District indicated average reliability would be 45 percent in 2015 and will continue through 2035. Table 8 provides the projected SWP water available to Valley District over the next 25 years, based on the Valley District’s maximum Table A amounts from 2010 to 2035 and the supply reliability analyses provided in the 2015 SWP Report and associated DRR.

Table 8 summarizes estimated SWP supply availability to Valley District in a single-dry year (based on a repeat of the worst-case historic hydrologic conditions of 1977) and over a multiple-dry year period (based on a repeat of the worst-case historic four-year drought of 1931 to 1934). During a dry or critical year as defined by the Sacramento River Index, the SWP will be able to supply an average of 11,286 ac-ft (year 2015) to Valley District. During a multiple dry year period (1931 to 1934), Valley District’s SWP supply is estimated to be about 33,858 ac-ft/yr (year 2015).

The values shown in Table 6 address the DWR estimates at the 2015 level for the current conditions. It is the best information and best estimates available to use in developing water management plans and this assessment.

Table 6
 State Water Project (SWP) Supply Reliability:
 Single-Dry Year and Multiple-Dry Year Conditions(a)

	Single-Dry Year(b)	Multiple-Dry Year(c)
% of Table A Amount Available	11%	33%
Anticipated Deliveries (Acre-Feet)	11,286	33,858

Notes:

(a) The percentages of Table A amount projected to be available are taken from Delivery Reliability Reports prepared for Valley District by DWR as part of "The State Water Project Delivery Capacity Report 2015" (July 2015). Supplies are calculated by multiplying Valley District's Table A amount (102,600 ac-ft/yr) by these percentages.

(b) Based on the worst case historical single dry year of 1977.

(c) Supplies shown are annual averages over four consecutive dry years, based on the worst case historical four-year dry period of 1931-1924.

While the primary supply of water available from the SWP is allocated Table A supply, SWP supplies in addition to Table A water are periodically available, including "Article 56C" carryover water, "Article 21" water, "Turnback Pool" water, and DWR "Dry Year Purchase Programs". Pursuant to the long-term water supply contracts, SWP contractors have the opportunity to carry over a portion of their allocated water approved for delivery in the current year for delivery during the next year. Valley District has exercised this option in the past. Contractors can also "carryover" water under Article 56C of the SWP long-term water supply contract with advance notice when they submit their initial request for Table A water, or within the last three (3) months of the delivery year. The carryover program was designed to encourage the most efficient and beneficial use of water and to avoid obligating the contractors to "use or lose" the water by December 31 of each year. The water supply contracts state the criteria of carrying over Table A water from one year to the next. Normally carryover water, which is water that has been exported during the year, has not been delivered to the contractor during that year, and has remained stored in the SWP share of San Luis Reservoir to be delivered during the following year. Storage for carryover water no longer becomes available to the contractors if it interferes with storage of SWP water for project needs (DWR 2010).

Article 21 water (which refers to the SWP contract provision defining this supply) is water that may be made available by DWR when excess flows are available in the Delta (i.e. when Delta outflow requirements have been met, SWP storage south of the Delta is full, and conveyance capacity is available beyond that being used for SWP operations and delivery of allocated and scheduled Table A supplies). Article 21 water is made available on an unscheduled and interruptible basis and is typically available only in average to wet years, generally only for a limited time in the late winter. Since 1999, Valley District has taken 256 ac-ft of Article 21 water.

The Turnback Pool is a program available to State Water Contractors who signed the “Monterey Amendment”. The program helps facilitate the sale of excess Table A supplies and establishes a sale price for the water. Valley District did not sign the Monterey Amendment; however, Valley District is able to sell any excess water to other SWP contractors. Currently, Valley District has an agreement with the Metropolitan Water District of Southern California (MWDSC) which gives MWDSC “first right of refusal” to purchase Table A supplies deemed “excess” to Valley District’s needs.

As urban contractor demands increase in the future, the amount of water turned back and available for purchase will likely diminish. In critical dry years, DWR has formed Dry Year Water Purchase Programs for contractors needing additional supplies. Through these programs, water is purchased by DWR from willing sellers in areas that have available supplies and is then sold by DWR to contractors willing to purchase those supplies.

