Appendix N Water Supply Assessment

Water Supply Assessment:
Hillwood Southgate 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 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 the SBMWD approved the 2005 update of the UWMP in December 2005, and is the primary source document for this water supply assessment.

On January 25, 2008, a letter was received by the SBMWD requesting that the Department prepare a water supply assessment pursuant to the provisions of the Water Code § 10910 et seq. for the IDS Real Estate Group Distribution Facility (see Appendix A). The project's applicant, IDS Real Estate Group, submitted the project for proposed development to the City of San Bernardino's Development Services Department.

Project Description

The IDS Real Estate Group's proposed project is a warehouse/distribution facility developed on approximately 33.3 acres of land and a future commercial building on an adjacent 1.8 acre parcel located adjacent (south) of Interstate 215 and approximately 3 miles east of Interstate 15. Specifically, the project site is located on the northeast corner of Palm Avenue and Industrial Parkway. The project site will consist of: (1) a single industrial building totaling 682,408 square feet on the 33.3 acre parcel located in the Industrial Light (IL) land use district, and (2) a future commercial building totaling 31,000 square feet on the adjacent 1.8 acre parcel located in the Commercial General (CG-1) land use district. A conceptual site plan is included in Appendix B.

The project development is consistent with the City's General Plan land uses. The total water demand for the warehouse/distribution facility was estimated using a water coefficient for light industrial land use multiplied by the site acreage, which resulted in a demand of 47.2

gallons per minute (or 76.1 acre-feet per year). The total water demand for the future commercial building was estimated using a water coefficient for commercial general land use multiplied by the site acreage, which resulted in a demand of 3.5 gallons per minute (or 5.6 acre-feet per year). Total estimated water demand is therefore 50.7 gallons per minute (or 81.7 acre-feet per year). Appendix C summarizes the water demand estimate for the IDS Real Estate Group Distribution Facility.

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.

The water demand projections developed for SBMWD's 2005 UWMP were based on ultimate build-out conditions reflected in the City's 2001 General Plan. The demand projections were based on residential, commercial, industrial and public land uses and representative water use factors. Although the City recently updated its General Plan (2005), the changes did not significantly alter the land use designations used by the water demand model enough to change the water demand projections included in the 2005 UWMP.

Because the SBMWD used ultimate build-out conditions from the City's General Plan as the basis for water demand projections for the UWMP, the water demands of 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 UWMP.

The IDS Real Estate Group Distribution Facility parcels of land are shown in Figure 1, which also shows the land use districts for the City. The project's parcels all fall within the major land use districts in the City's General Plan referred to as:

- IL (Industrial Light) – This land use district is intended to permit light industrial uses, including warehouses, research and development, and light manufacturing along major transportation routes within the City.

- CG-1 (Commercial General) – This land use district is intended to permit retail, personal service, entertainment, office, and related commercial uses.

Based on the permitting intent of the above-described land use districts and IDS Real Estate Group Distribution Facility description, it is concluded that the proposed project is consistent with the City's General Plan, and therefore, the water demands of the IDS Real Estate Group Distribution Facility are included in the total water demand projections of the 2005 UWMP.

Figure 1

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

Table 1
Average Climate Data for SBMWD Service Area

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Annual
Standard Monthly Average ETo (feet per year)[1]	2.42	2.69	4.29	5.37	6.30	6.59	7.55	7.19	5.45	3.91	2.75	2.44	4.75
Average Rainfall (inches)[2]	3.06	3.41	2.67	1.30	0.38	0.09	0.04	0.16	0.33	0.66	1.33	2.34	15.77
Average Max. Temperature (^oF)[2]	61.78	63.53	66.24	71.79	75.44	78.80	86.12	85.36	81.38	75.42	66.51	61.17	72.79

1. http://www.cimis.water.ca.gov/cimis/frontMonthlyReport.doc , Station #44 -UC Riverside, June 1995 - Sept 05.
2. Weather Station: San Bernardino F S 226, Station number 7723, Jan 1928 – Aug 2004

Table 2 presents the population projection for the SBMWD service area. It should be noted that the SBMWD service area is different than that of the City's boundary. To determine the portion of the City served by SBMWD, the 2000 US Census data by blocks were used to determine the SBMWD service area population. The ratio between the SBMWD service area population and the City's population for year 2000 was then applied to the population projections for the City proper included in the most recent Southern California Association of Government Regional Transportation Plan (SCAG RTP, 2004).

Table 2
Population Projections for SBMWD Service Area[1]

	2005	2010	2015	2020	2025	2030
Population	173,359	180,315	181,917	183,495	185,004	186,454

1 Projections for service area developed by using 2000 US Census data by blocks to develop a percentage of the City population served and then applying the percentage to City's population projections from SCAG RTP data.

Table 3 summarizes the projection of customer accounts for SBMWD. These accounts were projected based on land use categories from the City's General Plan and the historical correlation between land use and service accounts.

Table 3
Projection of SBMWD Customer Accounts

Customer Class	Year				
	2005	2010	2015	2020	2025
Residential	33,399	34,394	35,029	35,664	36,299
Commercial/ Industrial	5,096	5,619	6,143	6,624	7,104
Public	195	322	450	577	704
Other	19	93	167	241	315
Total	38,709	40,428	41,789	43,106	44,422

Source: SBMWD Urban Water Management Plan, 2005.

Table 4 summarizes the total water demand projections for SBMWD, as depicted in the 2005 UWMP. As discussed previously, water demand projections in the 2005 UWMP were based on ultimate build-out conditions presented in the City's General Plan. As such, the IDS Real Estate Group Distribution Facility would be included in the commercial/industrial demands.

