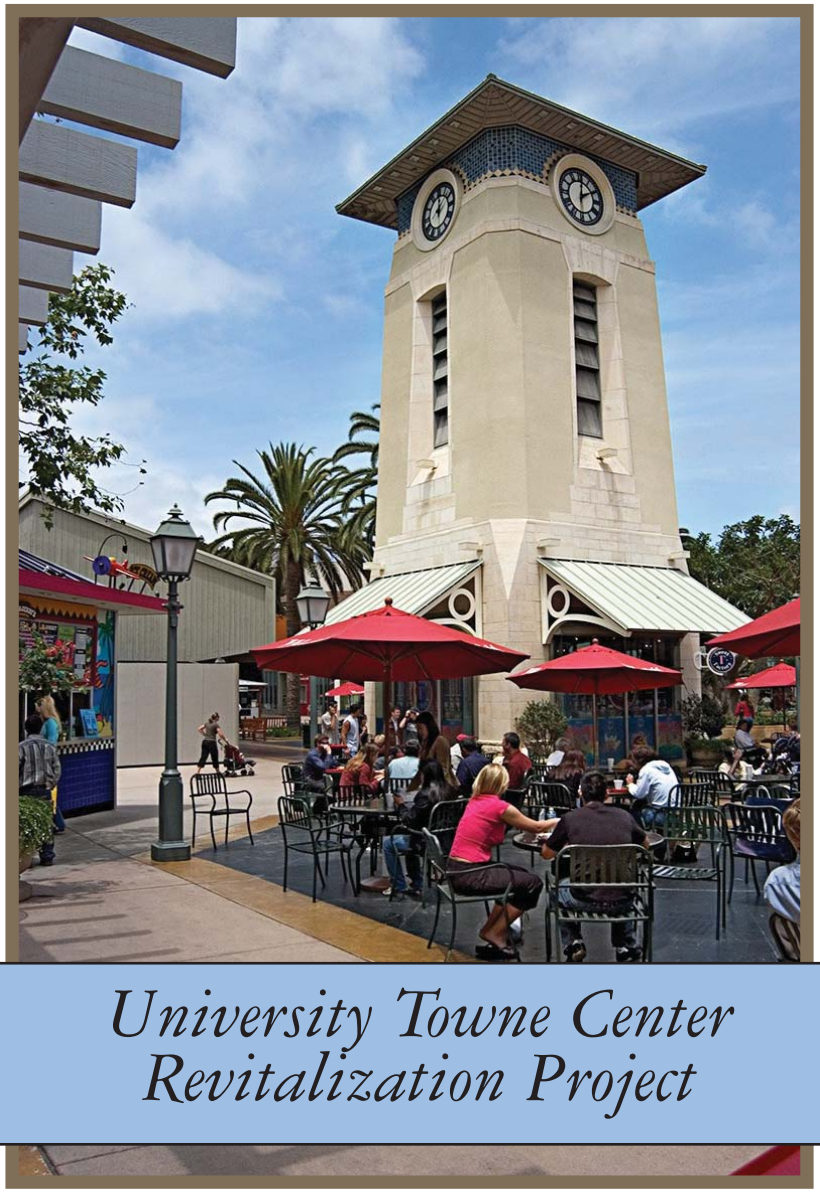
Technical Appendix M:
Water Supply Assessment

to the

Final Environmental Impact Report



University Towne Center Revitalization Project

SCH No. 2002071071 LDR No. 41-0159/PTS No. 2214

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March 2008

DCN: 2008-000210

THE CITY OF SAN DIEGO
MAYOR JERRY SANDERS

M E M O R A N D U M

DATE: March 19, 2008

TO: Cecilia Gallardo, Assistant Deputy Director, Development Services Department

FROM: Marsi A. Steirer, Deputy Water Department Director, Water Policy & Strategic Planning Division

SUBJECT: Water Supply Assessment Report – University Towne Center Revitalization Project (Project No 2214)

In response to your request, please find attached, the approved Water Supply Assessment Report (WSA) for University Towne Center Revitalization Project (Project No 2214).

The Water Department prepared this WSA to assess whether sufficient water supplies are or will be available to meet the projected water demands of the project. The findings verify that, as conditioned, there is sufficient water supply to serve existing demands, projected demands of the project, and future water demands within the Water Department's service area in normal and dry year forecasts during a 20-year projection.

Should there be any comments on the WSA at the conclusion of the public review process of the EIR, please forward them for our review and comment.

If you have any questions, please call George Adrian at (619) 533-4680.

Marsi A. Steirer

MAS/jwc

Attachment

cc: Ray Palmucci, Deputy City Attorney
Bob McCullough, Principal Water Resources Specialist
George Adrian, Associate Engineer
John Minhas, Junior Engineer
Martha Blake, Associate Planner
RMS 6.8.4

WATER SUPPLY ASSESSMENT REPORT

UNIVERSITY TOWNE CENTER REVITALIZATION PROJECT
(Project No. 2214)

Prepared by:

City of San Diego Water Department

Approved by:

MAS

J.M. Barrett, Water Department Director 3/19/08 **Date**

Prepared: March 2008

City of San Diego Water Department
Water Supply Assessment Report

University Towne Center Revitalization Project
(Project No. 2214)

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Section 1 - Purpose

On January 1, 2002, Senate Bill 610 (SB 610) and Senate Bill 221 (SB 221) took effect. The intent of SB 610 and SB 221 was to improve the link between information on water supply availability and certain land-use decisions made by cities and counties. SB 610, which has been codified in the Water Code beginning at Section 10910, requires the preparation of water supply assessments (WSA Report) for projects (defined in the Water Code) within cities and counties that propose to construct 500 or more residential units or that will use an amount of water equivalent to what would be used by 500 residential units. In addition, under SB 610, the WSA Report must be furnished to cities and counties for inclusion in any environmental documentation for projects subject to the California Environmental Quality Act (CEQA). Under SB 221, approval by a city or county of certain residential subdivisions requires an affirmative written verification of sufficient water supply. SB 221 is intended as a mechanism to ensure that collaboration finding the needed water supplies to serve a new large subdivision occurs before construction begins.

Not every project that is subject to the requirements of SB 610 is also subject to the mandatory water verification of SB 221 (*e.g.*, if there is no subdivision map approval). Conversely, not every project that is subject to the requirements of SB 221 must also obtain a SB 610 water supply assessment.

A foundational document for compliance for both SB 610 and SB 221 is the Urban Water Management Plan (UWMP) of the relevant water agency. Both of these statutes repeatedly identify the UWMP as a planning document that can be used by a water supplier to meet the standards set forth in both statutes. Thorough and complete UWMPs will allow water suppliers to use UWMPs as a foundation to fulfill the specific requirements of these two statutes. Cities, counties, water districts, property owners, and developers will all be able to utilize this document when planning for and proposing new projects. UWMPs serve as important source documents for cities and counties as they update their General Plan. Conversely General Plans are source documents as water suppliers update their UWMPs. These planning documents are linked and their accuracy and usefulness are interdependent. It is crucial that cities, counties and water suppliers work closely when developing and updating these planning documents.

The Water Department's 2005 UWMP was adopted by the City Council on September 11, 2006, and was filed with the California Department of Water Resources (DWR).

The City of San Diego Development Services Department (DSD) requested that the City of San Diego Water Department (Water Department) prepare the WSA Report as part of the environmental review of the University Towne Center Revitalization Project (Project). The WSA Report was required since the Project proposes to construct a mixed use area that will include more than 610,000 square feet of floor area, and may include 500 or more residential units (or equivalent to 500 units of water-use or more). A more detailed description of the Project is provided in Section 3 of this WSA Report. This WSA Report evaluates water supplies that are or will be available during normal, single-dry year, and multiple dry water years during a 20-year projection to meet existing demands, projected demands of the Project, and future water demands served by the Water Department. This WSA Report provides an assessment of the

availability of sufficient water supplies for the Project only and does not constitute approval of the Project.

This WSA Report includes, among other information, an identification of existing water supply entitlements, water rights, water service contracts, or agreements relevant to the identified water supply for the Project and quantities of water received in prior years pursuant to those entitlements, rights, contracts, and agreements.

This WSA Report has been prepared in compliance with the requirements under SB 610 by the Water Department in consultation with DSD, the San Diego County Water Authority (Water Authority), and the Metropolitan Water District of Southern California (Metropolitan).

Section 2 - Findings

The Project is not accounted for in SANDAG's (Series 10) forecast as represented in the City's 2005 UWMP and therefore additional water-use over and above the current water usage at the site has not been planned nor accounted for in this document. Consequently, unless additional supplies are made available or existing demands are reduced, no additional water over current levels of use is available for the Project.

As a result, the City of San Diego will place a series of conditions on this Project, to ensure that any estimated increase in water demands be offset by the use of reclaimed water for irrigation, installation of Leadership in Energy and Environmental Design (LEED) certified water efficiency measures, and by off-setting projected increases in potable water-use by retrofitting to reclaimed water irrigation one or more existing public facilities that currently use potable water for irrigation (see discussion below). This offset will be documented in a legally enforceable separate Agreement (Agreement) between Westfield LLC (Project Proponent) and the Water Department. This Agreement will require that the additional water-use at the Project, which exceeds current water usage at the site, be offset. The estimated water demands of the Project are detailed in the report prepared by Dexter Wilson Engineering Inc, University Towne Center Revitalization Project – Data for SB610 Water Supply Assessment (Dexter Wilson Engineering Inc., source documents).

The current level of water-use at the Project site is planned for as part of the SANDAG forecast and 2005 City of San Diego UWMP. Therefore sufficient water will be available for the Project if existing demand levels are maintained but not exceeded.

The Project will utilize reclaimed water for all irrigation needs. In addition, the Project will replace existing structures at the site with new structures that will incorporate, and will be conditioned to have, LEED certified water efficiency measures. This will allow the new and redeveloped commercial/retail portions of the Project to demand less potable water per square foot of commercial/retail space than is currently used at the site.

The completion of the Project's residential phase would also incrementally increase potable water demand at the site. If the Applicant opts to construct the maximum number of 725 residential units allowed under the permit, the projected incremental increase in water usage over current demand is 183.4 acre-feet per year (AFY) using the City of San Diego Design Guidelines. Under the maximum residential scenario, the projected increase in water usage at the site is estimated to range from 132.5 AFY to 183.4 AFY.[1] However, it is likely that the Applicant will construct Scenario 1 (Project), which includes 750,000 square feet of retail development and only 250 residential units. Under this probable development scenario, the increased water usage at the site is projected to be 66.3 - 76.5 AFY.[2]

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[1] The Project's maximum water usage would occur if the Applicant opts to construct Scenario 2, in which 725 residential units would be constructed.

[2] The Proposed Project includes 750,000 square feet of retail development and 250 residential units.

Table 2-1 illustrates the UTC Project's projected water usage.

Table 2-1
Water Usage for current and Proposed UTC Project
Gallons Per Day (GPD)

	Proposed Development (GPD)	Scenario 2 Maximum (GPD)
Water Demand (GPD)*	196,449	255,560
Exiting Water-Use (GPD)	137,281	137,281
Off-set water (GPD)	59,218	118,279
Off-set water (AFY)**	66.3	132.5

* Water Demand with refined numbers and LEED efficiency measures representing a 5% and 7.5% reduction
** Off-set water is defined as the water demand that is greater than the existing water-use on the site.

The Water Department has analyzed the projected water demands of the various development scenarios presented in the analysis by Dexter Wilson & Associates. The Water Department has accepted a water demand reduction of 5% for commercial uses and 7.5% for residential uses based on the Project's implementation of LEED water efficiency measures. Therefore, the Water Department has determined that the Project's incremental increase in potable water-use, over existing potable water-use, is projected to be 66.3 AFY to 132.5 AFY.

Depending on the development scenario chosen, the Applicant will be required to off-set the incremental increase in potable water demand over existing levels of water-use at the site through a legally enforceable separate Agreement. The Project Proponent will be required by DSD to have this Agreement with the Water Department executed prior to issuing a construction permit for the site. The Agreement will require the Project Proponent to achieve the off-set by retrofitting the irrigation infrastructure at one or more public facilities ("off-set project") connection to the City of San Diego's reclaimed water distribution system. Reclaimed water is created at the City's North City Water Reclamation Facility through tertiary treatment of wastewater. Reclaimed water is approved for use in irrigation and its use off-sets equivalent potable water supplies.

A number of potential recycled water users which would off-set potable water usage, are listed in the Water Department's 2005 Recycled Water Master Plan Update. These users were identified based on their proximity to the distribution system (within one-quarter of a mile) and potable water demands (between 7 to 20 AFY).

Depending on the development scenario chosen by the Applicant, the off-set project will reduce demand on the City's potable water system by 66.3 AFY to 132.5 AFY by replacing new potable water demand with the equivalent amount of reclaimed water. Therefore, the future potable water demand of the Project will not change the overall water demand assumptions in the 2005 UWMP. The combined result of implementing the off-set project(s) and the Project will be a zero net increase in City potable water usage. In addition, the Project Proponent will be conditioned to monitor its water-use for a period of three (3) years following project completion

to demonstrate that the Project has achieved the City's allowed reductions in water-use by installing LEED certified water efficiency measures.

As requested by DSD, the Water Department has prepared this WSA Report to assess whether sufficient water supplies are or will be available to meet projected water demands of the Project and the Water Department for normal, single-dry year, and multiple dry water years during a 20-year projection.

Based on a normal water supply year, the estimated water supply projected in five-year increments for a 20-year projection will meet the estimated water demand; 239,426 acre-feet (AF) in 2010 to 275,925 AF in 2030 (see **Table 6-6**). Based on dry year forecasts, the estimated water supply will also meet the projected water demand during single and multiple-dry year scenarios. For a single-dry year, a projected supply of 295,240 AF (2030) within the Water Department service area is available and for multiple-dry years (2026-2029), a projected supply of 287,119 AF, 289,149 AF, 291,179 AF and 293,210 AF, respectively, is available (see **Table 6-9**).

