5.12 UTILITIES AND SERVICE SYSTEMS

This Section of the DSEIR addresses the potential impacts of the Modified Project as compared to the Approved Project on utilities and service systems including: water, wastewater, solid waste, electricity, natural gas, and telecommunications. The analysis in this Section is based in part on the Service Provider Correspondence contained in Appendix L of this DSEIR. Storm drainage systems, and impacts to such systems, are discussed in Section 5.4, *Hydrology and Water Quality*, of this DSEIR and are not discussed further in this Section.

Existing conditions information presented in this Section is based on project-specific facilities reports and coordination with affected public utility agencies. Specific references are identified as relevant. The service provider for each of the public utilities analyzed in this Section of the DSEIR is noted parenthetically:

- Water Supply and Distribution Systems (Irvine Ranch Water District)
- Wastewater Treatment and Collection (Irvine Ranch Water District)
- Solid Waste (OC Waste & Recycling)
- Electricity (Southern California Edison)
- Natural Gas (Southern California Gas Company)
- Telecommunications (SBC Communications and Cox Communications Orange County, Inc.)

The analysis in this Section is based in part on the Service Provider Correspondence contained in Appendix L of this DSEIR and on the following technical reports:

- Planning Areas 30 & 51 Great Park /Great Park Neighborhoods Sub-Area Master Plan (SAMP) Update, Irvine Ranch Water District, March 2011 (Draft).
- Urban Water Management Plan, Irvine Ranch Water District, 2005.[1]
- Water Resources Master Plan, Irvine Ranch Water District, March 2002, supplemented January, 2004.[2]
- Regional Urban Water Management Plan, Metropolitan Water District of Southern California, 2005.[3]
- Water Supply Assessments for the Great Park Neighborhoods, Irvine Ranch Water District, May 2011.
- Integrated Water Resources Plan, Metropolitan Water District of Southern California, 2010.[4]
- Orange County Water District, Water Master Plan Report, April 1999.[5]

[1] Irvine Ranch Water District, *Urban Water Management Plan*, 2005.
[2] Irvine Ranch Water District, *Water Resources Master Plan*, March 2002, supplemented January, 2004.
[3] Metropolitan Water District of Southern California, *Regional Urban Water Management Plan*, 2005.
[4] Metropolitan Water District of Southern California, *Integrated Water Resources Plan*, 2010.

A complete copy of the Water Supply Assessment is included in Appendix N. The SAMP is available for review at the City of Irvine, Community Development Department, located at 1 Civic Center Plaza, Irvine.

5.12.1 Water Services

5.12.1.1 Environmental Setting

The Irvine Ranch Water District ("IRWD") provides potable and non-potable water service to the Proposed Project Site. IRWD is a multiservice agency that provides potable and non-potable water supply and wastewater collection, treatment, and disposal services to a population of approximately 266,000, within an area covering 84,610 acres (132 square miles). IRWD encompasses the City of Irvine; parts of unincorporated Orange County north and south of the City of Irvine; parts of the Cities of Orange, Tustin, Santa Ana, and Costa Mesa west of the City of Irvine; part of the City of Newport Beach south of the City of Irvine; and part of the City of Lake Forest east of the City of Irvine. IRWD is a member agency of the Orange County Water District ("OCWD"), and is the largest constituent agency of the Municipal Water District of Orange County ("MWDOC") (IRWD 2005). MWDOC in turn, is a member agency of the Metropolitan Water District of Southern California ("MWD"), a consortium of 26 cities and water districts that supply 19 million people, including with water from the State Water Project ('SWP").

IRWD prepares two planning documents to guide water supply decision making. IRWD's principal planning document is its Water Resources Master Plan ("WRMP"; IRWD 2004), which is a comprehensive document compiling data and analyses that IRWD considers necessary for its planning needs. IRWD's most recent WRMP is dated March 2002, and was supplemented in January 2004. IRWD also prepares an Urban Water Management Plan ("UWMP"), a document required by state statute. The UWMP is based on the WRMP, but contains defined elements that are required by Water Code section10631 *et seq*., and, as a result, is more limited than the WRMP in the treatment of supply and demand issues. Therefore, IRWD primarily relies on its most recent WRMP. The UWMP is required to be updated in years ending with "five" and "zero," and IRWD's next update of that document is anticipated in July 2011.

Water Supply

Water available to IRWD comes from groundwater pumped from the Orange County groundwater basin (including the Irvine Subbasin); captured local (native) surface water; reclaimed wastewater, and supplemental imported water supplied by MWD through the MWDOC. The supply-demand comparisons in this section are broken down among the various sources, and are further separated into potable and nonpotable water.

For comparison with demands, water supplies are classified as "currently available" or "under development."

- Currently available supplies are those presently operational and those that will be operational within the next several years. Supplies expected to be operational in the next several years are those that have completed or substantially completed the environmental and regulatory review process and have the necessary contracts (if any) in place to move forward. These supplies are in various stages of planning, design, or construction.

[5] Orange County Water District, *Water Master Plan Report*, April 1999.