Table 4
Average Annual SBMWD Water Demands (Acre-Feet/Year)

Customer Class	Year				
	2005	2010	2015	2020	2025
Residential	30,976	33,968	36,586	39,206	41,823
Commercial/ Industrial *	9,593	12,973	16,354	18,538	20,724
Public	3,332	3,934	4,537	5,139	5,742
Other	69	69	69	69	69
Unaccounted / system loss	3,310	3,835	4,332	4,738	5,145
Total	47,280	54,780	61,879	67,690	73,504

* Includes the IDS Real Estate Group Distribution Facility water demands.
Source: SBMWD Urban Water Management Plan, 2005.

Existing Water Supply

SBMWD's current water supply consists solely of water extracted from the underlying underground aquifer, Bunker Hill Groundwater Basin (BHG Basin). SBMWD produces its water supply from 57 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 gallons per minute (gpm). Table 5 presents historical groundwater pumping for SBMWD.

Table 5
SBMWD Groundwater Pumped (Acre-Feet/Year)

	2000	2001	2002	2003	2004
Groundwater Pumped	47,487	45,676	48,504	42,850	48,311
% of Total Water Supply	100%	100%	100%	100%	100%

Source: SBMWD Well Production Data 2000-2005

Groundwater Management

Management of the BHG Basin is coordinated through the San Bernardino Valley Municipal Water District (Muni), which was formed in 1954 to plan long-range water supply for the San Bernardino Valley including the BHG Basin. Muni 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 (AF) of high-quality water of which approximately 1.5 million AF 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.

Prior to 1963 the lack of native surface water and imported water for many years led to groundwater overdraft within Muni'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. Groundwater levels in the pressure zone may cause artesian flow in local wells, infrastructure infiltration, and the potential for liquefaction during seismic events. Within the past seventy years, a high groundwater condition has occurred in the area south and east of the intersection of "Mill and D Street" at least three times. 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. Muni has sold extracted high groundwater water to downstream water agencies and will likely do so again if high groundwater conditions reoccur.

Since 1970, Muni has been calculating the change in groundwater storage within the Bunker Hill Groundwater 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 BHG Basin compared to the base year of 1934. The year 1934 was selected by Muni 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 BHG Basin was negative 420,624 AF as illustrated in Figure 2. This figure represents a 30 percent decrease from the previous year. However, as illustrated in Figure 2 conditions have been worse in the past. 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.

The annual change in storage is the change in storage from the prior year. For 2004 this change was negative 97,648 AF as illustrated in Figure 3. Approximately 58 percent of the total decrease in annual storage is thought to be a result of increased well production and a reduction of natural recharge caused by below average precipitation throughout the BHG Basin.

In 2003, the most current year of verified extractions for the BHG Basin, extractions by agencies within Muni's jurisdiction were 169,833 AF. This exceeds the adjusted right of Muni by 2,595 AF, but does not exceed available credits Muni has resulting primarily from previous years where production was less than Muni's adjusted right.

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).