Together, these findings substantiate that there is a sufficient water supply to serve existing demands and future water demands within the Water Department's service area in normal and dry year forecasts. The Project will be required to create no change in the City of San Diego's planned water demands above existing water usage levels at the Project site. The projected new water demands of the Project will be met through the use of reclaimed water for irrigation, installation of LEED certified water efficiency measures, and by off-setting any projected increases in potable water-use by retrofitting to reclaimed water irrigation one or more public facilities that currently use potable water for irrigation.[3]

An adequate supply is further confirmed by the following from the Water Authority's UWMP, "If the Water Authority and member agency supplies are developed as planned, along with implementation of Metropolitan's Integrated Water Resource Plan (IRP), no shortages are anticipated within the Water Authority's service area under single-dry year or multiple dry water years through 2030." (UWMP Section 8.3).

Therefore, this WSA Report concludes that the proposed level of water-use at the Project site, after conditioning and the implementation of water demand off-set projects are within the water demand forecasts in the 2005 UWMP, other water resources planning documents of the Water Department, the Water Authority and Metropolitan. Water supplies necessary to serve existing demands, and future water demands within the Water Department's service area, as well as the actions necessary to develop these supplies have been identified in the water supply planning documents of the Water Department, the Water Authority, and Metropolitan.

[3] Off-set water is defined as the water demand that is greater than the existing water use on the site.

Section 3 - Project Description

Project Location: The approximately 75-acre University Towne Center (UTC) Revitalization project site is located in the northern portion of the University Community Plan area in the City of San Diego. The Project Site (Site) is developed with 1,061,400 square feet of the existing regional retail space, as well as a seven-acre developed open space between the southern edge of the shopping center and Towne Centre Drive. The Project is located east of Genessee Avenue, south of La Jolla Village Drive, west of Towne Center Drive and north of Nobel Drive.

Proposed Project: The Project is a redevelopment and renovation of the UTC regional shopping center which was originally constructed in the City of San Diego in the late 1970's, opened in 1977, and expanded in 1984. In any new construction at the Site, the Applicant will implement water-efficiency measures pursuant to the UTC green program and LEED for Neighborhood Development pilot project. (Greg Fitchitt letter to LEED Certification Team dated October 5, 2007, see Exhibit B). These water efficiency measures will result in significant water usage savings throughout the Project. In addition, the Project will utilize recycled water for all irrigation needs, resulting in significant potable water-use savings at the Site.

Table 3-1 illustrates eight possible land-use scenarios that could be developed under the Applicant's Master Project Development Plan (PDP). Scenario 1 (Proposed Project) is the most likely land-use scenario that the Applicant will utilize. The Project would include the renovation and expansion of retail uses by 750,000 square feet of new retail and the development of 250 multi-family residential units. Alternatively, the Project would consist of a mix of land-use scenarios that could include a reduction in new retail and the addition of up to 725 residential dwelling units.

Table 3-1
Land-Use Scenarios

Project Scenarios	Retail	Residential	Hotel	Office
1. Proposed Project	750,000 sf	250 units	- - -	- - -
2. Maximum Residential	610,000 sf	725 units	- - -	- - -
3. Maximum Hotel	525,000 sf	- - -	185 rooms	- - -
4. Maximum Office	525,000 sf	- - -	- - -	35,000 sf
5. All Uses	375,000 sf	250 units	100 rooms	35,000 sf
6. No Hotel	425,000 sf	500 units	- - -	35,000 sf
7. No Office No. 1	425,000 sf	300 units	250 rooms	- - -
8. No Office No. 2	350,000 sf	610 units	250 rooms	- - -

The Proposed Project would be constructed in two sequences to accommodate the desire of the department stores to remain in operation throughout the project construction. The initial sequence would add approximately 450,000 square feet of new retail space, while the second sequence would add the remaining 300,000 square feet of net new retail space and the 250 residential units.

Discretionary Approvals: The required discretionary approvals include an EIR certification, a University Community Plan Amendment, Rezone, Master Planned Development Permit, Site Development Permit, Vesting Tentative Map and summary vacations of sewer and water easement.

Water Usage: The Site currently uses, on average, approximately 137,281 GPD of potable water for domestic[4] and irrigation uses as demonstrated by actual meter data. (See Dexter Wilson Engineering Inc. Report, source documents).

As mentioned previously, in the course of the revitalization of the retail portion of the Site, the Project will utilize reclaimed water for all irrigation needs, resulting in a net savings of approximately 40,578 GPD of potable water-use. Moreover, the Applicant has committed to utilize LEED water efficiency measures under the UTC green program and LEED for Neighborhood Development (LEED-ND) pilot project (Greg Fitchitt letter dated October 5, 2007, see Exhibit B). Specifically, the Applicant has made commitments under the LEED-ND program to achieve a minimum 27% reduction in water-use over baseline for both residential and commercial construction.

These water efficiency measures will result in significant water usage savings in all of the Project's areas of new construction. Although the Applicant has committed to achieving this 27% reduction in water-use with the LEED conservation measures, in order to maintain a conservative approach to estimating water demands, the City of San Diego has agreed to a more limited expectation of water-use reduction. It consists of a 5% reduction in baseline potable water-use for new commercial construction and a 7.5% reduction in baseline potable water-use for new residential construction at the Project site based upon the use of LEED water conservation measures.

The Project's Maximum Water Demand under Scenario 2: Of the land-use scenarios proposed by the Applicant, Scenario 2 (Maximum Residential) would result in the greatest water usage because it includes the maximum number of residential units. Under the Maximum Residential scenario, the Project would result in a net increase of 610,000 square feet of retail space and 725 residential units. Using the Water Department's Design Guidelines, the Project under Scenario 2 would use approximately 506,750 GPD. Thus, under the Design Guidelines, the Maximum Residential scenario would result in an increase of the Site's water demand by approximately 163,750 GPD (183.4 AFY). This calculation does not take into account the significant water-saving measures that the Applicant will include under the LEED program, the lower per-unit water demand generated by higher density residential development or the use of reclaimed water for all irrigation uses.

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[4] The term "domestic use" refers to interior use, and does not include water used for irrigation.

Water demand projections based on actual meter data of current water usage at the Site, the density of the proposed residential units and the use of reclaimed water for irrigation uses indicate that the Project under Scenario 2 would result in a maximum demand of 269,731 GPD, an incremental increase of 132,450 GPD (148.4 AFY) over current water usage at the Site (Dexter Wilson report – see Exhibit A). Applying the City's accepted reductions in water usage that would be created by the implementation of LEED measures, Scenario 2's maximum potable water demand will be 255,559 GPD (286.3 AFY), an incremental increase of 118,278 GPD (132.5 AFY), (Dexter Wilson Engineering, Inc. Report – source documents).

The Proposed Project's Water Demand: As explained previously, the Applicant has indicated that it is highly probable that it will implement Scenario 1 (Proposed Project), which would be an increase of 750,000 square feet of retail space and 250 residential units. Using the Water Department's Design Guidelines, the Proposed Project's water demand would be 399,500 GPD (447.5 AFY), which is an increase of 56,500 GPD (63.3 AFY) over existing water demand at the Site. (Dexter Wilson report – source documents) This calculation does not take into account the water-saving measures that the Applicant will include under the LEED program, the lower per-unit water demand generated by higher density residential development, or the use of reclaimed water for all irrigation uses.

Water demand projections based on actual meter data of current water usage at the Site, as well as the density of the proposed residential units and the use of recycled water for irrigation uses, indicate that the Proposed Project would use 205,537 GPD (230.2 AFY) of potable water for the Site, an incremental increase of 68,256 GPD (76.5 AFY) over existing levels. (See Dexter Wilson Engineer Report – source documents). Factoring in the City-accepted water-use savings from the Project's implementation of LEED measures the maximum demand would be 196,498 GPD (220.1 AFY), an incremental increase of 59,217 GPD (66.3 AFY).

Section 4 - City of San Diego Water Department

The City of San Diego (City) purchased its initial water system in 1901 from the privately owned San Diego Water & Telephone Company. Since then, continual expansion of the water system has been required to meet the demands of the growing population of the City. To meet the demand, the Water Department purchased a number of reservoirs between 1913 and 1935 to supplement local water supplies. Despite low annual precipitation for the area (approximately 10 inches per year), these reservoirs supplied the City's growing demands until 1940.

The need to import water emerged with the increased demand generated by the presence of the United States Navy before and up to World War II, and the ensuing population boom. As a result, the Water Department and other local retail water distributors formed the Water Authority in 1944 for the purpose of purchasing Colorado River water from Metropolitan. The Water Department and other local retail water distributors began receiving imported water from the Colorado River in 1947.

Today, the Water Department treats and delivers more than 200,000 AFY of water to nearly 1.3 million residents. Its service area is generally located within the south central portion of San Diego County and is approximately 330 square miles. The Water Department potable water system serves the City of San Diego and certain surrounding areas, including both retail and wholesale customers. The Project is located within the Water Department service area.

In addition to delivering potable water the City has a recycled water program. Its objectives are to optimize the use of local water supplies, lessen the reliance on imported water and free up capacity in the potable system. Recycled water gives the City a dependable, year-round, locally produced and controlled water resource.

Overview of Potable System Facilities

The water system consists primarily of nine raw water storage facilities with 416,000 AF of storage capacity, three water treatment plants, 32 treated water storage facilities and more than 3,460 miles of transmission and distribution lines.

The Water Department maintains and operates nine local surface raw water storage facilities, eight of which are directly connected to water treatment operations. The Lower Otay, Barrett and Morena Reservoirs (137,700 AF total capacity) service the Otay Water Treatment Plant in south San Diego; the El Capitan, San Vicente, Sutherland and Lake Murray Reservoirs (237,500 AF total capacity) service the Alvarado Water Treatment Plant in central San Diego; and the Miramar Reservoir (7,200 AF total capacity) services the Miramar Water Treatment Plant in north San Diego. Lake Hodges Reservoir has a total capacity of 33,600 AF.

The Water Department maintains and operates three water treatment plants with a combined total rated capacity of 294 million gallons per day (MGD). The Miramar Water Treatment Plant (Miramar WTP), originally constructed in 1962, has a current rated capacity of 140 MGD. The Miramar WTP generally serves the City's geographical area north of the San Diego River (north San Diego). Construction is underway to increase the rated capacity of the Miramar WTP to 215

MGD by 2010. The Alvarado Water Treatment Plant (Alvarado WTP), operational since 1951, had an initial capacity rating of 66 MGD. Several hydraulic improvements to the Alvarado WTP were constructed in the mid-1970s to increase the plant's capacity to 120 MGD. Recent improvements at the plant increased the rated capacity to 150 MGD (interim). With completion of ongoing construction the rated capacity of the Alvarado WTP will increase to 200 MGD by 2010. The Alvarado WTP generally serves the geographical area from National City to the San Diego River (central San Diego). The Otay Water Treatment Plant (Otay WTP) was originally constructed in 1940, and has a current rated capacity of 34 MGD. The Otay WTP generally serves the geographical area bordering Mexico (south San Diego) and parts of the southeastern portion of central San Diego. Currently, the Otay WTP is in the process of being upgraded to include a third set of flocculation and sedimentation basins, filter piping and media improvements, and two 6.9 MGD clearwells. It is anticipated once the upgrades are completed that the rated capacity of the Otay WTP will increase to 43.3 MGD by 2010.

The Water Department maintains and operates 32 treated water storage facilities, including steel tanks, standpipes, concrete tanks and rectangular concrete reservoirs, with capacities varying from less than 1 to 35 million gallons.

The water system consists of approximately 3,460 miles of pipelines, including transmission lines up to 84 inches in diameter and distribution lines as small as 4 inches in diameter. Transmission lines are pipelines with larger diameters that convey raw water to the water treatment plants and convey treated water from the water treatment plants to the treated water storage facilities. Distribution lines are pipelines with smaller diameters that directly service the retail users connected to a meter. In addition, the Water Department maintains and operates over 50 water pump stations that deliver treated water from the water treatment plants to over 273,000 metered service connections in over 90 different pressure zones. The Water Department also maintains several emergency connections to and from neighboring water agencies, including the Santa Fe Irrigation district (Miramar WTP), the City of Poway Municipal Water District (Miramar WTP), the Cal-American Water Company (Alvarado and Otay WTP's), the Sweetwater Authority (Otay WTP) and the Otay Water District (Otay WTP).

Overview of Recycled System Facilities

The City of San Diego built the North City Water Reclamation Plant (NCWRP) and the South Bay Water Reclamation Plant (SBWRP) to treat wastewater to a level approved for irrigation, manufacturing and other non-potable purposes.

The NCWRP currently treats 22.5 MGD of wastewater, although the Plant has an ultimate treatment capability of 30 MGD. On average, 28% or 6.5 MGD of the current wastewater flows are treated to a tertiary level and beneficially reused. During the summer months, the beneficial reuse increases to 45% or 10.1 MGD of the wastewater flows.

The Water Department maintains and operates the North City recycled water distribution system which consists of 80 miles of recycled water pipeline, two reservoirs and two pump stations. The pipeline sizes vary from 4-inch to 36-inch diameter. The recycled water distribution system currently serves more than 418 retail sites and two wholesale customers: the City of Poway and

the Olivenhain Municipal Water District. Among the largest consumers of recycled water are Caltrans, University of California at San Diego, Torrey Pines Golf Courses, Metro Biosolids Center, Black Mountain Ranch Home Owner's Association, Santa Luz golf course, Miramar Landfill, La Jolla Colony HOA, Miramar Marine Corp Air Station golf course and the City of Poway.

SBWRP production of recycled water commenced in July 2006, with service to the International Boundary and Water Commission (IBWC). Recycled water production at South Bay expanded in May 2007 when the Otay Water District began taking deliveries. SBWRP's wastewater treatment capacity is 15 MGD. The plant is presently treating a maximum of 9 MGD to tertiary level due to the current volume of wastewater flows to the plant. During the summer months, 100% of the wastewater flows to the South Bay Plant are treated to a tertiary level and beneficially reused. Wintertime beneficial reuse from SBWRP is approximately 3 MGD currently.