Because the availability of these supplies is somewhat uncertain, they are not included as supplies to Valley District in this Plan. However, Valley District’s access to these supplies when they are available may enable it to improve the reliability of its SWP supplies beyond the values used throughout this report.

Comparison of SBMWD’s Supply and Demand Under Different Hydrologic Conditions

Based on the availability of Valley District’s water supplies discussed above, comparisons of SBMWD’s water supplies and demands were evaluated in its 2015 UWMP under normal, single dry year, and multiple dry year hydrologic conditions. These comparisons of water supplies and demands under each of the hydrologic conditions are summarized in Tables 7, 8, and 9.

Table 7
Normal Year Supply and Demand Comparison (AF) ¹

	2020	2025	2030	2035	2040
Supply totals	58,271	66,830	75,466	84,082	90,582
Demand totals	45,969	49,094	53,339	57,623	59,449
Difference	12,302	17,736	22,127	26,459	31,133

¹Source: SBMWD Urban Water Management Plan, 2015

Table 8
Single Dry Year Supply and Demand Comparison (AF) ¹

	2020	2025	2030	2035	2040
Supply totals	58,271	66,830	75,466	84,082	90,582
Demand totals	50,566	54,003	58,673	63,386	65,394
Difference	7,705	12,827	16,793	20,696	25,188

¹Source: SBMWD Urban Water Management Plan, 2015

Table 9
Multiple Dry Years Supply and Demand Comparison ¹

		2020	2025	2030	2035	2040
First year	Supply totals	58,271	66,830	75,466	84,082	90,582
	Demand totals	50,566	54,003	58,673	63,386	65,394
	Difference	7,705	12,827	16,793	20,696	25,188
Second year	Supply totals	58,271	66,830	75,466	84,082	90,582
	Demand totals	45,969	49,094	53,339	57,623	59,449
	Difference	12,302	17,736	22,127	26,459	31,133
Third year	Supply totals	58,271	66,830	75,466	84,082	90,582
	Demand totals	41,372	44,184	48,005	51,861	53,504
	Difference	16,899	22,646	27,461	32,221	37,078

¹Source: SBMWD Urban Water Management Plan, 2015

The 2015 UWMP projects that SBMWD's water supplies exceed its water demands under all hydrologic conditions until 2040. Projections beyond 2040 were not presented.

Impacts of Hillwood Gateway South Building 4 Demands

As discussed, incremental water demands from the Project are estimated at 201 ac-ft/yr.; this amount represents an estimated 0.06 percent increase in the total 2015 water demand in Valley District's service area. The additional demand would result in an average deficit that can be easily addressed through water conservation, groundwater recharge, and/or future recycled water direct use.

Conclusion

Based on the supply reliability of Valley District and SBMWD supply sources, as presented in this water supply assessment, it is concluded that SBMWD has sufficient water supplies to meet the water demands of the Project, along with the other projected municipal water demands.

However, it should be noted the SBMWD reserves the right to revisit and review the Water Supply Assessment if any changes occur to the project. The purpose of the review would be to determine if SBMWD has a sufficient water supply to accommodate the project changes and revise the Water Supply Assessment accordingly in accordance with the provisions of the Water Code §10910 et seq.

This review is only an assessment of the water supply availability and does not address the water infrastructure needs.

Primary Source Documents

SBMWD Urban Water Management Plan, 2015

SBMWD Water Master Plan, 2015 Final Report

California Department of Water Resources, Guidebook for Implementation of Senate Bill 610 and Senate Bill 221 of 2001, 2003

City of San Bernardino General Plan (November 2005)

2013-2021 Housing Element, City of San Bernardino (February 2014)

Upper Santa Ana River Watershed Integrated Regional Water Management Plan, January 2015, San Bernardino Valley Municipal Water District


The State Water Project Delivery Capability Report – 2015, July 2015

Santa Ana Watershed Integrated Regional Water Management Plan (IRWMP), also known as “One Water One Watershed” (OWOW) Plan, November 2010 & OWOW 2.0 Plan February, 2