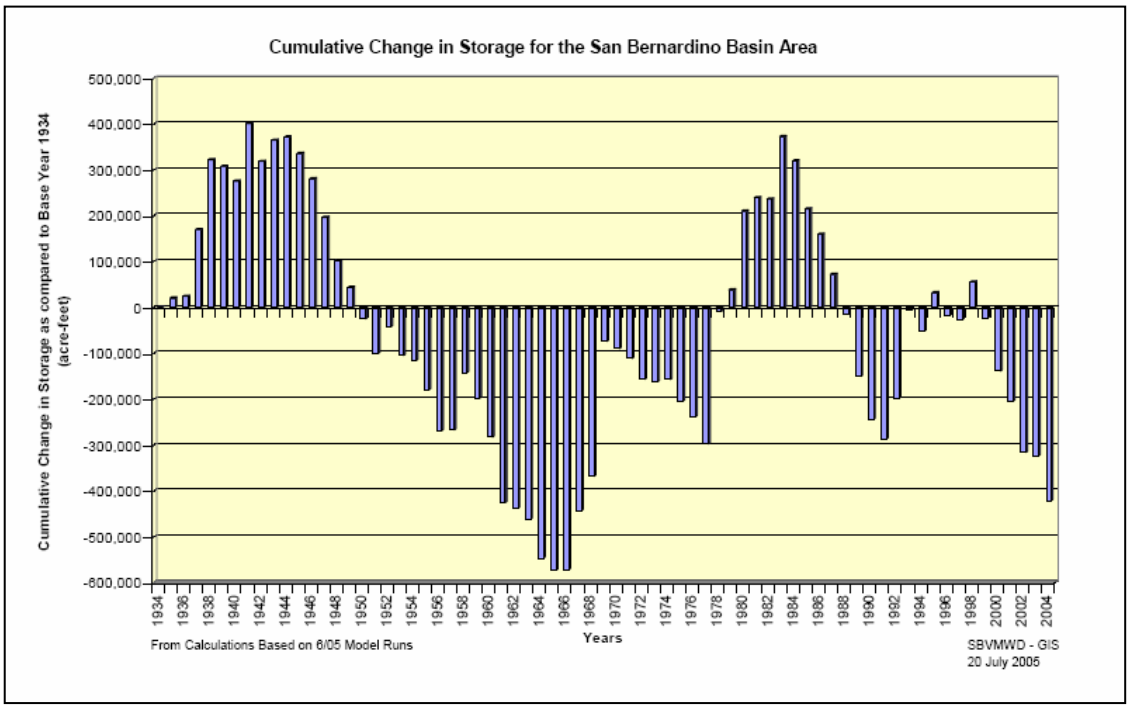


Figure 2
Cumulative Change in Basin Storage

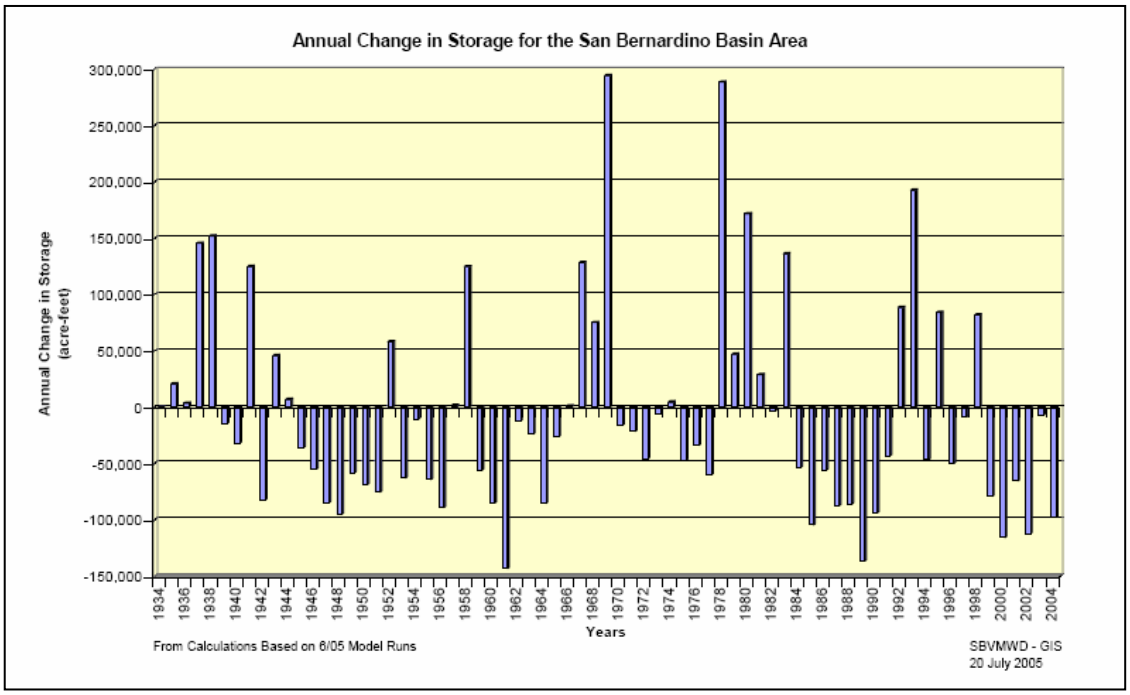


Figure 3
Annual Change in Basin Storage

Groundwater Judgments

Groundwater management issues (mainly export) in the Bunker Hill Groundwater 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.

Under the Western Judgment, Muni has the responsibility to ensure that adequate quantities of water are available for extractions above the basin safe yield of 232,100 AF/Y. As defined, this includes both the BHG Basin and the Lytle Creek Basin. Within Muni's boundaries, the adjusted right is 167,238 acre feet per year (AF/Y), with the remainder of the water rights assigned to plaintiff agencies outside of its service area. If pumping by water agencies within Muni's service area exceeds their overall groundwater production, Muni is required to augment the supply sources by spreading imported water from the SWP or water obtained from other sources. Under the Western Judgment, the production rights of individual agencies within Muni'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 SBMWD's 2005 UWMP.

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 AF plus all storm flow reaching Prado Dam. Muni, Chino Basin Municipal Water District (now IEUA), and Western Municipal Water District guarantee that those flows are met, with Muni responsible for delivery of approximately 16,000 AF to the Riverside Narrows. Muni contracts with SBMWD to discharge 16,000 AF from its wastewater treatment facility (now the RIX facility) to meet this obligation.

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 settles 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 the 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 is developing a groundwater management program, that would regulate new wells within the management area and spreading such that these activities would not adversely affect the remedy.

As part of the groundwater management activities currently being conducted in the Basin, Muni submitted a Proposition 50 planning grant, with funding from a number of local water agencies within its jurisdiction, including SBMWD, to complete an Integrated Regional Groundwater Management Plan (IRGMP). The goal of the IRGMP is to coordinate the existing planning documents and legal documents governing the management of groundwater and surface water within Muni's service area.

Recycled Water

Wastewater in the region is coordinated with several neighboring communities, with the SBMWD treating wastewater for 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 further treatment. RIX is jointly owned by the SBMWD and the Colton Water Department. Currently all effluent, which meets California Title 22 standards, is discharged into the Santa Ana River. The 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.

Planned Water Supply

Both the SBMWD and Muni 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

SBMWD is currently in the process of completing a Water Master Plan. The purpose of the Water Master Plan is to develop a long-range water supply plan and capital improvement plan to reliably meet the needs of SBMWD's service area from now until 2035.

Based on SBMWD's current capital improvement plan, SBMWD will be constructing a new well in fiscal year 2008 with an additional well to be constructed every four years thereafter. These wells will have adequate capacity to handle projected demands within SBMWD's service area.

In addition to groundwater wells, the SBMWD has plans to use about 840 AF from the RIX water reclamation facility for landscape irrigation.

Table 6 summarizes the planned water supplies for SBMWD through 2025. SBMWD will continue to rely on the BHG Basin to fulfill the majority of its future supply needs. The SBMWD will continue to evaluate recycled water opportunities, based on potential demands and cost.