Section 5 - Existing and Projected Supplies

The Water Department relies on imported water as its major water supply source. The Water Department is a member public agency of the Water Authority. The Water Authority is a member public agency of Metropolitan. The statutory relationships between the Water Authority and its member agencies, and Metropolitan and its member agencies, respectively, establish the scope of Water Department's entitlements to water from these two agencies. Due to the Water Department's reliance on these two agencies, this WSA Report relies and includes information on the existing and projected supplies, supply programs, and related projects of the Water Authority and Metropolitan.

The City of San Diego relies in part on the Water Authoritiy's 2005 Updated Urban Water Management Plan and Metropolitan's 2005 Regional Urban Water Management Plan (RUWMP) in their entirety to support the work on this WSA. These documents are available at the following websites and contacts;

San Diego County Water Authority

http://www.sdcwa.org/manage/2005UWMP.phtml

Dana Friehauf, Principal Water Resources Specialist (858) 522-6749

Metropolitan Water District of Southern California

http://www.mwdh2o.com/mwdh2o/pages/yourwater/RUWMP/RUWMP_2005.pdf

MWD staff, (213) 217-6000

The Water Authority and Metropolitan are actively pursuing programs and projects to diversify their water supply resources. This information along with a description of local surface and local recycled water supplies available to the Water Department are discussed below.

5.1 Metropolitan Water District of Southern California

Metropolitan was formed in 1928 to develop, store, and distribute supplemental water in Southern California for domestic and municipal purposes. Metropolitan is a wholesale supplier of water to its member public agencies. It obtains supplies from local sources as well as the Colorado River, via the Colorado River Aqueduct (CRA) which it owns and operates, and the Sacramento-San Joaquin Delta, via the State Water Project (SWP). The Metropolitan RUWMP documents the availability of these existing supplies and additional supplies necessary to meet future demands.

The Water Authority, one of 27 Metropolitan member agencies, is the largest of Metropolitan's member agencies in terms of deliveries, purchasing about 25 percent of all the water Metropolitan delivered in fiscal year 2007.

Metropolitan's IRP identifies a mix of resources (imported and local) that, when implemented, will provide 100 percent reliability for full-service demands through the attainment of regional targets set for conservation, local supplies, SWP supplies, Colorado River supplies, groundwater banking and water transfers. The 2004 update to the IRP includes a planning buffer to mitigate against the risks associated with implementation of local and imported supply programs. The planning buffer identifies an additional increment of water that could potentially be developed if other supplies are not implemented as planned. As part of implementation of the planning buffer, Metropolitan periodically evaluates supply development to ensure that the region is not over-developing supplies. If managed properly, the planning buffer will help ensure that the southern California region, including San Diego County, will have adequate supplies to meet future demands.

LINK to Metropolitan's Integrated Resources Plan (IRP)

http://www.mwdh2o.com/mwdh2o/pages/yourwater/irp/IRPupdate.pdf

In November 2005, Metropolitan adopted its 2005 RUWMP, in accordance with state law. The resource targets included in the 2004 IRP Update, serve as the foundation for the planning assumptions used in the 2005 RUWMP. Metropolitan's 2005 RUWMP contains a water supply reliability assessment that includes a detailed evaluation of the supplies necessary to meet demands over a 25-year period in average, single-dry year and multiple-dry year periods. As part of this process, Metropolitan also uses SANDAG's regional growth forecast in calculating regional water demands for the Water Authority's service area.

As stated in Metropolitan's 2005 RUWMP, the document may be used as a source document for meeting the requirements of SB 610 and 221 until the next scheduled update is completed in 2010. In addition, the 2005 RUWMP includes a "Justification for Supplies" in Appendix A.3 that details the planning, legal, financial and regulatory basis for including each source of supply in the plan.

Impacts of Global Climate Change on Metropolitan's Water Supply

Metropolitan's sources of water supply could be impacted negatively by global climate change. There is a broad consensus that there is a warming trend due to global climate change and that this warming trend could affect California's water supplies. The predicted impacts of global climate change that could affect Metropolitan's water supply include, but are not limited to: (1) reduction in the average annual snowpack; (2) changes in the timing, intensity, location, amount and variability in precipitation; (3) long-term changes in watershed vegetation and increased incidence of wildfires; (4) rise in sea level; (5) increased water temperatures; and (6) changes in urban and agricultural water demand. (Source: California Department of Water Resources (DWR), Progress on Incorporating Climate Change into Management of California's Water Resources, July 2006).

Governmental entities in California, including the DWR, have issued numerous reports evaluating the impacts of global climate change on California. (*See:* California Climate Change

Center, 2006 Biennial Report: Our Changing Climate: Assessing the Risks to California, 2006). Given the complexity of global climate change and the uncertainty of the evidence of the potential impacts of global climate change, the impacts of global climate change on Metropolitan's water supply cannot be meaningfully quantified at this time.

Moreover, Metropolitan has taken actions to decrease the potential impacts of climate change on the reliability of its water supplies. In 2002, Metropolitan adopted policy principles regarding global climate change, which are reflected in Metropolitan's Integrated Resource Plan (IRP). The IRP's water resource portfolio emphasized diversification and adaptability of supply sources to manage uncertainties created by climate change. The IRP also stressed local water supplies that are arguably less affected by global climate change including conservation, water reclamation, groundwater recharge and additional reservoir capacity to store water when it is plentiful for times of drought. Metropolitan has also entered into agreements to store water in groundwater reservoirs within and outside of Southern California. While not eliminating the risks created by global climate change, these actions should decrease the adverse impacts on Metropolitan's water supplies upon which the Project would rely.

Delta Decision

The amount of water that MWD will be able to supply to Southern California in the near future is unclear given the recent decision in *Natural Resources Defense Council, et al. v. Kempthorne, et al. (NRDC)*, currently pending in the United States District Court for the Eastern District of California, Judge Oliver Wanger presiding. In May 2007, Judge Wanger invalidated the Biological Opinion issued by the U.S. Fish & Wildlife Service (USFWS) for operations of the SWP and Central Valley Project (CVP) with regard to the Delta smelt, a federally- and state-listed threatened fish species that inhabits the estuaries of the Bay-Delta region. Later that month, the DWR voluntarily shut down SWP pumps in the Sacramento-San Joaquin River Delta (Delta) for 17 days in an effort to protect the endangered Delta smelt.

In June 2007, after the DWP restarted the SWP pumps, various environmental groups sought to halt the operation of the SWP pumps in the Delta to protect the Delta smelt and other endangered fish. Metropolitan currently receives approximately 60% of its water from the Delta. In December 2007, Judge Wanger issued an interim remedial order that requires the USFWS to prepare a new Biological Opinion by September 15, 2008. It is likely that there will be significant conservation measures put into place on a permanent basis after this opinion is issued. The interim remedial order also specifies "Flow Restrictions," which ensure that flows in the Old and Middle Rivers (which are part of the Delta) do not exceed certain levels to prevent the Delta smelt from becoming trapped near the SWP and CVP pumps. The interim remedial order allows the SWP and CVP operators to take good faith measures that are reasonably necessary and appropriate for the protection of human health and safety, which presumably include but are not limited to supply for emergency water services, as well as actions that protect the structural integrity of any CVP and SWP facility. Therefore, the full extent of *NRDC*'s impact on Metropolitan's ability to supply water to Southern California is uncertain.

This decision should not significantly impact the Project's water supply. Restoring the Delta's water delivery capacity is of great importance to the Governor and the California Legislature.

Prior to the decision, plans were underway for improving the operation of the Delta's water pumps while also protecting the Delta smelt and other endangered fish species. The Governor has made the Delta and statewide water policy high priorities by establishing the Delta Vision Process and the Bay-Delta Conservation Plan. The California Legislature enacted SB 27 to find a long-term water supply solution for the Delta.

Metropolitan is similarly focused on the challenges relating to the reliability of the Delta water supply. In May 2007, its Board adopted a Delta Action Plan as a framework to address water supply risks in the Delta both for the near-, mid-, and long-term. The near- and mid-term actions outlined in the Delta Action Plan are intended to implement measures to reduce fishery and earthquake-related risks, such as aggressive monitoring, ecosystem restoration, local water supply projects, and emergency preparedness and response plans. The long-term actions are intended to create a global, comprehensive approach to the fundamental environmental issues facing the Delta to create a sustainable ecological environment through Delta ecosystem restoration, improved water supply conveyance, flood control protection, and development of storage facilities.

In the near-term, Metropolitan will continue to rely on the plans and policies outlined in its RUWMP and IRP to address water supply shortages and interruptions (including potential shut downs of SWP pumps) to meet water demands. Campaigns for voluntary conservation, curtailment of replenishment water, and agricultural water delivery are some of the actions outlined in the RUWMP. If necessary, reduction in municipal and industrial water-use and mandatory water allocation could be implemented, but is unlikely to be in effect in the long-term. Finally, as mentioned above, Metropolitan recently entered into a series of agreements that ensure the stability of its Colorado River supplies and provide Metropolitan with substantial storage capacity at Lake Mead in years with surplus water supplies. As a result of these plans, Metropolitan's water supply may be restored to previous levels future.

On a local level, the Water Authority is in the process of minimizing the amount of water it purchases from Metropolitan by diversifying its water supply portfolio as discussed in detail below. Prompted by a 30% cutback in its water supply from Metropolitan due to a six-year drought that began in 1987, the Water Authority began to diversify its portfolio. Significantly, the implementation of the Quantification Settlement Agreement (QSA) and the Imperial Irrigation District (IID) water conservation and transfer agreement in 2003, the Water Authority is reducing its reliance on Metropolitan water supplies. Moreover, the Water Authority seeks to increase its local water supplies to 40% of the region's water supply by 2020 through conservation programs, local reservoirs, recycling, and groundwater.

In light of the Governor's, the California Legislature's, and Metropolitan's ongoing efforts to rehabilitate the Delta and stabilize the Delta's water supply as well as Metropolitan's efforts, the *NRDC* decision is not expected to impact the Project's short-term water supply. Moreover, any possible impact would be short-lived in light of the Water Authority's efforts to minimize its reliance on Metropolitan water supplies in favor of increased local water supplies and conservation efforts.

Lake Mead Agreements. Metropolitan authorized four agreements in December 2007 that allows local agencies to develop and store new water supplies from the Colorado River. The agreements coincide with U.S. Interior Secretary's signing of a federal conservation and reservoir operations plan for the Colorado River. When adopted, the federal plan will be in effect until 2026. Metropolitan is granted the opportunity to store nearly 1.5 million acre feet (MAF) of conserved water in Lake Mead. The additional storage is equivalent to building a reservoir nearly twice the size of Diamond Valley Lake, Metropolitan's largest reservoir located near Hemet in southwest Riverside County. The plan, furthermore, calls for storage levels in Lake Mead and Lake Powell to be closely coordinated in order to more efficiently manage water and reduce the risk of shortages to all upper and lower Colorado River Basin states.

Under these agreements, California will not be targeted for cutbacks until water levels at Lake Mead reach 16 percent of capacity. Lake Mead, with a capacity of 25.9 MAF, is (after eight years of drought) 48 percent full. The compromise, protecting California's 4.4 MAF water allotments, also has implications beyond CRA supply as it ends the prior "use it or lose it" storage approach. Previously, the three lower basin states (California, Arizona and Nevada) were forced to abandon remaining supplies in Lake Mead at year's end. Metropolitan is now permitted to bank up to an extra 400,000 AF of unused water annually in Lake Mead, providing a greater degree of certainty during periods of prolonged drought or to offset possible reductions in other sources of supply.

Capital Investments. As part of Metropolitan's annual budget approval process, the District prepares a Capital Investment Plan (CIP). The cost, status, and progress of each of Metropolitan's approved infrastructure projects to deliver present and future water supplies, are fully documented within this CIP Plan. Project-financing is approved through their annual budget approval process. The CIP Plan is available on their website.

5.2 San Diego County Water Authority

The Water Authority was formed in 1944 to provide a supplemental supply of water to the San Diego region. The Water Authority's 24 member agencies purchase water from the Water Authority for retail distribution within their service areas. The Water Authority purchases water from Metropolitan and conserved agricultural water transferred from the IID. These supplies are delivered to its member agencies through two aqueducts containing five large-diameter pipelines.

In November 2005, the Water Authority Board adopted its 2005 Urban Water Management Plan (2005 Plan) in accordance with state law. The Urban Water Management Plan was updated in April 2007. Section 8 of the Updated 2005 Plan (April 2007) contains a water supply reliability assessment that identifies a diverse mix of imported and local supplies necessary to meet demands over the next 25 years in average, single-dry year and multiple-dry year periods. As stated in Section 8, if projected Water Authority and member agency supplies are developed as planned, along with implementation of Metropolitan's IRP, no shortages are anticipated within the Water Authority's service area. Section 4 and Appendix E of the Updated 2005 Plan (April 2007) contains documentation on the existing and planned water supplies being developed by the Water Authority. This documentation was prepared for use by the Water Authority's

member agencies to facilitate preparation of the water supply assessments and written verifications required under state law.

In accordance with the Water Authority's Administrative Code, the Water Authority also prepares, for use by its member agencies, cities and county in complying with SB 610/221, an annual water supply report. The supply report provides updated documentation on existing and projected supplies. The Water Authority plans to have a 2008 Water Supply Report completed by June that would document the current restriction of deliveries from the State Water Project. Metropolitan Water District is also developing a water supply reliability report, taking into account supplies currently available from the SWP and actions being taken to ensure a reliable water supply, which should also be completed by June 2008.

5.3 Water Department

The Water Department currently purchases approximately 75-90% of its water from the Water Authority, which supplies the water (raw and treated) through two aqueducts consisting of five pipelines. While the Water Department imports a majority of its water, it uses three local supply sources to meet or offset potable demands: local surface water, conservation and recycled water.