Appendix A
Letter Requesting Water Supply Assessment

CITY OF SAN BERNARDINO
Community Development Department – Planning Division
Interoffice Memorandum

TO: Stacey Aldstadt, General Manager, Water Department

FROM: Oliver Mujica, Planning Division Manager 

SUBJECT: Water Supply Assessment for Hillwood Gateway South Building 4 Project

DATE: March 16, 2017

Hillwood has submitted discretionary land use entitlement applications for the proposed Hillwood Gateway South Building 4 Project. This project involves the development of a light industrial warehouse containing approximately 1,063,852 square feet on a site containing approximately 62.02 acres. The proposed project is bounded by Waterman Avenue to the east, the Santa Ana River to the south, Twin Creek Channel to the west and is approximately 500 feet south of Dumas Street. An Environmental Impact Report is being prepared.

This project exceeds the threshold of 650,000 sq. ft. to be defined as a “project” pursuant to section 10912(5) of the Water Code. Therefore, a Water Supply Assessment (WSA) is required pursuant to Public Resources Code section 21151.9 and Water Code section 10910, et seq. Hillwood would appreciate the expedited preparation of the WSA, and has submitted project information and water demand estimates transmitted via a previous e-mail. (please see Attachments)

Hillwood will be responsible for the costs associated with the WSA. Please contact me with cost information and I will process a transfer of funds on deposit for this project, or will arrange for direct payment by Hillwood.

ATTACHMENTS: 1. Project Description
 2. Water Demand Estimates
 3. Site Plan

Project Description

The Hillwood Gateway South Building 4 Project is a light industrial warehouse project proposed to be developed on approximately 62.02 acres of land. This project will consist of one warehouse type building with a total of 1,063,852 square feet, including 5,000 square feet of office and 1,171 parking stalls for autos and trailers. The proposed project is bounded by Waterman Avenue to the east, the Santa Ana River to the south, Twin Creek Channel to the west and is 500 feet south of Dumas Street in the City of San Bernardino.

The proposed use of the site, "Warehouse" is not allowed according to the current City of San Bernardino General Plan and Zoning designations for the majority of the site ("PCR" Public Commercial Recreational). There is a small portion of the north end of the site that has a General Plan designation of "Industrial" and Zoning designation of "I-L" Industrial Light. This area will keep its current designations and the rest of the site will adopt the same designations via a General Plan Amendment and Zone Change.

Water demand for the proposed project was determined using water coefficients and site acreage. Specifically, the indoor water demand for the project was estimated using a water coefficient for light industrial land use multiplied by the site acreage, which resulted in a demand of 88 gallons per minute (142 acre-feet per year). Outdoor demand was determined by the project Landscape Architect, with a demand of approximately 40 gallons per minute (or 65 acre-feet per year). Total estimated water demand is 128 gallons per minute (or 207 acre-feet per year).