Table 6 Planned Water Supply (Acre-Feet/Year)				
Water Supply Sources	**2010**	**2015**	**2020**	**2025**
Groundwater	53,940	61,039	66,850	72,664
Recycled Water	840	840	840	840
Total	54,780	61,879	67,690	73,504

Source: SBMWD Urban Water Management Plan, 2005.

Muni's Planned Supplies

In early 1996, Muni completed a Regional Water Facilities Master Plan (Master Plan) for the BHG Basin. The Master Plan includes an analysis of local water retailers' current and projected build-out water demands. A list of proposed projects was developed in the Master Plan to allow for moving water throughout the BHG Basin (See Table 7). The most important project recommended to increase reliability is item 7, the completion of the Master Plan Crosstown Feeder to transfer groundwater produced in the artesian pressure zone to purveyors in the eastern and western portions of Muni's service area.

Table 7 Muni's Planned Projects for the Bunker Hill Groundwater Basin	
1.	Install shallow groundwater extraction wells and a transmission system throughout the lower portion of the artesian pressure zone to facilitate rapid dewatering (lowering groundwater levels) to prevent groundwater loss due to artesian flow and subsurface losses over the San Jacinto Fault. The extraction system will be used to maintain lower groundwater levels which will decrease liquefaction potential and provide storage capacity for additional groundwater recharge of periodic storm flow normally lost from the Basin.
2.	Increase current water production safe yield of the Basin to create additional storage capacity for conjunctive use storage of SPW in the Basin.
3.	Construct a storm water discharge pipeline from the Corp of Engineers Seven Oaks Dam Project to transport conservation water and/or storm flows into the Muni's SPW transmission pipeline. Storm flows normally lost to the ocean can be distributed as follows: a) To areas of the Basin that have storage capacity: b) For conjunctive groundwater storage with other SPW contractors and/or the Department of Water Resources. c) Sale to other agencies outside of the boundaries of the Muni.
4.	Construct a surface water conservation element in the Corp of Engineers Seven Oaks Dam Project to conserve up to 10,000 AF per year of native stream flow currently lost during storm events.
5.	Optimize groundwater recharge of tertiary treated water reclamation plant effluent. A study is currently underway in the watershed involving the Regional Water Quality Control Board's (RWQCB) nitrogen and TDS objectives and the establishment of a Management Plan for the watershed. The Department recently completed construction of a 41 MGD Rapid Infiltration and Extraction (RIX) facility to treat secondary wastewater effluent to tertiary levels and reduce nitrogen. This source of water is considered viable for groundwater replenishment through pump back to spreading facilities and/or a negotiated exchange for SPW.
6.	Construction of the Foothill Feeder extension (a joint project between the Muni, the Department of Water Resources, and the San Gorgonio Pass Water Agency) which, will when completed, include pipelines and boosting stations capable of delivering combinations of SPW and local stream flows to local basin producers.
7.	Completion of the Master Plan Crosstown Feeder to transfer groundwater produced from the artesian pressure zone to water purveyors in the eastern and western portions of the Muni service area.

Source: Regional Water Facilities Master Plan Draft EIR, 2000.

Reliability of Water Supply

The reliability of the SBMWD water supply is a function of two aspects, 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. SBMWD is completing its water facilities master plan which will address the adequacy of system capacity. To determine the availability of water supply requires an assessment of Muni's supply reliability.

Muni's service area covers a 325 square mile area in southwestern San Bernardino County, about 60 miles east of Los Angeles, with a population of about 600,000. It spans the eastern two-thirds of the San Bernardino Valley, the Crafton Hills, and a portion of the Yucaipa Valley, and includes the cities and communities of San Bernardino, Colton, Loma Linda, Redlands, Rialto, Bloomington, Highland, Grand Terrace, and Yucaipa. Groundwater is the principal source of supply in the Muni's service area. Other sources of water supply are the California State Water Project (SWP), the Santa Ana River, and its major tributaries including Mill Creek on the east end and Lytle Creek on the west. Projected water demands for Muni were derived from ultimate-build out demands that were estimated in draft Regional Water Facilities Master Plan (see Figure 4).