The availability of sufficient imported and regional water supplies to serve existing and planned uses within the Water Department service area is demonstrated in the above discussion on Metropolitan and the Water Authority's water supply reliability. The City has been receiving water from the Water Authority since 1947 and during the last 20 years the City has purchased between 100,000 and 228,000 AFY. For Fiscal Year 2007, water purchases totaled approximately 227,300 AF, representing 92 percent of the City's total water needs. Depending upon the success of local water supply initiatives this could remain somewhat constant or increase up to a projected maximum of 253,000 AFY in 2025 during normal years. For the purpose of this analysis the maximum is used.

5.3.1 Demonstrating the Availability of Sufficient Supplies and Plans for Acquiring Additional Supplies

Imported Supplies

Section 5, subdivision 11 of the County Water Authority Act states that the Water Authority "as far as practicable, shall provide each of its member agencies with adequate supplies of water to meet their expanding and increasing needs." The Water Authority provides between 75 to 95 percent of the total supplies used by its 24 member agencies, depending on local weather and supply conditions.

As mentioned in Section 4, the Water Department and other local retail water distributors formed the Water Authority in 1944 for the purpose of purchasing Colorado River water from the Metropolitan Water District of Southern California.

Local Surface Water Supplies

The Water Department maintains and operates nine local surface raw water storage facilities, eight of which are connected to water treatment operations. In the San Diego region, on average, about 13 percent of the local precipitation produces surface runoff to streams and Water Department reservoirs. About half of the runoff is used for the municipal water supply, while the remaining runoff evaporates during reservoir storage, or spills over the dams and returns to the Pacific Ocean in very wet years. Average rainfall produces less than half of the average runoff in San Diego. The local climate requires about average rainfall to saturate the soils sufficiently for significant surface runoff to occur. Therefore, most of the runoff to reservoirs is produced in years with much greater than average rainfall. Some flooding may occur even during average or below average rainfall years if the annual rainfall is concentrated in a few intense storms.

Use of local water by the Water Department to meet water demand is affected by availability, and water resource management policies. The Water Department's policy is to use local water first, when available, to reduce imported water purchases and costs. The Water Department also operates emergency and seasonal storage programs in conjunction with its policy.

The purpose of emergency storage is to increase the reliability of the imported water aqueduct system. This is accomplished by maintaining a sufficient amount of water in accessible storage to ensure an uninterrupted supply of water to water treatment plants and customers should earthquakes or other events interrupt the supply of imported water. The management of reservoirs is guided by Council Policy 400-04, which outlines the City's Emergency Storage Program. The policy mandates the Water Department to store sufficient water in active, available storage to meet six-tenths of the annual (7.2 months) City normal water demand requirements (conservation is not included). Active, available storage is that portion of the water that is above the lowest usable outlet of each reservoir.

The monthly emergency storage requirement changes from month to month and is based on the upcoming seven months water demand. This results in a seasonally fluctuating emergency storage requirement generally peaking in May and reaching its minimum in October. This seasonally fluctuating requirement makes a portion of the required emergency storage capacity available for impounding or seasonal storage.

The purpose of seasonal storage is to increase imported water supply. This is done by storm surplus imported water in the wet winter season for use during the dry summer season. This may also be accomplished by increased use of imported water in lieu of local water in the winter when local water may be saved in reservoirs or groundwater basins for summer use. In addition to increased water yield, this type of seasonal operation also reduces summer peaking on the imported water delivery system.

Conservation

The Water Department's Water Conservation Program is effective in promoting permanent water savings. Established by the City Council in 1985, the Water Conservation Program now accounts for approximately 32,000 AF of potable water savings per year. This savings has been

achieved by creating a water conservation ethic, adopting programs, policies and ordinances designed to promote water conservation practices, and implementing comprehensive public information and education campaigns.

The City offers a broad range of conservation methods to help meet the needs of our residential and commercial water customers. These include:

- Voucher programs for low-flush toilets and water conserving washing machines
- Survey programs
- Regulations
- Landscape and irrigation efficiency
- Park & Recreation partnerships
- Public Education and Outreach

Research conducted by the City, the Water Authority and the American Water Works Association Research Foundation (AWWARF) has shown that more than half of residential water-use is outdoors. Therefore, the City has added outdoor conservation programs to focus on water efficient landscaping and irrigation management which provide the best opportunity to achieve significant water savings.

Tools and services available and being developed for customers include:

- Commercial and Residential Water-Use Survey Programs — account for all water-use, determine leaks, and check irrigation systems for proper function and uniform coverage. Residential surveys average 15% water savings, while commercial surveys, depending on type of facility, can achieve 15% to 25% water savings.

- Nationally recognized Landscape Watering Calculator — an on-line tool that creates watering schedules based on landscaping features, soil type and weather data. The Calculator is very popular and those who have used it are impressed with its ease of use. MWD has adapted this tool and made it available throughout Southern California. The Landscape Watering Calculator has produced enough schedules to account for water savings of more than one million GPD in fiscal year (FY) 2007.

- Water Resources Landscape Database — another tool used to create water budgets and manage irrigation using aerial photographs, GIS maps, weather data, etc. This service has generated significant water savings in City parks, freeway landscapes, schools and homeowner associations.

- New programs being developed include incentives to install water efficient irrigation equipment and evapo-transpiration controllers (smart irrigation clocks that use weather data to set watering schedules).

In addition to offering landscape water conservation programs to existing customers, the Water Department is also working closely with the City's Planning and Development Services Departments to incorporate water conservation requirements in the City's General Plan and

permitting process. This ensures that new communities and properties will also have water efficient landscapes.

Planning to increase water conservation is an ongoing process. The aforementioned water conservation programs undergo periodic reevaluation to ensure the realization of forecasted savings. Additionally, changes in water conservation technologies may require reassessment of long-range plans. Nevertheless, the Water Department continues to work with proven water conservation programs, while also including irrigation management programs to maximize water savings. The Water Department regularly examines new technologies and annually checks progress towards conservation goals. The Water Department continues to work collaboratively with Metropolitan and the Water Authority to formulate new conservation initiatives.

Recycled Water Supplies

Recycled water is produced from wastewater processed at two water reclamation plants owned and operated by the City of San Diego: North City and South Bay. The recycled water is of high quality and suitable for irrigation, industrial and non-potable uses.

The City's beneficial reuse goals were established by the U.S. Environmental Protection Agency (EPA) as a grant condition for the North City Water Reclamation Plant (NCWRP) which provides recycled water to businesses, golf courses, homeowner associations and other users in the northern service area of the City as well as the City of Poway and Olivenhain Municipal Water District. The EPA's grant goal is to reuse 50% of treated waster water flows at NCWRP by December 31, 2010 (12 MGD). In order to meet the EPA reuse goal, a Beneficial Reuse Study was conducted in 2000, and is now being implemented by the Water Department. The study's objective was to develop a long-term cost-effective strategy to meet the EPA goal for the North City plant. In addition to the 30 MGD of treatment capacity at the NCWRP, the South Bay Water Reclamation Plant (SBWRP) has a treatment capacity of 15 MGD.

As of December 2007, the City provides recycled water to 421 meters and three wholesale meters: Poway, Olivenhan, and Otay. In CY 2007 the City produced and distributed over 10,800 acre-feet of recycled water for beneficial reuse. Landscaping is the single largest use for recycled water in the City. Major customers include Caltrans, University of California at San Diego, Black Mountain Ranch HOA, Santa Luz Golf Course, the City of San Diego Metro Biosolids Center, La Jolla Colony HOA, and the Miramar Marine Corps Air Station Golf Course.

Recycled water rates were lowered from $1.34 to $0.80 per hundred cubic feet (HCF) on July 1, 2001, following the completion of a detailed rate study. Although it was anticipated that the reduction in rates would provide an economic incentive for customers to switch from potable to recycled water, this incentive did not prove to entice a significant number of customers due to the high cost of retrofit construction. The City of San Diego is currently conducting a recycled water pricing study and will use the analysis to make recommendations on future recycled water rates.

Summary of Supplies

Historic imported water deliveries from the Water Authority to the Water Department and local surface water, conservation savings and recycled water deliveries are shown in **Table 5-1.**

Table 5-1
Historic Imported, Local and Recycled Water Deliveries
Water Department

Calendar Year	Imported Water (acre-feet)	Local Surface Water (acre-feet)	Conservation[1] (acre-feet)	Recycled Water (acre-feet)	Total[2] (acre-feet)
1980	101,547	75,290	-	-	176,837
1985	167,430	48,602	-	-	216,032
1990	212,399	9,727	-	-	222,126
1995	158,172	40,985	8,914	-	208,071
2000	201,881	25,194	17,410	3,250	247,735
2005[3]	204,200	26,425	29,410	4,800	264,835

[1] Conserved water results in a savings and is not a direct supply.
[2] Total includes water supplied and conserved.
[3] Fiscal Year

Future Supplies

In 2002, the City of San Diego City Council adopted the Long-Range Water Resources Plan 2002-2030 (Long-Range Plan) which provided a decision-making framework for evaluating water supply options. The Long-Range Plan identified water conservation, water recycling, groundwater desalination, groundwater storage, ocean desalination, marine transport, water transfers, and imported supply from the Water Authority and Metropolitan as potential near-term and long-term supplies. The Long-Range Plan concluded that no single supply source would be sufficient to meet the future water demands, but a portfolio of supply options would reduce the Water Department's dependence upon imported water over time.

The Long-Range Plan identified priority supplies for implementation by 2010. The supply options included water conservation and recycled water, groundwater storage, brackish groundwater desalination, and water transfers. Conservation and recycled water have been implemented and will be increased. The Water Department is currently investigating the development of groundwater and water transfers. Once these supplies are developed, and contracts, permits and approvals obtained, these new supplies will be included in the WSA Report.

Efforts are ongoing to identify longer range opportunities (2020 and 2030) such as further increasing conservation and recycled water, ocean desalination, marine transport other supply sources.

Groundwater

Over the past several years, the Water Department has studied numerous potential groundwater supply options and has a CIP project to continue the quest to develop potential groundwater resources. The Long-Range Plan contained brief descriptions of the development of potential groundwater supplies. The Water Department is currently pursuing groundwater studies in the San Pasqual Basin, and has drilled several monitoring wells in the San Diego Formation. The results of these efforts are not yet complete. For the purposes of this WSA, groundwater is not included as a resource to meet demands.

Water Transfers

Water transfers are agreements in which water supplies are transferred from the original point of origin or control to a new place of use. Transfers can offer flexibility and help ensure that the state's water resources are used effectively. While a myriad of rules surround transfers in California water transfers are not currently considered as a supply resource as defined in SB 610 to meet projected demands. The Water Department is relying upon the Water Authority and Metropolitan to pursue water transfers.

Water Department's Capital Improvement Program

In May 1996, the Mayor and the City Council appointed 30 city residents to serve on a Public Advisory Group to develop a long-term plan for addressing the City's future water supply. The Public Advisory Group attended monthly workshops, with each workshop building upon information presented at the previous sessions. A subcommittee was formed to renew and evaluated proposed capital improvement projects. At the final workshop the Public Advisory Group prepared, and unanimously approved, a statement calling for the Water Department to make significant capital improvements to its water system to ensure that San Diego has a cost-effective, safe and reliable water supply. In addition, the Strategic Plan identified the projects that the Public Advisory Group felt should be included in the Capital Improvement Program (CIP) 1997 to 2006. In August 1997, the City Council approved the CIP as contained in the Strategic Plan and approved three annual 6 percent rate increases.

The Water Department reevaluates the projects contained in the CIP and the timing thereof periodically. Changes to the CIP are made to reflect changing priorities within the water system and occur as a result of project scope changes, date revisions, project sequencing and operational considerations. The Water Department expended approximately $777 million from July 1, 1998 through June 30, 2007 on CIP projects. Improvements included projects to upgrade and expand water treatment plants, rehabilitate raw and treated water storage facilities, construct major transmission pipelines, replace and/or upgrade existing pump stations, replace cast iron water mains citywide, recycled water system and other new supply initiatives. In February 2007, the City Council adopted increases for the next four fiscal years of 6% per year. These rate increases will provide needed revenue to continue funding the upgrade and expansion of the water system through the CIP in order to ensure a reliable water supply for all City residents. For the Fiscal Years ending June 30, 2008 through June 30, 2011, the Water Department plans to expend approximately $585 million on such improvements. After that time, additional expenditures will

be made to complete certain improvements begun during the current phase of the CIP, additional projects that are now in preliminary planning, and other projects that are not yet identified.

Section 6 - Projected Demands

Approximately every three years the Water Department calculates projected water demands within its service area for planning purposes. A computer model is used (IWR-Municipal and Industrial Needs) to break down water-use by major water-use sectors: Commercial, Industrial, Residential and Public uses. Using past water-use data from the Water Department and past demographic data provided by SANDAG, the model is able to correlate the data to determine sector water demands. Using this correlated data, future demographic data is used to project water demands. The model also accounts for water conservation, weather and water rate changes.

The updated demands from the 2005 UWMP are used throughout this WSA.

In addition to the Water Department, the Water Authority and Metropolitan use regional growth forecasts to calculate projected water demands within their respective service areas. This provides for consistency between the retail and wholesale agencies projected water demands, thereby ensuring that adequate supplies are being planned for the Water Department's existing and future water users.

The historical and projected water demands for a normal year are shown in **Table 6-1** using the computer model discussed previously.

As part of the requirement for complying with SB 610, **Table 6-8** and **Table 6-9** show the single highest normal, dry and consecutive multiple dry year demands.