Water Demand Estimates

Project: Gateway South Building 4

Date: 03-09-2017

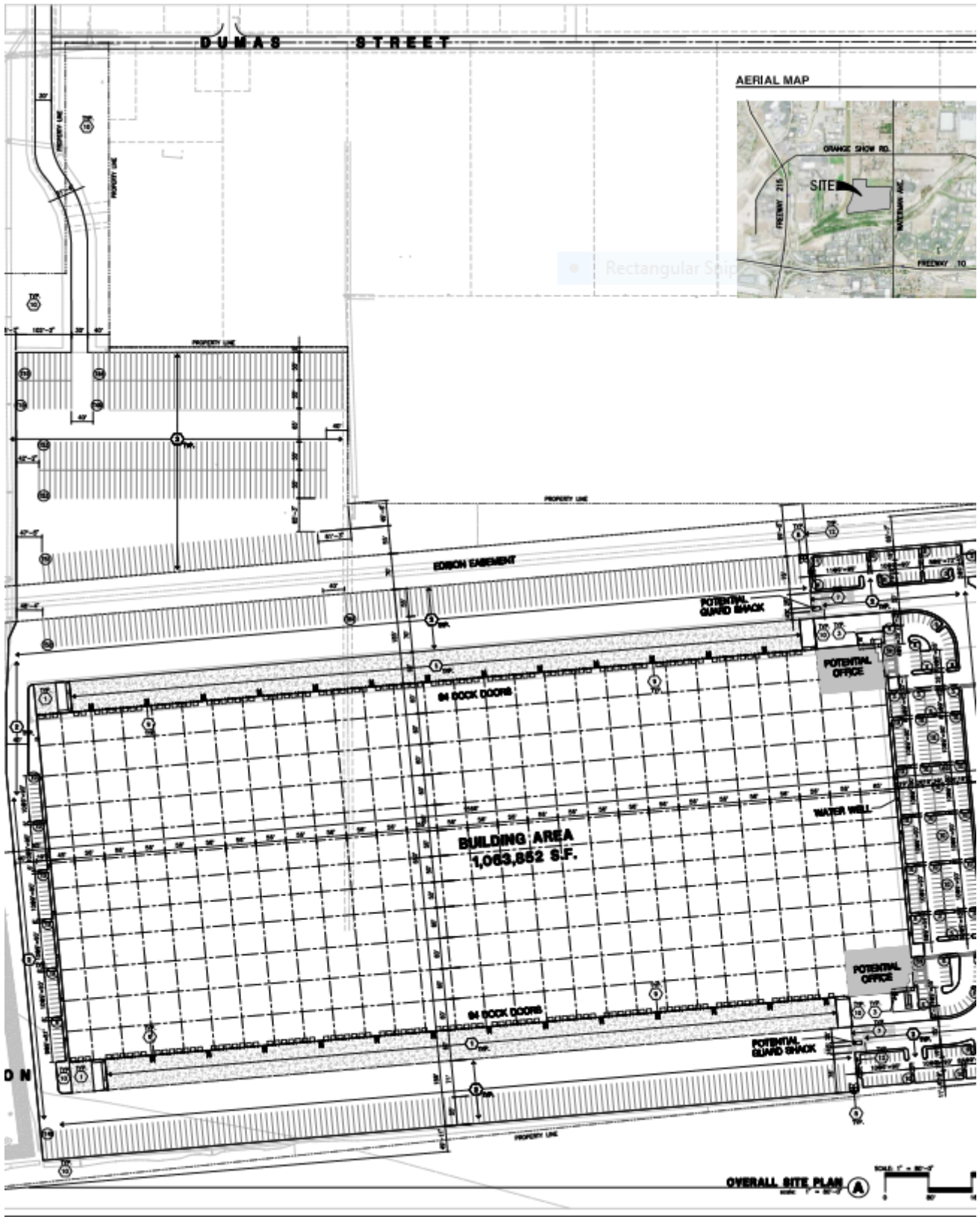
JN 3412

• Rectangular Snip

Site Area (AC) 62.02
 Landscape Area (AC) 8.58
 Industrial Light (GPM / Acre) 1.42

Water Demand Calculations	GPM	GPD	AC-FT/YR
Site Average Demand (GPM)	88	126720	142
Maximum Day Demand (GPM) x 1.73	152	218880	245
Peak Hour Demand (GPM) x 1.73 x 2.0	304	437760	491
Landscape GPM Demand	40	57600	65
TOTAL:	128	184320	207





Appendix B

Water Demands for Hillwood Gateway South Building 4 Project

Water Demand Estimates

Project: Gateway South Building 4

Date: 03-09-2017

JN 3412

Rectangular Snip

Site Area (AC)	62.02
Landscape Area (AC)	8.58
Industrial Light (GPM / Acre)	1.42

Water Demand Calculations	GPM	GPD	AC-FT/YR
Site Average Demand (GPM)	88	126720	142
Maximum Day Demand (GPM) x 1.73	152	218880	245
Peak Hour Demand (GPM) x 1.73 x 2.0	304	437760	491
Landscape GPM Demand	40	57600	65
TOTAL:	128	184320	207