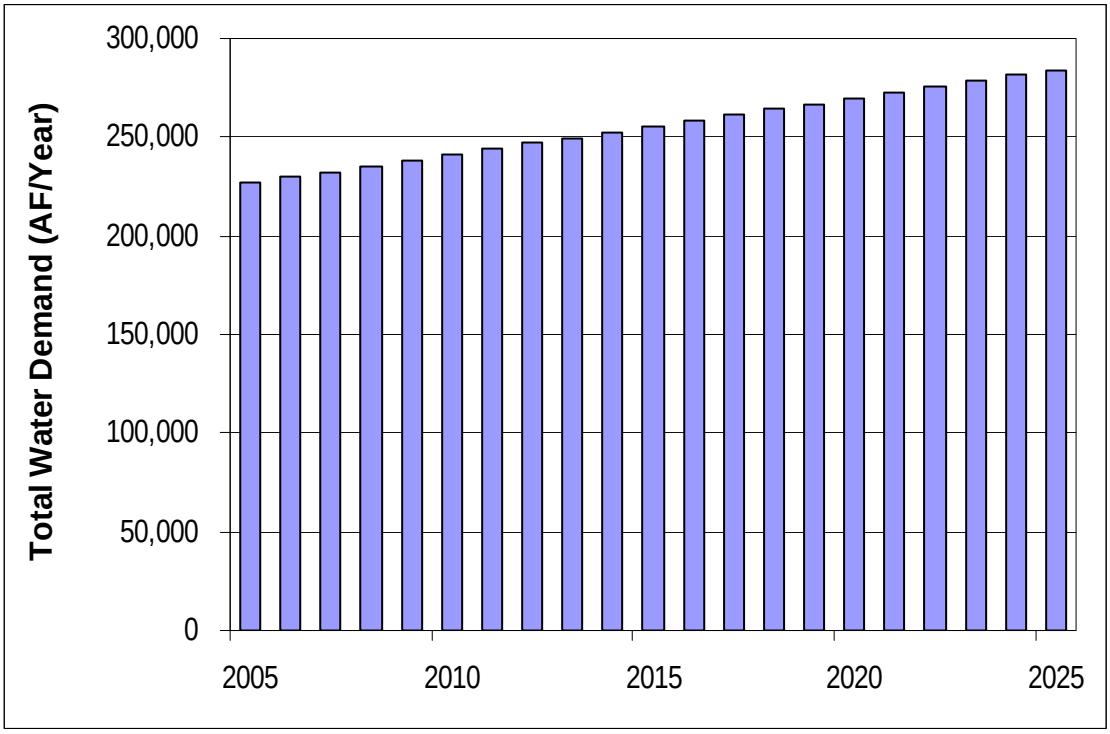


Figure 4
Projected Water Demands for Muni

Muni's Local Supply

Muni's local supply has three main components: groundwater, surface supply, and new/reclaimed supply. Groundwater comes from four different basins: San Bernardino (including Lytle Creek), Colton, Riverside and Yucaipa. Groundwater exports from the San Bernardino Basin include exports to Western Municipal Water District, per the 1969 Western Judgment, and exports to the Chino Basin per an agreement with the Inland Empire Utilities Agency. Table 8 summarizes the local water supply for Muni.

Table 8
Local Water Supply for Muni (Acre-Feet/Year)

Groundwater	
San Bernardino Basin Available Supply to Muni	102,511
Colton Basin Available Supply to Muni	8,350
Riverside Basin Available Supply to Muni	12,644
Yucaipa Basin Available Supply to Muni	8,700
Sub-Total	132,305
Surface Supply Available to Muni	
Lytle Creek	12,000
Santa Ana River	25,800
Mill Creek	14,400
Sub-Total	52,200
New Supplies and Reclaimed Water for Muni	
New Supplies	11,000
Increase water spreading	10,000
Reclaimed water	26,000
Sub-Total	47,000
Total Local Supplies	231,405

Source: Muni Water Budget, Revised 11-03-2005.

Because of the amount of storage in the BHG Basin, it is assumed that the total local supplies shown in Table 8 of 231,405 AF will be available during normal, single-dry and multiple-dry weather scenarios.

Muni's Imported Water from the State Water Project

Muni is one of 29 contractors to the California State Water Project (SWP), which delivers water from northern California to various parts of the state. Muni's contract entitlement for state water was 1,677 AF in 1972, the initial year of deliveries, and increased to a maximum entitlement of 102,600 AF in 1991. Its maximum entitlement is the fifth-largest of the SWP contractors.

The SWP is owned and operated by the State of California, Department of Water Resources (DWR). Its principal facilities consist of Oroville Dam on the Feather River in Northern California and the California Aqueduct, which transports water from the Sacramento-San Joaquin River Delta over 300 miles south to the Tehachapi Mountains. At the base of the Tehachapis, DWR operates the A. D. Edmonston pump station, which lifts SWP water over the mountains, the largest single lift in the world. Pipeline facilities run from the Tehachapis to the Devil Canyon Power Plant and from Devil Canyon to Lake Perris, 25 miles south,

which is the terminus of the SWP. The Devil Canyon Power Plant Afterbay, located in the northern portion of the City of San Bernardino, is a principal point from which SWP water flows by gravity to SWP contract water users in Southern California, including Muni.

The SWP currently delivers about 2.3 million AF per year. SWP contracts call for ultimate delivery of a total of 4.2 million AF per year. It has been determined, however, that without modification, the SWP is not capable of meeting ultimate delivery needs. Moreover, statewide drought conditions and environmental constraints in the Sacramento-San Joaquin Delta and San Francisco Bay can significantly curtail the availability of water from the SWP, making the quantity of available water from the SWP uncertain from year to year.

To help assess the reliability of SWP supplies for preparation of the 2005 UWMPs, the State Water Contractors sent excerpts from DWR's working draft of the 2005 State Water Project Delivery Reliability Report (May 2005). In this draft report, various hydrologic studies were conducted on the expected deliveries (expressed as percentage of entitlement) that would be available during different hydrologic years from 1922 to 1994. Study 7 of that report seems to be the most recent and relevant. Figure 5 shows the percent of total entitlement for the SWP supply available under this hydrologic study.