TABLE 6-1
PAST, CURRENT, AND PROJECTED WATER DELIVERIES
(AFY)

Sector	Fiscal 2000 (Actual)		Fiscal 2005 (Actual)		2010		2015	
	Metered		Metered		Metered		Metered	
Water-Use by Sector	# of accounts	Deliveries (AFY)	# of accounts	Deliveries (AFY)	# of accounts	Deliveries (AFY)	# of accounts	Deliveries (AFY)
Single Family	208,377	77,801	217,893	76,529		77,398		78,899
Multi Family	27,832	41,729	28,102	40,271		41,781		42,591
Commercial	15,381	38,694	15,300	35,277		37,118		37,838
Industrial	356	4,350	247	3,617		3,714		3,786
Institutional 1*	1,392	14,487	1,845	10,905		11,648		11,874
Institutional 2**	1,715	13,528	1,822	11,596		13,070		13,324
Landscape	4,550	21,334	5,254	20,882		21,618		22,037
Other (Outside City)	57	1,124	57	1,383		1,088		1,109
TOTAL	**259,666**	**213,047**	**270,526**	**200,460**	**277,700**	**207,436**	**289,500**	**211,458**

* Military, University, and School
** City, Public, and Government

Sector	2020		2025		2030	
	Metered		Metered		Metered	
Water-Use by Sector	# of accounts	Deliveries (AFY)	# of accounts	Deliveries (AFY)	# of accounts	Deliveries (AFY)
Single Family		80,923		84,400		87,702
Multi Family		43,684		45,561		47,343
Commercial		38,808		40,476		42,059
Industrial		3,883		4,050		4,208
Institutional 1*		12,179		12,702		13,199
Institutional 2**		13,666		14,253		14,810
Landscape		22,603		23,574		24,496
Other		1,137		1,186		1,233
TOTAL	**297,100**	**216,882**	**306,500**	**226,201**	**317,800**	**235,050**

* Military, University, and School
** City, Public, and Government

Table 6-2 summarizes the current and planned water sources the City is relying on to meet future demands.

TABLE 6-2
PLANNED WATER SUPPLY SOURCES
(AFY)

Water Supply Sources	2010	2015	2020	2025	2030
San Diego County Water Authority (Purchased)	201,901	205,178	212,260	222,238	231,725
Local Surface Water	29,000	29,000	29,000	29,000	29,000
Recycled Water	8,525	12,200	15,200	15,200	15,200
TOTAL	**239,426**	**246,378**	**256,460**	**266,438**	**275,925**

6.1 Sales to other Agencies

Potable
In addition to the water-use shown in **Table 6-1**, the City, through past agreements, sells water to two other companies/agencies: the California American Water Company (Cal-Am), and the City of Del Mar (Del Mar). Per the agreement between the City and Cal-Am, water is sold to Cal-Am to provide water to supply Cal-Am customers. A portion of City residents in the south bay area are also served by Cal-American. Per the agreement between the City and Del Mar, the City takes deliveries of water, which Del Mar purchases from the Water Authority, through the Second Aqueduct Connection at Miramar. This water is then treated at the City's Miramar Water Treatment Plant and transported to Del Mar.

The past and projected water sales uses (2000 and 2005) to Cal-Am and Del Mar are shown in **Table 6-3**.

TABLE 6-3
SALES TO OTHER AGENCIES-POTABLE
(AFY)

Potable Water Distributed	2000	2005	2010	2015	2020	2025	2030
Cal American	13,700	11,620	13,170	12,125	13,350	13,580	13,810
Del Mar	1,556	1,301	1,417	1,494	1,533	1,572	1,561
TOTAL	**15,256**	**12,921**	**14,587**	**13,619**	**14,883**	**15,152**	**15,371**

Recycled

The City has three separate agreements to sell recycled water. Olivenhain Municipal Water District and the City of Poway are provided recycled water from the City's North City Water Reclamation Plant while Otay Water District receives recycled water from the City's South Bay Water Reclamation Plant. Their respective projections for 2010 through 2030 are shown in **Table 6-4** and were taken from the Water Authority's 2005 Plan.

TABLE 6-4
SALES TO OTHER AGENCIES-RECYCLED
(AFY)

Recycled Water Distributed	2000	2005	2010	2015	2020	2025	2030
Olivenhain	-	-	400	100	100	100	100
Poway	280	375	425	425	425	425	425
Otay	-	-	2,584	3,228	3,974	4,838	5,840
TOTAL	**280**	**375**	**3,409**	**3,753**	**4,499**	**5,363**	**6,365**

* These projections are not included as part of the City's overall demands.

Lastly, **Table 6-5** shows the City's additional water-uses (recycled water) and potable system losses. The City's past and current recycled use is shown for 2000 and 2005 with projected use shown for 2010 through 2030. Losses were calculated by multiplying the total potable water-use by 4.3%. The factor was calculated by averaging the annual losses from 1998 to 2004.

TABLE 6-5
ADDITIONAL WATER USES AND LOSSES
(AFY)

Water-Use	2000	2005	2010	2015	2020	2025	2030
Recycled	3,250	4,294	8,525	12,200	15,200	15,200	15,200
Potable System losses	10,404	9,781	10,295	10,594	11,028	11,457	11,865
TOTAL	**13,654**	**14,075**	**18,820**	**22,794**	**26,228**	**26,657**	**27,065**

Table 6-6 is a summary of the previous two tables and displays City's past and current use for 2000 and 2005 with projected use shown for 2010 thru 2030. Projections correlate with those provided by the Water Authority.

TABLE 6-6
TOTAL WATER-USE
(AFY)

Water-Use*	2000	2005	2010	2015	2020	2025	2030
TOTAL of Tables 6-1, 6-3 & 6-5	**241,957**	**227,456**	**239,426**	**246,378**	**256,460**	**266,438**	**275,925**

* Does not include demands from Del Mar since their demands are accounted for by the Water Authority.

Table 6-7 shows supply and demand totals for the normal year assessment in five year increments for a twenty-five year period. In addition the table shows the percentage increase as compared to 2005 demands.

TABLE 6-7
PROJECTED SUPPLY AND DEMAND COMPARISON
(AFY)

Water-Use	2010	2015	2020	2025	2030
Local Surface Water	29,000	29,000	29,000	29,000	29,000
Recycled Water	8,525	12,200	15,200	15,200	15,200
Imported Water (Water Authority)	201,901	205,178	212,260	222,238	231,725
Supply totals (from **Table 6-2**)	**239,426**	**246,378**	**256,460**	**266,438**	**275,925**
Demand totals (from **Table 6-6**)	**239,426**	**246,378**	**256,460**	**266,438**	**275,925**
% of year 2005	105%	108%	113%	117%	121%

6.2 Projected Single-Dry-Year Water Supply and Demand

Table 6-8 shows supply and demand totals for the dry-year assessment in five year increments for a twenty-five year period. In addition the table shows the percentage increase as compared to normal demands.

TABLE 6-8
PROJECTED SINGLE DRY YEAR SUPPLY AND DEMAND COMPARISON
(AFY)

Water-Use	2010	2015	2020	2025	2030
Local Surface Water	4,500	4,500	4,500	4,500	4,500
Recycled Water	8,525	12,200	15,200	15,200	15,200
Imported Water (Water Authority)	243,161	246,924	254,712	265,389	275,540
Supply totals	**256,186**	**263,624**	**274,412**	**285,089**	**295,240**
Demand totals	**256,186**	**263,624**	**274,412**	**285,089**	**295,240**
% of projected normal*	7.0%	7.0%	7.0%	7.0%	7.0%

* The 7% (approximate) increase was taken from the Water Authority's projections.

6.3 Projected MULTIPLE-Dry-Year Water Supply and Demand

Table 6-9 shows supply and demand totals for the multi-dry year assessment in one year increments for the twenty year period. In addition the table shows the percentage increase as compared to normal demands.

TABLE 6-9
PROJECTED SUPPLY AND DEMAND COMPARISON DURING MULTIPLE DRY YEAR PERIOD ENDING IN 2030
(AFY)

Water-Use	2026	2027	2028	2029	2030
Local Surface Water	7,500	8,100	5,900	4,500	4,900
Recycled Water	15,200	15,200	15,200	15,200	15,200
Imported Water (Water Authority)	264,419	265,849	270,079	273,510	275,140
Supply totals	**287,119**	**289,149**	**291,179**	**293,210**	**295,240**
Demand totals	**287,119**	**289,149**	**291,179**	**293,210**	**295,240**
% of projected normal*	7.0%	7.0%	7.0%	7.0%	7.0%

*The 7% (approximate) increase was taken from the Water Authority's projections.

Section 7 - Conclusion - Availability of Sufficient Supplies

The Project, as conditioned, is consistent with water demand assumptions in the UWMPs of Metropolitan, Water Authority and Water Department. The Water Department receives the majority of its water supply from Metropolitan through the Water Authority. In addition, Metropolitan and the Water Authority have developed water supply plans to improve reliability and reduce dependence upon existing imported supplies. The Report on Metropolitan's Water Supplies and the Water Authority's Regional Water Facilities Master Plan include projects that meet long-term supply needs through securing water from the Colorado River, local water supply development and recycled water. With existing supplies from Metropolitan and the Water Authority, these planned water supply projects will provide a secure long-term water supply for the Water Department and the Project.

The forecasted normal year water demands compared with projected supplies for the Water Department are shown in **Table 7-1**. This demonstrates that with existing supplies and implementation of the projects discussed in the three agencies planning documents there will be adequate water supplies to serve the Project development along with existing and other future planned uses.

TABLE 7-1
PROJECTED SUPPLY AND DEMAND COMPARISON – NORMAL YEAR
(AFY)

Water-Use	2010	2015	2020	2025	2030
Local Surface Water	29,000	29,000	29,000	29,000	29,000
Recycled Water	8,525	12,200	15,200	15,200	15,200
Imported Water (Water Authority)	201,901	205,178	212,260	222,238	231,725
Supply totals (from **Table 6-2**)	**239,426**	**246,378**	**256,460**	**266,438**	**275,925**
Demand totals (from **Table 6-5**)	**239,426**	**246,378**	**256,460**	**266,438**	**275,925**
% of year 2005	105%	108%	113%	117%	121%

The normal, single, and multiple-dry year scenarios, within a 20-year projection, are shown in **Table 7-2**. This demonstrates that supplies will be adequate to meet future demands in dry year periods for the Water Department. Multiple-dry year scenarios represent hot, dry weather periods which may generate urban water demands that are greater than normal. No extraordinary conservation measures are reflected in the demand projections. The recycled water supplies are assumed to experience no reduction in a dry year.

TABLE 7-2
PROJECTED SUPPLY AND DEMAND COMPARISON DURING MULTIPLE DRY YEAR PERIOD ENDING IN 2030
(AFY)

Water-Use	2026	2027	2028	2029	2030
Local Surface Water	7,500	8,100	5,900	4,500	4,900
Recycled Water	15,200	15,200	15,200	15,200	15,200
Imported Water (Water Authority)	264,419	265,849	270,079	273,510	275,140
Supply totals	**287,119**	**289,149**	**291,179**	**293,210**	**295,240**
Demand totals	**287,119**	**289,149**	**291,179**	**293,210**	**295,240**
% of projected normal*	7.0%	7.0%	7.0%	7.0%	7.0%

*The 7% (approximate) increase was taken from the Water Authority's projections.

This WSA Report demonstrates that, as conditioned, there are sufficient water supplies over a 20-year planning horizon to meet the projected demand of the Project as well as the existing and other planned development projects within the Water Department service area.

Source Documents

California Department of Water Resources (DWR), Progress on Incorporating Climate Change into Management of California's Water Resources, July 2006 Report

California Climate Change Center, 2006 Biennial Report: Our Changing Climate: Assessing the Risks to California, 2006

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

Development Services Department, City Memorandum, Request for assessment and project description, June 2007

Metropolitan Regional Urban Water Management Plan, 2005

Metropolitan Report on Metropolitan's Water Supplies, A Blueprint for Water Reliability, March 2003

Metropolitan 2003 Integrated Resources Plan Update, July 2004

Water Department Long-Range Water Resources Plan (2002-2030), December 2002

Water Authority 2005 Updated Urban Water Management Plan, 2007

Water Authority Regional Water Facilities Master Plan, December 2002

Water Authority 2004 Annual Water Supply Report, June 2004

Water Department Urban Water Management Plan, 2005

Water Department Update of Long-Term Water Demand, March 2002

Water Department The City of San Diego Subordinated Water Revenue Bonds, Series 2002, October 2002

Exhibits

A Dexter Wilson Engineering, University Towne Center Revitalization Project – Data for SB610 Water Supply Assessment, February 25, 2008

B Letter from Greg Fitchitt to LEED Certification Team, October 5, 2007

EXHIBIT A

DEXTER WILSON ENGINEERING, INC.

DEXTER S. WILSON, P.E.
ANDREW M. OVEN, P.E.
STEPHEN M. NIELSEN, P.E.
DIANE H. SHAUGHNESSY, P.E.

February 25, 2008

505-036

Rick Engineering Company
5620 Friars Road
San Diego, CA 92110-2596

Attention: Dan Gutierrez, Project Engineer

Subject: University Towne Center Revitalization Project – Data for SB 610 Water Supply Assessment

The information in this letter and its attachments is the background data for the Water Supply Assessment for the University Towne Center (UTC) Revitalization Project.

I. Project Background

The Proposed Project is a redevelopment and renovation of the University Towne Center regional shopping center, which was originally constructed in the City of San Diego in the late 1970's, opened in 1977, and expanded in 1984. The Proposed Project would include the renovation and expansion of retail uses by 750,000 square feet of new retail and the development of 250 multi-family residential units.

The Proposed Project would be constructed in two sequences to accommodate the desire of the department stores to remain in operation throughout the project construction. The initial sequence would add approximately 450,000 square feet of net new retail space, planned to open in 2011. The second sequence would add the

remaining 300,000 square feet of net new retail space and the 250 residential units, planned to open in 2013.

As options to this proposed land use scenario, the project applicant is requesting approval of a Master PDP that would allow for up to seven other potential land use scenarios provided they have similar or less average daily traffic (ADT) and critical peak hour movements compared to the proposed project. Specifically, the Project would consist of a mix of land use scenarios that could include a reduction in new retail and the addition of up to 725 residential dwelling units; up to 250 hotel rooms; and/or up to 35,000 square feet of office space. Table 1, Land Use Scenarios, depicts the different uses proposed under each land use scenario.