- In general, supplies under development may necessitate the preparation and completion of environmental documents, regulatory approvals, and/or contracts prior to full construction and implementation.

A list of the currently available and under development supplies of both potable and nonpotable water can be found in the Water Supply Assessment ("WSA") (DSEIR Appendix N). The WSA has been prepared in compliance with SB 610 and SB 221 to identify adequate water supplies to serve the Modified Project. Due to the number of contracts, statutes, and other documents comprising IRWD's written proof of entitlement to its water supplies, in lieu of attachment of such items, they are identified by title and summarized in Section 2(b) of the WSA, Written Contracts/Proof of Entitlement. Copies of the items summarized are available for review at the City and can also be obtained from IRWD.

IRWD is also evaluating the development of additional supplies that are not included in either currently available or under development supplies for purposes of this assessment. As outlined in the WRMP, prudent water supply and financial planning dictates that development of supplies be phased over time, consistent with the growth in demand.

Table 5.12-1 shows IRWD's water supply sources. IRWD does not allocate particular supplies to any project, but identifies total supplies for its service area.

Table 5.12-1
IRWD's Existing Sources of Water Supply

	Max Day (cfs)	*Avg. Annual (afy)*	*Annual by Category (afy)*
Current Supplies			
Potable – Imported			
East Orange County Feeder No. 2*	41.4	16,652[1]	
Allen-McColloch Pipeline**	64.7	26,024[1]	
Orange County Feeder	18.0	7,240[1]	49,916
Potable – Groundwater			
Dyer Road Wellfield	80.0	28,000[2]	
OPA Well	1.4	1,000	
Deep Aquifer Treatment System (DATS)	10.0	8,900[2]	
Irvine Desalter	10.6	5,640[3]	43,540
Total Potable Current Supplies	**226.1**		**93,456**
Nonpotable – Reclaimed Water			
MWRP (18 mgd)	23.9	17,340[4]	
LAWRP (5.5 mgd)	8.3	5,975[4]	23,315
Nonpotable – Imported			
Baker Aqueduct	52.7	15,262[5]	
Irvine Lake Pipeline	65.0	9,000[6]	24,262
Nonpotable – Groundwater			
Irvine Desalter	5.4	3,898[7]	3,898

Table 5.12-1
IRWD's Existing Sources of Water Supply

	Max Day (cfs)	Avg. Annual (afy)	Annual by Category (afy)
Nonpotable Native			
Irvine Lake	5.5	4,000[8]	4,000
Total Nonpotable Current Supplies	**160.8**		**55,475**
Total Combined Current Supplies	**386.5**		**148,931**
Supplies Under Development			
Potable Supplies			
Wells 21 and 22	6.0	5,000	
Well 106	2.2	1,300	
Well 53	4.5	3,000	
Future OPA Wells	8.0	5,000	
Anaheim wellfield	10.0	6,500	
Wells 51 and 52	9.0	5,500	
Tustin Legacy wells	9.0	5,000	
Total Potable Under Development Supplies	**48.7**	**32,600**	**32,600**
Nonpotable Supplies: Future MWRP & LAWRP Reclaimed	20.0	14,450[10]	14,450
Total Under Development	**117.4**		**47,050**
Potable Supplies	274.8		126,056
Nonpotable Supplies	180.7		69,925
Total Supplies (Current and Under Development)	**455.6**		**195,981**

afy = acre feet per year
Cfs = cubic feet per second
MWRP - Michelson Water Reclamation Plant
LAWRP - Los Alisos Water Recycling Plant

1 Based on converting maximum day capacity to average by dividing the capacity by a peaking factor of 1.8 (see Footnote 3, page 22 of the WSA).
2 Contract amount - See WSA page A-25, Potable Supply-Groundwater (iii) (DSEIR Appendix N).
3 Contract amount - See WSA page A-25, Potable Supply-Groundwater (iv) and (v) (DSEIR Appendix N). Maximum day well capacity is compatible with contract amount.
4 MWRP 18 mgd treatment capacity (17,400 afy RW production) and LAWRP 5.5 mgd tertiary treatment capacity (5,975 afy).
5 Based on converting maximum day capacity to average by dividing the capacity by a peaking factor of 2.5 (see Footnote 3, WSA page A-22). (DSEIR Appendix N).
6 Based on IRWD's proportion of Irvine Lake imported water storage; Actual ILP capacity would allow the use of additional imported water from MWD through the Santiago Lateral. MWD is the source of this water.
7 Contract amount – See WSA page A-29, Nonpotable Supply-Groundwater (i) and (ii). (DSEIR Appendix N). Maximum day well capacity (cfs) is compatible with contract amount.
8 Based on 70 years historical average of Santiago Creek Inflow into Irvine Lake.
9 Estimated combined capacity of wells.
10 Future estimated MWRP and LAWRP reclaimed water production.
* Imported water from MWD.
* *64.7 cfs is current assigned capacity; based on increased peak flow, IRWD can purchase 10 cfs more (see WSA page A-23 (b)(1)(iii)). (DSEIR Appendix N).