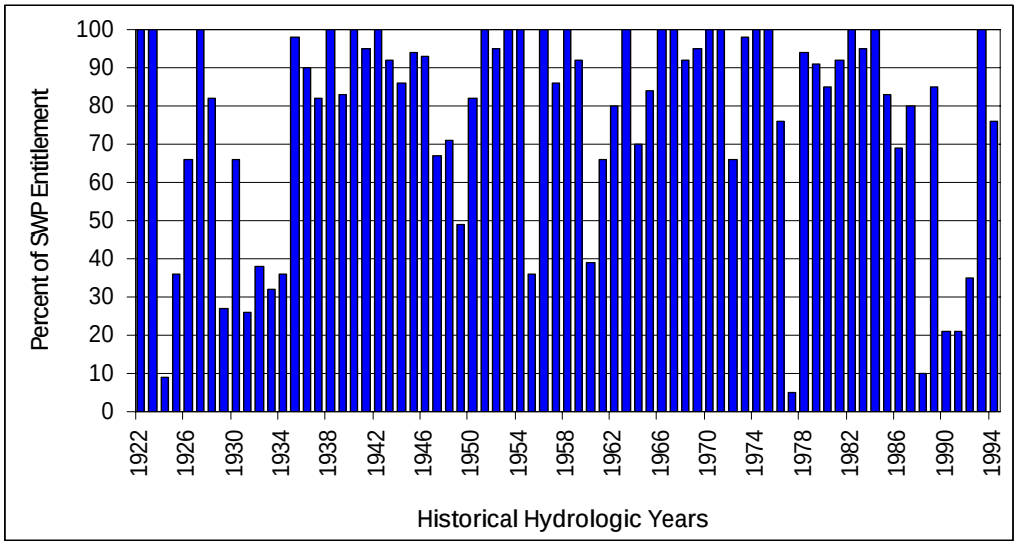


Figure 5
Reliability of SWP Deliveries

Source: DWR Working Draft of SWP Delivery Reliability Report (May 2005)

Muni's Supply Reliability

Muni's supply reliability was assessed for normal, single-dry year and multiple-dry year weather scenarios. Only imported water varies for these year types based on Muni's entitlement multiplied by the percent availability of SWP supplies show in Figure 5. Table 9 summarizes Muni's supply reliability for year 2025, under a normal weather year (average of all hydrologic conditions from 1922-1994), a single-dry year (represented by 1991), and multiple-dry years (represented by 1987-1991).

Table 9 Supply Reliability Assessment for Muni's Service Area (Acre-Feet/Year)							
	Average	Single Dry Year (1991)	Multiple-Dry Years				
			1987	1988	1989	1990	1991
Local Supplies	231,405	231,405	231,405	231,405	231,405	231,405	231,405
SWP Supply	79,002	21,546	82,080	10,260	87,210	21,546	21,546
Total	310,407	252,951	313,485	241,665	318,615	252,951	252,951
2025 Demand	284,211	284,211	284,211	284,211	284,211	284,211	284,211
Difference	26,196	(31,260)	29,247	(42,546)	34,404	(31,260)	(31,260)
% of Demand	9%	-11%	10%	-15%	12%	-11%	-11%
Carryover Supply*	--	3,144	--	29,274	--	31,260	3,144
Difference with Carryover	NA	(28,117)	0	(13,272)	0	0	(28,117)
% of Demand	NA	-10%	0%	-5%	0%	0%	-10%

* Carryover supply represents unused SWP supply from previous year (if available) to meet potential shortage in following year.

In the first comparison on Table 9, total average-year supply exceeds demand by about 26,000 AF per year. However, shortages exist for the single-dry year (1991), second year of multi-year drought (1988), fourth and fifth years (1990 and 1991). Because Muni can store unused SWP water for later use (carryover), another comparison was made using carryover supplies from the SWP. Carryover supplies are unused SWP supplies from the previous year that can be used to meet potential shortages in the following year. The result of this reliability assessment indicates that by year 2025, there could be: a 28,000 AF per year shortage (or 10%) in a single-year dry period (1991); 13,000 AF per year shortage (or 5%) in the second year (1988); and a 28,000 AF per year shortage (or 10%) in the fifth year.

If these shortages in supply are passed on in proportion to the communities within Muni's service area, then the worst shortage any of them would have to manage by 2025 would be 10 percent of projected water demands. Proportions allocated to agencies are based on verified extractions as a percentage of the total extraction by non-plaintiffs in the 2003 Western-San Bernardino Watermaster Report. This would be a manageable reduction that was experienced during the 1987-1991 drought, during which public education resulted in about a 10% reduction in water demand in the San Bernardino region.

SBMWD's Supply Reliability

Based on the reliability of Muni's supply, it is expected that total groundwater available to SBMWD will be sufficient to meet demands reliably through year 2022. After 2022, supplies will be adequate to meet demands in all but the most severe types of drought.

Table 10 shows total demands and total supplies for SBMWD under normal (or average) weather conditions.

Table 10
Service Area Reliability Assessment for Normal Water Year (Acre-Feet/Year)

	2010	2015	2020	2025
Total Demand [1]	54,780	61,879	67,690	73,504
Percent of Year 2005	115%	130%	142%	155%
Total Supply	54,780	61,879	67,690	73,504
Percent of Year 2005	115%	130%	142%	155%
Difference (Supply minus Demand)	0	0	0	0
Difference as a Percent of Supply	0%	0%	0%	0%
Difference as a Percent of Demand	0%	0%	0%	0%

[1] Includes consumptive demand, and unaccounted for uses.

Source: SBMWD Urban Water Management Plan, 2005.

Using the year 1991 to represent the single-dry year scenario, projections of water demands were compared to projected supplies for the period 2010 to 2025 (see Table 11). It is projected that no shortfalls in supply exist until after 2020. The shortfalls in 2025 represent a 10%, which is manageable through public education and drought conservation.

Table 11
Service Area Reliability Assessment for Single-Dry Year (Acre-Feet/Year)

	2010	2015	2020	2025
Total Demand [1]	54,780	61,879	67,690	73,504
Percent of Year 2005	115%	130%	142%	155%
Total Supply	54,780	61,879	67,690	66,154
Percent of Year 2005	115%	130%	142%	155%
Difference (Supply minus Demand)	0	0	0	7,350
Difference as a Percent of Supply	0%	0%	0%	11%
Difference as a Percent of Demand	0%	0%	0%	10%

[1] Includes consumptive demand, and unaccounted for uses.

Source: SBMWD Urban Water Management Plan, 2005.