TABLE 1
LAND USE SCENARIOS

Project Scenarios	Land Use			
	Retail	Residential	Hotel	Office
Proposed Project	750,000 sf	250 units	- - -	- - -
Scenario 2: Maximum Residential	610,000 sf	725 units	- - -	- - -
Scenario 3: Maximum Hotel	525,000 sf	- - -	185 rooms	- - -
Scenario 4: Maximum Office	525,000 sf	- - -	- - -	35,000 sf
Scenario 5: All Uses	375,000 sf	250 units	100 rooms	35,000 sf
Scenario 6: No Hotel	425,000 sf	500 units	- - -	35,000 sf
Scenario 7: No Office No. 1	425,000 sf	300 units	250 rooms	- - -
Scenario 8: No Office No. 2	350,000 sf	610 units	250 rooms	- - -
Other: Commercial Only	750,000	---	---	---

II. Existing Potable Water Use for the UTC Shopping Center

The existing potable water use for the UTC shopping center was determined from water meter billing data records for a period of three and a half years from January 2004 through July 2007. The total average potable water use for the site was 137,281 gallons per day (gpd) or 153.8 acre-feet per year (AFY). This average potable water use includes irrigation demand. Several meters at the current UTC shopping center are designated as "irrigation only" meters, and the total average water use for irrigation according to these meters was 40,578 gpd. During the Project's construction, the Project will be connected to the City of San Diego's recycled water system for its irrigation needs, thus resulting in a net savings of approximately 40,578 gpd of potable water use.

The total existing water use for the UTC site is 137,281 gpd average (0.14 mgd average or 153.8 AFY average). Using the City of San Diego Water Department Guidelines and Standards, Book 2, Chapter 2, "Water Demands and Service Criteria," the peak hour demand factor and the maximum day demand factor were generated based upon the peaking factor curves for the Coastal/Downtown Zone. The peak hour demand factor is 6.0 and the maximum day demand factor is 2.4.[1] Attachment A contains excerpts from the Design Guide which present this information graphically. Table 2 shows the existing demand for the UTC site based on water meter data records.

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1 Maximum day demand is the total water demand for the one day of the year which has the highest water use; peak hour demand is the equivalent daily demand for the one hour of greatest use during the maximum day event.

III. Projected Water Use for the UTC Revitalization Project Based on City of San Diego Water Department Design Criteria

A. Existing UTC Project

The UTC Revitalization project is proposed to be built within the boundaries of the existing land ownership. The site totals 75.9 acres of which 7.3 acres is open space. Below are the calculations to determine the existing water demand of the project based upon the City of San Diego Water Department design criteria.

Existing Land Use = Commercial
Project acreage = 75.9 acres total – 7.3 acres open space = 68.6 acres

Total water demand = 68.6 ac x 5,000 gpd/ac = 343,000 gpd avg.

Using the average day demand of 0.34 mgd and Figures 2-1 and 2-2 of the City of San Diego Water Department Guidelines and Standards, Book 2, Chapter 2 Water Demands and Service Criteria, Coastal/Downtown curves, the peak hour demand factor is 5.0 and the maximum day demand factor is 2.1.

Table 2 summarizes the water demand projection for the existing UTC project using the City of San Diego design criteria.

B. Proposed Project for UTC Revitalization

The proposed UTC Revitalization project includes additional commercial space to a total of 1,811,000 square feet plus 250 multi-family dwelling units. The proposed dwelling units are expected to be built as a high-rise type building on a total area of 2.2 acres. Thus, the area available for commercial use will reduce to 66.4 acres. The projected water demand for the Proposed Project is calculated below.

Commercial land area = 66.4 acres
The water demand is: 66.4 ac x 5,000 gpd/ac = 332,000 gpd

Total Proposed Residential Dwelling Units = 250
Residential acreage = 2.2 acres
Then project dwelling unit density is:

250 dwelling units / 2.2 acres = 114 DU/Acre

Determine water use for the Proposed Project using City of San Diego Water Department Guidelines and Standards, Book 2, Chapter 2 Water Demands and Service Criteria.

From Table 2-1 Residential Population Density, determine Persons/DU density.
For: DU density of 114, Persons/DU = 1.8
Then total Proposed Project average residential water demand is:

$$250\ DU \times 1.8\ \frac{Persons}{DU} \times 150\ \frac{gpd}{Person} = 67{,}500\ gpd$$

The total water demand[2] for the Proposed Project is:

332,000 gpd commercial + 67,500 gpd residential = 399,500 gpd avg.

Using the average day demand of 0.40 mgd and Figures 2-1 and 2-2 of the City of San Diego Water Department Guidelines and Standards, Book 2, Chapter 2 Water

[2] Based upon City of San Diego Water Department Guidelines and Standards, Book 2, Chapter 2 Water Demands and Service Criteria.

Demands and Service Criteria, Coastal/Downtown curves, the peak hour demand factor is 4.9 and the maximum day demand factor is 2.07.

Table 2 summarizes the water demand projection for the UTC Revitalization Proposed Project based upon the City of San Diego water demand design criteria.

C. Maximum Use Alternative Project for UTC Revitalization

The maximum water use alternative for the UTC Revitalization project is identified in the Master Planned Development Permit as Scenario 2. This scenario includes 610,000 square feet of new commercial building plus 725 multi-family residential dwelling units. The acreage for the 725 multi-family dwelling units was approximated based on the Proposed Project scenario which has 250 dwelling units proposed. Thus, for the 725 units, the land acreage for residential will be 6.4 acres. This reduces the commercial land acreage to 62.2 acres. The calculations below present the water demand for this development scenario based on City of San Diego Water Department Design Criteria.

Commercial land area = 62.2 acres
The water demand is: 62.2 ac x 5,000 gpd/ac = 311,000 gpd

Total Proposed Residential Dwelling Units = 725
Residential acreage = 6.4 acres
Then project dwelling unit density is:

725 dwelling units / 6.4 acres = 113 DU/Acre

Determine water use for the maximum use alternative project (Scenario 2) using City of San Diego Water Department Guidelines and Standards, Book 2, Chapter 2 Water Demands and Service Criteria.

From Table 2-1 Residential Population Density, determine Persons/DU density.

For: DU density of 113, Persons/DU = 1.8

Then total maximum use alternative project average residential water demand is:

$$725 \text{ DU} \times 1.8 \frac{\text{Persons}}{\text{DU}} \times 150 \frac{\text{gpd}}{\text{Person}} = 195{,}750 \text{ gpd}$$

The total water demand for the maximum water use alternative is:

311,000 gpd commercial + 195,750 gpd residential = 506,750 gpd avg.

Using the average day demand of 0.51 mgd and Figures 2-1 and 2-2 of the City of San Diego Water Department Guidelines and Standards, Book 2, Chapter 2 Water Demands and Service Criteria, Coastal/Downtown curves, the peak hour demand factor is 4.8 and the maximum day demand factor is 1.95.

Table 2 summarizes the water demand projection for Scenario 2 of the UTC Revitalization alternatives based upon the water demand design criteria of the City of San Diego Water Department.

D. Commercial Only Project

The Commercial Only project alternative considers eliminating the residential component of the Proposed Project on the UTC Revitalization site. The commercial buildout would be consistent with the Proposed Project alternative, in which the UTC site would have an ultimate total of 1,811,000 square feet of commercial space.

Water use for this scenario using the City of San Diego design criteria is calculated the same way as for the existing UTC project in Part III.A above. The existing site

totals 75.9 acres of which 7.3 acres are open space. Below are the calculations to determine the existing water demand of the project based upon the City of San Diego Water Department Design Criteria.

Existing Land Use = Commercial
Project acreage = 75.9 acres total – 7.3 acres open space = 68.6 acres

Total water demand = 68.6 ac x 5,000 gpd/ac = 343,000 gpd avg.

Using the average day demand of 0.34 mgd and Figures 2-1 and 2-2 of the City of San Diego Water Department Guidelines and Standards, Book 2, Chapter 2 Water Demands and Service Criteria, Coastal/Downtown curves, the peak hour demand factor is 5.0 and the maximum day demand factor is 2.1.

Table 2 summarizes the water demand projection for the Commercial Only scenario for the UTC Revitalization project using the City of San Diego Design Criteria.

TABLE 2
UTC REVITALIZATION PROJECT WATER USE

Alternative Scenario	Average Water Use			Maximum Day Factor	Maximum Day Water Use			Peak Hour Factor	Peak Hour Demand		
	gpd	mgd	AFY		gpd	mgd	AFY		gpd	mgd	AFY
Existing (Meter Records)	137,281	0.14	153.8	2.4	329,475	0.33	369.1	6.0	823,686	0.82	922.7
Existing (City Criteria)	343,000	0.34	384.2	2.1	720,300	0.72	806.9	5.0	1,715,000	1.72	1,921.2
Proposed Project (City Criteria)	399,500	0.40	447.5	2.07	826,965	0.83	926.4	4.9	1,957,550	1.96	2,192.9
Scenario 2 Project (City Criteria)	506,750	0.51	567.7	1.95	988,163	0.99	1,107.0	4.8	2,432,400	2.43	2,724.8
Commercial Only (City Criteria)	343,000	0.34	384.2	2.1	720,300	0.72	806.9	5.0	1,715,000	1.72	1,921.2

IV. Projected Water Use Factors for the UTC Revitalization Project

As explained previously in this letter, the UTC Revitalization project consists of eight potential expansion scenarios. To determine which scenario has the greatest water demand, we calculated the water demand for each scenario. Attachment B to this Letter contains a summary chart of the potable water demand for the different

potential land use scenarios for the Project. As explained in greater detail below, the water demand for the different land uses proposed is based upon a combination of factors from the City of San Diego Design Guide, LEED Guidelines, as well as other sources.

A. LEED Standards

Leadership in Energy and Environmental Design (LEED) is a rating system created by the US Green Building Council to rate a building's performance as an environmentally friendly building. Its approach is to focus on five areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection, and indoor environmental quality. Different standards have been created for each area and can be found online: U.S. Green Building Council, "Leadership in Energy and Environmental Design," Oct. 11, 2007, http://www.usgbc.org/DisplayPage.aspx?CategoryID=19. The section entitled "Green Construction and Technology" explains the criteria for reduced water use which was referenced to calculate water demand factors for the Project built to LEED Standards.

Westfield UTC, the applicant for the Proposed Project, has committed to certain water use reduction goals using the LEED Guidelines. A letter dated October 5, 2007, attached as Exhibit C, outlines the water use reduction goals to which Westfield is committed, including a 30% reduction in baseline water use for 90% of the new construction proposed as part of the UTC expansion project. (Attachment C, Letter from G. Fitchitt to LEED Certification Team dated October 5, 2007.) This commitment means in simpler terms that the overall potable water use reduction goal would be equivalent to 27% reduction for all new construction of the Proposed Project.

The City of San Diego recognizes the commitment being made by Westfield UTC to reduce significantly the water use of the UTC Revitalization project. However,

since published studies are not available currently to substantiate the targeted levels of water use reduction, and to maintain its conservative approach to estimating water demands, the City of San Diego agreed to a more limited expectation of water reduction through use of low water using fixtures in the new construction of the UTC Revitalization project. For the commercial component of the project, the City of San Diego has accepted an estimate of 5 percent water use reduction; for the residential component, the acceptable reduction estimate is 7.5 percent. The remaining water demand calculations for the Project reflect these respective 5% and 7.5% reductions. Westfield's LEED-ND program expects to achieve a significantly higher reduction of at least 27% from the baseline water use for both residential and commercial use.

B. Retail and Commercial Water Use Factors

For retail and commercial use, the baseline water demand factor is obtained from actual meter billing records. The total average potable water use for the existing UTC site was 137,281 ga llons per day (gpd). This average potable water use includes irrigation demand which totals an average daily use of 40,578 gpd.

Thus, the current average daily domestic water use[3] for the existing UTC project is 96,703 gpd. The existing shopping center consists of 1,061,400 square feet of retail/commercial building space. Using the water use data, the generation factor for retail/commercial land use at the UTC site is:

(96,703 gpd / 1,061,400 sf) x 1,000 sf = 91.11 gpd/1,000 sf

---

3 The term "domestic water use" refers to interior use, and does not include water used for irrigation.

Using water data from existing metered water use as shown above, the retail and commercial water demand factor is 91.11 gpd/1,000 sf. Using the water use reduction goals accepted by the City of San Diego, the water demand factor for new retail and commercial construction would be 5% lower than current use. The water demand factor for new retail and commercial construction applying the 5 percent reduction estimate is (1.0 - 0.05) x 91.11 = 86.55 gpd/1,000 sf.

C. Multi-Family Residential Water Use Factors

In multi-family residential buildings, the current water demand factors are based on the City of San Diego Water Department Design Guide with an adjustment to remove the irrigation component of the demand factor. The standard City of San Diego Water Department Design Guide uses a unit water demand of 150 gallons per person per day (gpcd) for residential land use. This unit water demand includes irrigation. However, all the Project's irrigation needs will be satisfied by use of recycled water, thus eliminating the need to include irrigation uses in the Project's projected average daily potable water use. Rather, a better estimate of the Project's potable water consumption is the per capita potable water use excluding irrigation uses. The City of San Diego Water Department's internal review of residential water demand exclusive of exterior irrigation resulted in a value of 90 gallons per person per day.

The multi-family residential buildings proposed for the UTC Revitalization project are expected to be mid-rise to high rise structures with high density. The population density for the residential component of the UTC expansion project was examined in the approved sewer study prepared for the project entitled, "Sewer Study, University Towne Centre Master Planned Development Permit," prepared by Rick Engineering Company, dated March 23, 2007. The sewer study concluded that 1.8 persons per dwelling unit was the appropriate density for the multi-family

residential component. For consistency, this water use study will utilize the same per unit density figure.