To determine the reliability of SBMWD's supplies under a multi-year drought scenario, the 1987-1991 drought period was used. Each five-year increment (e.g. 2006-2010) assumes the same multiple dry year period condition. Only after year 2022 are supply shortages expected, which would be managed through public education and drought conservation. Tables 12 through 15 summarize this reliability.

Table 12 2006-2010 Service Area Reliability Assessment for Multiple-Dry Years (AF/Y)					
	2006	**2007**	**2008**	**2009**	**2010**
Total Demand	48,957	50,413	51,868	53,324	54,780
Total Supply	48,957	50,413	51,868	53,324	54,780
Difference (Supply minus Demand)	0	0	0	0	0
Difference as a Percent of Supply	0%	0%	0%	0%	0%
Difference as a Percent of Demand	0%	0%	0%	0%	0%

Table 13 2011-2015 Service Area Reliability Assessment for Multiple-Dry Years (AF/Y)					
	2011	**2012**	**2013**	**2014**	**2015**
Total Demand	56,200	57,620	59,039	60,459	61,879
Total Supply	56,200	57,620	59,039	60,459	61,879
Difference (Supply minus Demand)	0	0	0	0	0
Difference as a Percent of Supply	0%	0%	0%	0%	0%
Difference as a Percent of Demand	0%	0%	0%	0%	0%

Table 14 2016-2020 Service Area Reliability Assessment for Multiple-Dry Years (AF/Y)					
	2016	**2017**	**2018**	**2019**	**2020**
Total Demand	63,041	64,203	65,366	66,528	67,690
Total Supply	63,041	64,203	65,366	66,528	67,690
Difference (Supply minus Demand)	0	0	0	0	0
Difference as a Percent of Supply	0%	0%	0%	0%	0%
Difference as a Percent of Demand	0%	0%	0%	0%	0%

Table 15 2021-2025 Service Area Reliability Assessment for Multiple-Dry Years (AF/Y)					
	2021	**2022**	**2023**	**2024**	**2025**
Total Demand	68,853	70,016	71,178	72,341	73,504
Total Supply	68,853	69,315	68,331	67,277	66,154
Difference (Supply minus Demand)	0	-700	-2,847	-5,064	-7,350
Difference as a Percent of Supply	0%	-1%	-4%	-8%	-11%
Difference as a Percent of Demand	0%	-1%	-4%	-7%	-10%

Sources for Tables 12-15: SBMWD Urban Water Management Plan, 2005.

Conclusion

Based on the supply reliability of Muni and SBMWD, as presented in this water supply assessment, it is concluded that SBMWD has sufficient water supplies to meet the demands of the IDS Real Estate Group Distribution Facility, along with the other projected municipal water demands. Only after 2022 and only during the most severe drought conditions would potential water shortfalls exist, with the maximum shortfall being 10 percent of water demand. Such a shortfall could easily be managed through public education.

Primary Source Documents

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

SBMWD Urban Water Management Plan, 2005.

City of San Bernardino General Plan (November 2005)

City of San Bernardino University Hills Specific Plan (March 2007)

Appendix A

Letter Requesting Water Supply Assessment

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

RECEIVED
JAN 28 2008
S.B.M.W.D.
GENERAL MANAGER

TO: Stacey Aldstadt, General Manager, Municipal Water Department

FROM: Terri Rahhal, Deputy Director/City Planner

SUBJECT: Water Supply Assessment for IDS Real Estate Group distribution facility

PROJECT: Development Permit Type 2 No. 06-28

DATE: January 25, 2008

COPIES: Brian Foote, Associate Planner
Ted Brunson, Water Utility Engineering Technician
Steven Ledbetter, Water Utility Construction Project Manager

Development Permit Type 2 No. 06-28 has been submitted for the construction of one warehouse/distribution facility (total of 682,408 square-feet) on 33 acres located on the east side of Industrial Parkway, approximately 300 feet south of Palm Avenue, and adjacent to I-215 (APN: 0266-041-62). The project is consistent with the City's General Plan, and meets the threshold for requirement of a Water Supply Assessment pursuant to Water Code Section 10910 et seq. and Public Resources Code Section 21151.9.

As outlined in Section 10910(g)(1), the Water Department has 90 days to prepare the assessment from receipt of this request, and may request a 30-day extension. The developer would appreciate an expedited response, to assist them with preparation of the project Draft EIR.

The applicant will be responsible for all costs associated with the Water Supply Assessment, including Water Department staff time or consultant services that may be required. You may contact Melissa Poole, Senior Associate, of IDS Real Estate Group at (213) 347-6448 or 'mpoole@idsrealestate.com' to make the arrangements for payment or to request additional information.