The multi-family residential domestic water use calculates to be:
1.8 persons/du x 90 gpd/person = 162.0 gpd/du

Applying the 7.5 percent water reduction allowance accepted by the City of San Diego Water Department, the multi-family residential domestic water use factor is:

(1.0 – 0.075) x 162.0 gpd/du = 149.85 gpd/du

D. Hotel Water Demand

The industry-standard typical water use for a hotel is 100 gpd/room as stated by Metcalf & Eddy. Metcalf & Eddy, Inc., *Wastewater Engineering*, McGraw Hill Book Company, pgs. 15-17 (2nd ed. 1979). Although water reduction potential has been documented by some agencies where hotels have used low-flow showerheads, aerating faucets, and have used linen cards urging guests to reuse linens, no water reduction for the hotel use will be incorporated into the water use calculations for the different UTC Revitalization project scenarios.

E. Office Space Water Demand

For the use of office space, the general rule of thumb is to assume that each person uses about 175-250 sq. ft. of office space, which averages to 212.5 sq. ft. per person. Office Finder, "Tenants' Rule of Thumb," Oct. 12, 2007, http://officefinder.com/how.html. In a 1,000 sq. ft. space, using this assumption, there would be 4.7 people, which rounds to 5 people/1,000 sq. ft. A reference to the Uniform Building Code (UBC) in the Riverside County Airport Land Use

Compatibility Plan Policy Document states that, for office use, it can be assumed that each occupant uses 100 sq. ft. of space with an adjustment of 50% to account for actual occupancy levels. Riverside County Airport Land Use Commission, Riverside County Airport Land Use Compatibility Plan Policy Document, *Methods of Determining Concentrations of People*, December 2004, http://www.rcaluc.org/filemanager/plan/new//22%20Appendix%20C.%20Determining%20Concentrations%20of%20People.pdf. Therefore, the typical population density for office space is estimated to be 5 people/1,000 sq. ft.

The average water use per person in an office setting, as stated by Metcalf & Eddy, is 10.6 gpd/person. Metcalf & Eddy, Inc., *Wastewater Engineering*. McGraw Hill Book Company, pgs. 15-17 (2d Ed. 1979). For 5 persons per 1,000 sf of office space, the water demand factor is 53 gpd/1,000 sf. As with the hotel water use, no water reduction factors will be applied to the office space water use factors for the various UTC Revitalization project scenarios.

F. Summary of Potable Water Demand Factors

Table 3 summarizes the potable water demand factors for each possible land use for the UTC Revitalization Project.

TABLE 3
POTABLE WATER DEMAND FACTORS
FOR THE UTC REVITALIZATION PROJECT

Land Use	Baseline Water Demand Factor	Demand Factor With Allowable Reduction	Source
Existing Retail/Commercial	91.11 gpd/1,000 sf	Not Applicable	Historical Water Use
New Retail/Commercial	91.11 gpd/1,000 sf	86.55 gpd/1,000 sf	Historical Water Use and Allowable Reduction
Multi-Family Residential	162.0 gpd/unit	149.85 gpd/unit	City Design Guide and Allowable Reduction
Hotel	100 gpd/room	100 gpd/room	Metcalf & Eddy[1]
Office Space	53 gpd/1,000 sf	53 gpd/1,000 sf	Metcalf & Eddy[1]

[1] Table 2-2 Typical Rates of Water Use for Various Establishments, Wastewater Engineering, Second Edition, Metcalf & Eddy, Inc.

V. Projected Potable Water Demands for the UTC Revitalization Project

Using the generation factors from Table 3, we calculated the water demand for the Proposed Project scenario for the UTC Revitalization Project, as well as each of the seven alternative scenarios. Attachment B contains a summary of projected potable water demands for each possible development scenario. Scenario 1, the Proposed Project, is the most likely development to be utilized by Westfield. Out of the seven alternative scenarios, the highest potable water usage would occur under Scenario

2, which would have the maximum amount of residential units permitted under the Master PDP. Both of these scenarios are discussed in detail below.

A. Projected Potable Water Demands for the Proposed Project

Table 4 presents the total potable water demand for the Proposed Project in greater detail. As explained previously, the water use for the existing site does not include the 40,578 gpd irrigation component of the historical water use, because the expansion project is intending to serve all the irrigation demands from the recycled water system. Thus, the Proposed Project's irrigation demands will not affect the Proposed Project's impact on the potable water system.

In addition, of the existing 1,061,400 square feet of retail space, 566,132 square feet (53.3%) will be demolished and reconstructed as part of the UTC Revitalization project. This rebuilt space will be constructed to meet the LEED water conservation standards furthering the project's goal of increasing water use efficiency on the UTC site.

TABLE 4
UTC REVITALIZATION POTABLE WATER DEMAND
PROPOSED PROJECT SCENARIO

Land Use Category	Quantity	Baseline Water Demand Factor	Baseline Average Annual Demand (gpd)	Water Demand Factor With Allowable Reduction	Average Annual Demand With Reduction (gpd)
Existing Retail Space To Remain	495,268 sf	91.11 gpd/1,000 sf	45,124	Not Applicable	45,124
Rebuilt Retail Space	566,132 sf	91.11 gpd/1,000 sf	51,580	86.55 gpd/1,000 sf	48,999
New Retail Space	750,000 sf	91.11 gpd/1,000 sf	68,333	86.55 gpd/1,000 sf	64,913
Subtotal Retail Space	**1,811,400 sf**	- - -	**165,037**	- - -	**159,036**
Multifamily Residential	250 units	162.0 gpd/unit	40,500	149.85 gpd/unit	37,463
Hotel	0 rooms	100 gpd/room	0	100 gpd/room	0
Office Space	0 sf	53 gpd/1,000 sf	0	53 gpd/1,000 sf	0
TOTAL			205,537		196,499

The baseline potable water use for the Proposed Project is 68,256 gpd more than the current average daily potable water use:

205,537 gpd – 137,281 gpd = 68,256 gpd (76.5 AFY)

In comparison, the potable water use for the Proposed Project using the allowable water use reduction percentages is slightly greater than the existing water use at the current UTC shopping center. The additional average daily water use is:

196,499 gpd – 137,281 gpd = 59,218 gpd (66.3 AFY)
This is an increase over the existing water use of 43%.

B. Projected Potable Water Demands for Scenario 2

Scenario 2 would demand the most potable water should it be developed. Scenario 2 would include 610,000 sf of new retail space, as well as 725 residential units.

TABLE 5
UTC REVITALIZATION POTABLE WATER DEMAND
SCENARIO 2: MAXIMUM RESIDENTIAL

Land Use Category	Quantity	Baseline Water Demand Factor	Baseline Average Annual Demand (gpd)	Water Demand Factor With Allowable Reduction	Average Annual Demand With Reduction (gpd)
Existing Retail Space	495,268 sf	91.11 gpd/1,000 sf	45,124	Not Applicable	45,124
Rebuilt Retail Space	566,132 sf	91.11 gpd/1,000 sf	51,580	86.55 gpd/1,000 sf	48,999
New Retail Space	610,000 sf	91.11 gpd/1,000 sf	55,577	86.55 gpd/1,000 sf	52,796
Multifamily Residential	725 units	162.0 gpd/unit	117,450	149.85 gpd/unit	108,641
Hotel	0 rooms	100 gpd/room	0	100 gpd/room	0
Office Space	0 sf	53 gpd/1,000 sf	0	53 gpd/1,000 sf	0
TOTAL			269,731		255,560

The baseline potable water use for Scenario 2 is 132,450 gpd more than the current average daily potable water use:

269,731 gpd – 137,281 gpd = 132,450 gpd (148.4 AFY)

In comparison, the projected daily potable water use for Scenario 2 using the allowable reduction percentages is:

255,560 gpd – 137,281 gpd = 118,279 gpd (132.5 AFY)

This is an increase over the existing water use of 86%.

Dexter Wilson Engineering, Inc.

Andrew Oven

AO:sbr

Attachments

cc: Greg Fitchitt, Westfield UTC

Attachment A

Chapter 2
WATER DEMANDS AND SERVICE CRITERIA

2.1 General

This chapter outlines planning procedures to estimate water demands and fire flows. Water system service requirements are also defined in terms of water pressure and reservoir storage.

2.2 Service Area

The DESIGN CONSULTANT defines the project's service area and identifies the pressure zones in which it is located. The Senior Civil Engineer in charge of either Water Planning and Project Development, or Planning and Development Review Water Review Section, approves the service area boundaries.

2.3 Land Use and Residential Population

The DESIGN CONSULTANT develops present and future land use maps for the service area to define the following land use categories: residential (by zone in accordance with Table 2-1), central business district, commercial and institutional, parks, hospitals, hotels, industrial, office, and schools.

The DESIGN CONSULTANT estimates the residential population in the service area based on present and future allowable land use. Unless more accurate population density estimates are available, the residential population in the service area is estimated based on the figures presented in Table 2-1.

Table 2-1
Residential Population Density

Zone	Dwelling Unit Density (dwelling unit/net acre)	Unit Density (persons/dwelling unit)	Population Density (persons/net acre)
A-1-10	0.1	3.5	0.4
A-1-5	0.2	3.5	0.7
A-1-1	1	3.5	3.5
R-1-40	1	3.5	3.5
R-1-20	2	3.5	7.0
R-1-10	4	3.5	14
R-1-5	9	3.5	32
R-2	14	3.2	45
R-2A	29	3.0	87
R-3	43	2.6	112
R-3A	73	2.2	161
R-4	109	1.8	196
R-4C	218	1.5	327

Dwelling unit density in Table 2-1 is based on net area. The net area is measured in acres, and is 80% of the gross area for each residential zone.

2.4 Average Annual Water Demands

For most projects, average annual water demands are determined based on the unit water demand criteria presented in Table 2-2.

Table 2-2
Unit Water Demands

Land Use Category	Unit Water Demand
Residential	150 gallons/person-day
Central Business District	6000 gallons/net acre-day
Commercial and Institutional	5000 gallons/net acre-day
Fully Landscaped Park	4000 gallons/net acre-day
Hospitals	22500 gallons/net acre-day
Hotels	6555 gallons/net acre-day
Industrial	6250 gallons/net acre-day
Office	5730 gallons/net acre-day
Schools	4680 gallons/net acre-day

Average annual water demands are calculated as the sum of: (1) the residential water demand, and (2) other water demands for each land use category as follows:

Residential Water Demand (gallons/day) = Residential Population x 150 gallons/person-day

Other Water Demand (gallons/day) = Land Use Area by Category (net acres) x Unit Water Demand for Each Land Use Category (gallons/net acre-day)

Average Annual Water Demand (gallons/day) = Residential Water Demand + Other Water Demands

On some projects, particularly large residential developments, using the unit water demands in Table 2-2 may generate unrealistically high estimates of water requirements. For these large projects, the DESIGN CONSULTANT or developer may request that the CIP Project Manager consider an alternative approach, making use of the City's water demand distribution data developed for macroscale planning purposes. Similarly, the CIP Project Manager may also consider alternative unit water demand estimates for specific land use types where such estimates are based on detailed demand evaluations.

2.5 Peak Water Demands

Unless the project involves a large development that calls for an alternative approach, peak hour and maximum day water demands are estimated using the peaking factors presented in Figures 2-1 and 2-2. These peaking factors correspond to the zones identified in Figure 2-3.

Attachment A

FIGURE 2-1
PEAK HOUR DEMAND FACTOR

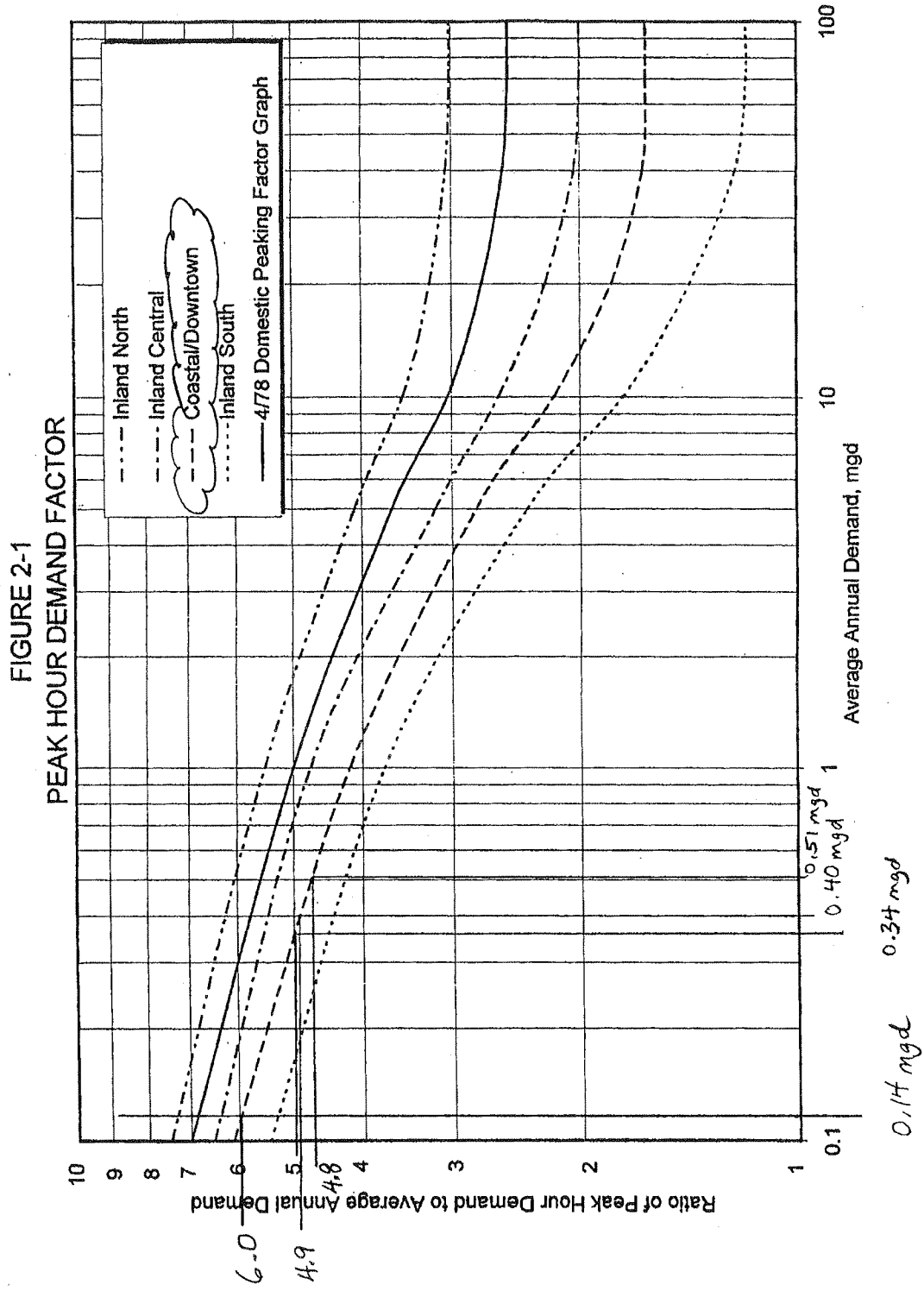
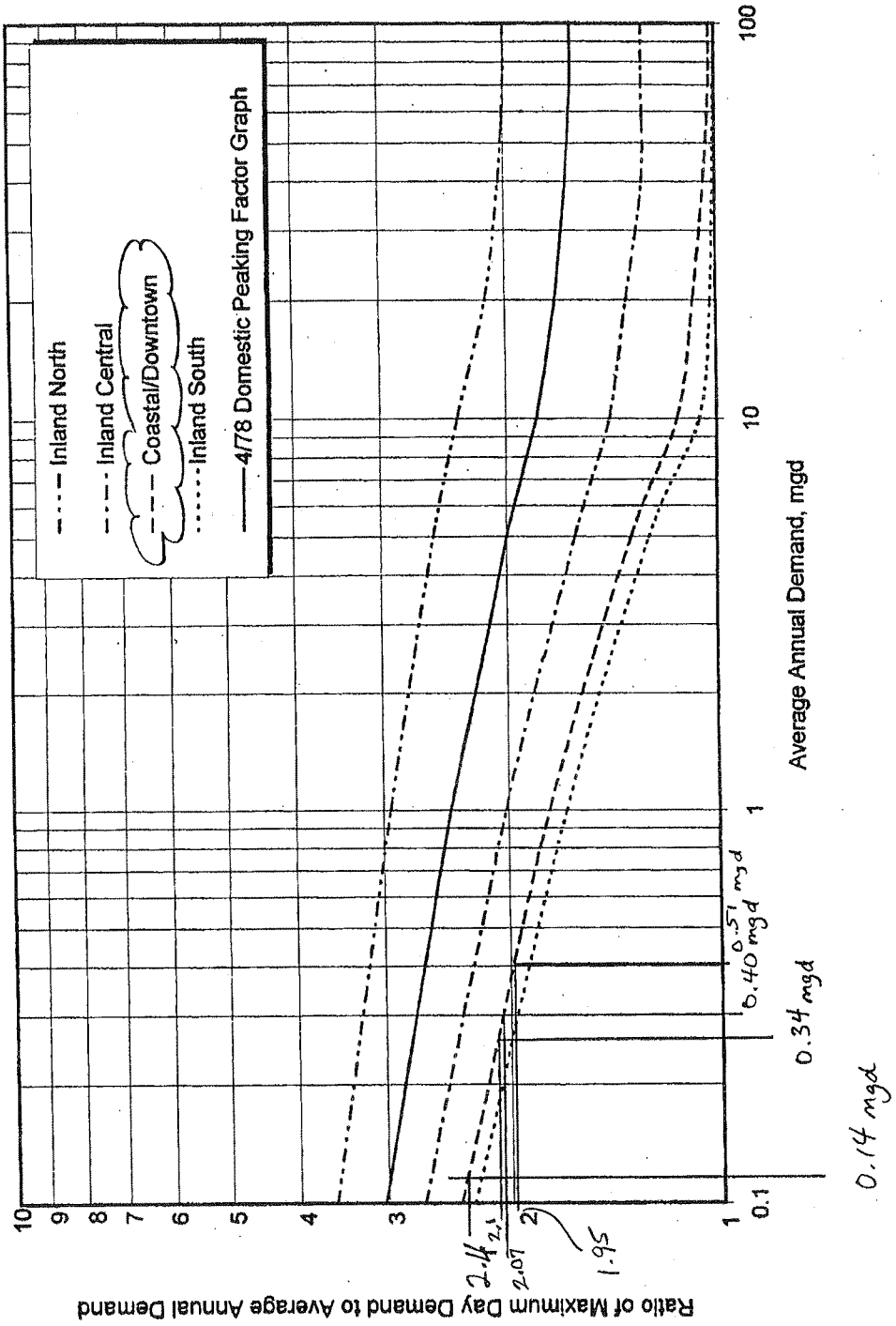


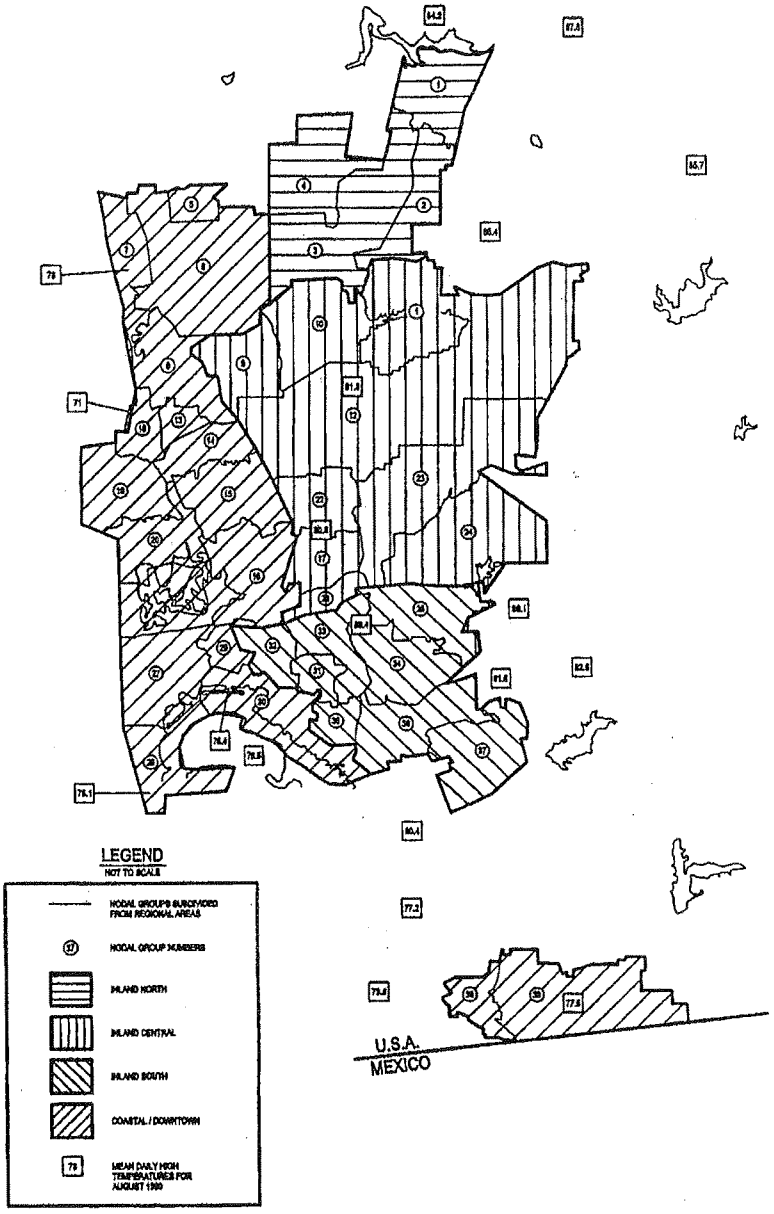
FIGURE 2-2
MAXIMUM DAY DEMAND FACTOR



Attachment A

PEAKING FACTOR ZONES
(BOUNDARIES BASED ON LAND USE GROUPINGS)

FIGURE 2-3



July 1999

ATTACHMENT B

Table 1
Proposed Land Use Scenarios

Project Scenarios	Land Use			
	Retail	Residential	Hotel	Office
Scenario 1: Proposed Project	750,000 sf	250 units	- - -	- - -
Scenario 2: Maximum Residential	610,000 sf	725 units	- - -	- - -
Scenario 3: Maximum Hotel	525,000 sf	- - -	185 rooms	- - -
Scenario 4: Maximum Office	525,000 sf	- - -	- - -	35,000 sf
Scenario 5: All Uses	375,000 sf	250 units	100 rooms	35,000 sf
Scenario 6: No Hotel	425,000 sf	500 units	- - -	35,000 sf
Scenario 7: No Office No. 1	425,000 sf	300 units	250 rooms	- - -
Scenario 8: No Office No. 2	350,000 sf	610 units	250 rooms	- - -
Other: Commercial Only	750,000 sf	- - -	- - -	- - -

ATTACHMENT B

Table 2
Summary of Existing and Projected Potable Water Demands

Project Scenarios (See Table 1)	New Potable Water Demand Based On Meter Data[4] (gpd / AFY)	Increase from Existing Potable Use Based On Meter Data[5] (gpd / AFY)	New Potable Water Demand Using Reduced Factors[6] (gpd / AFY)	Increase from Existing Potable Use Using Reduced Factors (gpd / AFY)	New Potable Water Use Under Standard City Design Guidelines (gpd / AFY)	Increase From Existing Potable Use Under Standard City Design Guidelines (gpd / AFY)[7]
Proposed Project	205,537 / 230.2	68,256 / 76.5	196,498 / 220.1	59,217 / 66.3	399,500 / 447.5	56,500 / 63.3
Maximum Residential	269,731 / 302.2	132,450 / 148.4	255,559 / 286.3	118,278 / 132.5	506,750 / 567.7	163,750 / 183.4
Maximum Hotel	163,037 / 182.6	25,756 / 28.9	158,061 / 177.1	20,780 / 23.3	343,778 / 385.1	778 / 0.9
Maximum Office	146,392 / 164.0	9,111 / 10.2	141,416 / 158.4	4,135 / 4.6	343,365 / 384.6	365 / 0.4
All Uses	183,225 / 205.3	45,944 / 51.5	175,896 / 197.0	38,615 / 43.3	400,643 / 448.8	57,643 / 64.6
No Hotel	218,281 / 244.5	81,000 / 90.7	207,686 / 232.7	70,405 / 78.9	456,365 / 511.2	113,365 / 127.0
No Office No. 1	209,026 / 234.2	71,745 / 80.4	200,861 / 225.0	63,580 / 71.2	411,778 / 461.3	68,778 / 77.0
No Office No. 2	252,413 / 282.8	115,132 / 129.0	240,824 / 269.8	103,543 / 116.0	481,478 / 539.4	138,478 / 155.1
Commercial Only[8]	165,037 / 184.9	27,756 / 31.1	159,035 / 178.2	21,754 / 24.4	343,000 / 384.2	0 / 0

4 This figure refers to the potable water demand of the Project once completed. Because the Project will utilize recycled water for irrigation, this figure does not include water used for irrigation purposes.

5 Existing potable use refers to the daily demand for potable water for both domestic and irrigation purposes for the existing UTC shopping center, which is 137,281 gpd average. The Site currently uses 40,578 gpd average for irrigation purposes.

6 Reduced Factors refer to the potable water demand incorporating various water reduction measures to be utilized by Westfield UTC in the Project as part of its LEED-ND sustainability program. The City of San Diego has accepted a 5% reduction in baseline potable water use for new commercial construction, and a 7.5% reduction in baseline potable water use for new residential construction. The "Reduced Factors" calculations reflect these respective 5% and 7.5% reductions. Westfield's LEED-ND program expects to achieve a significantly higher reduction of at least 27% from the baseline for both residential and commercial use.

7 Under the Design Guidelines, the current potable water use is 343,000 gpd on average.

8 Commercial Only refers to the 750,000 sq ft of commercial included in the Proposed Project without the residential units.

Attachment C

Westfield

Westfield, LLC
402 West Broadway
Suite 2060
San Diego, CA 92101
Telephone (619) 544-8100
Facsimile (619) 238-9488

October 5, 2007

WESTFIELD, LLC
11601 Wilshire Blvd. 11th Floor
Los Angeles
CA 90025

Dear LEED Certification Team,

Westfield UTC Revitalization: Stage 1 Pre-review Submission
Written commitment to comply with GCT Credit 3: Reduced Water Use

I write to confirm that Westfield's UTC project will comply with the requirements for 3 points under GCT Credit 3: Reduced Water Use, namely Option 1 (Indoor, Category 1) and Option 2 (Outdoor).

Under Option 1 (Category 1), Westfield commits to designing and constructing at least 90% of the new buildings[1] in the project to incorporate strategies that in aggregate use 30% less water than the water use baseline calculated for the building (not including irrigation) after meeting the Energy Policy Act of 1992 fixture performance requirements. Calculations will be based on estimated occupant usage and will include only the following fixtures (as applicable to the building): water closets, urinals, lavatory faucets, showers, and kitchen faucets.

There are no Category 2 buildings proposed within the UTC project.

Under Option 2, Westfield commit to utilizing recycled graywater for all irrigation purposes.

This letter should be taken as the written commitment to implement the requirements of GCT Credit 3 for 3 points as part of UTC's Stage 1 submittal documentation under the LEED-ND pilot program.

Sincerely,

Greg Fitchitt
UTC Development Director
Westfield, LLC

EXHIBIT B

Westfield®

Westfield, LLC
402 West Broadway
Suite 2050
San Diego, CA 92101
Telephone (619) 544-8100
Facsimile (619) 238-9485

October 5, 2007

WESTFIELD, LLC
11601 Wilshire Blvd. 11th Floor
Los Angeles
CA 90025

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Greg Fitchitt
UTC Development Director
Westfield, LLC