Appendix B

IDS Real Estate Group Location and Site Plan

vicinity map

tabulations

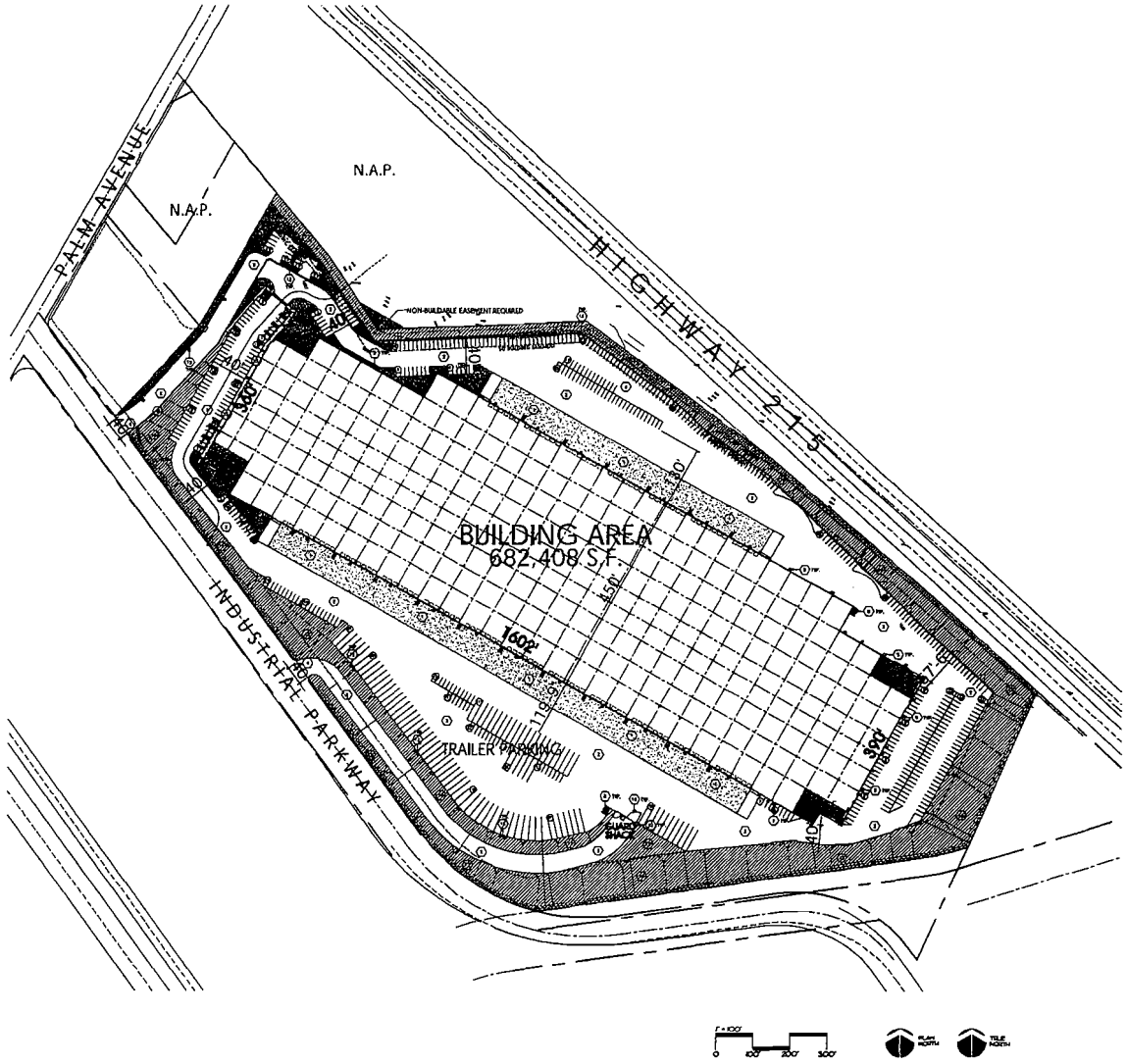
CITY OF SAN BERNARDINO

	682K Building Totals
Total Land Area	
Acres	38.03
Square Feet	1,656,558
Building Area	
Office (Future) - Ancillary	-
Warehouse	682,408
Total Building Area	682,408
Coverage	
Building Coverage	41%
Landscape Required	
15% of Car Parking Area	63,910
Landscape Provided	
Landscape Coverage	11%
Landscape Area	172,075
Parking Required	
Office (1-3000sf - 1 per 250 S.F.)	12
Office (3001-5000sf - 1 per 500 S.F.)	4
Office (5001-10000sf - 1 per 750 S.F.)	7
Office (10001-50000sf - 1 per 1,000 S.F.)	40
Office (50001sf + - 1 per 1,250 S.F.)	506
Total Automobile Parking Required	569
Parking Provided	
Standard Stalls (9'x19')	505
Handicap Stalls (9'x19')	9
Handicap Van Stalls (9'x19')	4
Trailer Stalls (12'x53')	93
Total Parking Provided	612

code data

CONSTRUCTION TYPE	**III - N**
BUILDING OCCUPANCY	**B, S - 1**
AUTOMATIC FIRE SPRINKLERS	**YES**
ALLOWABLE AREA WITH 60' MIN. YARDS ON 4 SIDES AND FULLY SPRINKLERED	**UNLIMITED**

ACCESSOR'S PARCEL NO. 266 - 041 - 62


N.A.P.
N.A.P.
PALM AVENUE
HIGHWAY 215
INDUSTRIAL PARKWAY
NON-BUILDABLE EASEMENT REQUIRED
BUILDING AREA
682,408 S.F.
TRAILER PARKING
GUARD SHACK
1602'
450'
390'
1150'
1500'
1150'
1500'
1150'
1500

Appendix C

Water Demands for IDS Real Estate Group

Water Demand Calculations

Land Use Classification	Project Area	Average Water Demand	Average Day Demand	Max Day Demand 2 Times Average Day	Peak Hour Demand 2 Times Max Day	Annual Water Demand
	acres	(gpm/acre)	(gpm)	(gpm)	(gpm)	(acre-ft.)
Industrial Light (IL)	33.24	1.42	47.2	94.4	188.8	76.1
Future Commercial (CG-1)	1.78	1.95	3.5	7.0	14.0	5.6
TOTAL	**35.02**	**-**	**50.7**	**101.4**	**202.8**	**81.7**

Respectfully,

STANTEC CONSULTING INC.

REGISTERED PROFESSIONAL ENGINEER
GRANT W. BECKLUND
NO. 23737
EXP. 12/31/09
CIVIL
STATE OF CALIFORNIA

3/11/08

Grant W. Becklund, P.E.
Project Manager
RCE 23737