Potable Water Supply

Approximately 35 percent of IRWD's domestic water is purchased from the MWD and imported from the Colorado River via the Colorado River Aqueduct and the SWP. The majority of IRWD's imported potable water is supplied from a single source, the MWD Diemer Filtration Plant, located north of Yorba Linda. Typically, the Diemer Filtration Plant receives a blend of Colorado River water from Lake Mathews through the MWD lower feeder and SWP water through the Yorba Linda Feeder. Groundwater now makes up approximately 65 percent of IRWD's total potable water supply depending on a series of local wells, including Dyer Road Wellfield Project and the IRWD's Deep Aquifer Treatment System ("DATS").

IRWD's total existing potable water supply and demand (without the Modified Project) are shown in Table 5.12-2. Forecasts indicate that IRWD will continue to have a surplus supply of potable water through the year 2031 under Normal-, Single Dry- and Multiple Dry-Year conditions.

Nonpotable Water Supply

Reclaimed water, groundwater, and imported water account for IRWD's nonpotable water supply. IRWD's total existing nonpotable water supply and demand (without the Modified Project) are show in Table 5.12-3. The source of IRWD's groundwater supply is the Lower Santa Ana River Basin. IRWD is an operator of groundwater producing facilities in the Orange County Groundwater Basin.

Forecasts indicate that IRWD will continue to have a surplus supply of nonpotable water through the year 2031 under Normal-, Single Dry- and Multiple Dry-Year conditions.

Reliability of Long-Term Water Supply

Southern California faces the challenge of satisfying its water requirements and securing its firm water supplies. Increased environmental regulations and the collaborative competition for water from outside the region have resulted in reduced supplies of imported water. Continued population and economic growth correspond to increased water demands in the region, putting an even larger burden on local supplies. A number of significant areas affecting the uncertainty for delivery reliability are discussed below. Major sources of uncertainty include Delta pumping restrictions, organism decline, climate change and sea level rise, and levee vulnerability to floods and earthquakes.

On March 29, 2011, Governor Jerry Brown ended the state of emergency declared by former Gov. Arnold Schwarzenegger in February 2009 after three relatively dry winters. Former Governor Schwarzenegger had declared a statewide drought in June 2008. The announcement from Governor Brown came after the California Department of Water Resources reported that the water content in the statewide snowpack is 165 percent of average for this time of year. The snowpack was also slightly above average last year. This year's snowpack is 174 percent of normal in the north, 163 percent in the central Sierra and 158 percent in the southern part of the range. Sierra snow provides one third of California's water.

The reliability of the IRWD's water supply currently depends on the reliability of both groundwater and imported water supplies, which are managed and delivered by the Orange County Water District and MWD, respectively.

Table 5.12-2
IRWD Existing Supply and Demand for Potable Water
(afy)

Source	2010	2015	2020	2025	2031
Normal Year					
Current Potable Supplies					
MWD Imported (EOCF#2, AMP, OCF)	41,929	41,929	41,929	41,929	41,929
DRWF/DATS/OPA	37,900	37,900	37,900	37,900	37,900
Irvine Desalter	5,640	5,640	5,640	5,640	5,640
Supplies Under Development					
Future Groundwater	-	15,600	22,100	32,600	32,600
Maximum Supply Capability	85,469	101,069	107,569	118,069	118,069
Baseline Demand	56,353	70,989	80,140	84,575	86,837
Reserve Supply	**29,116**	**30,080**	**27,429**	**33,494**	**31,232**
Single Dry – Year					
Current Potable Supplies					
MWD Imported (EOCF#2, AMP, OCF)	41,929	41,929	41,929	41,929	41,929
DRWF/DATS/OPA	37,900	37,900	37,900	37,900	37,900
Irvine Desalter	5,640	5,640	5,640	5,640	5,640
Supplies Under Development					
Future Groundwater	-	15,600	22,100	32,600	32,600
Maximum Supply Capability	85,469	101,069	107,569	118,069	118,069
Baseline Demand	60,298	75,958	85,750	90,495	92,915
Reserve Supply	**25,171**	**25,111**	**21,819**	**27,574**	**25,154**
Multiple Dry – Year					
Current Potable Supplies					
MWD Imported (EOCF#2, AMP, OCF)	41,929	41,929	41,929	41,929	41,929
DRWF/DATS	37,900	37,900	37,900	37,900	37,900
Irvine Desalter	5,640	5,640	5,640	5,640	5,640
Supplies Under Development					
Future Groundwater	-	15,600	22,100	32,600	32,600
Maximum Supply Capability	85,469	101,069	107,569	118,069	118,069
Baseline Demand	60,298	75,958	85,750	90,495	92,915
Reserve Supply	**25,171**	**25,111**	**21,819**	**27,574**	**25,154**

Source: IRWD 2011
afy = acre feet per year
A full discussion of current and under-development water supply entitlements, water rights, and water service contracts can be found in the WSA.

Table 5.12-3
IRWD Existing Supply and Demand for Nonpotable Water
(afy)

Source	2010	2015	2020	2025	2031
Normal – Year					
Current Nonpotable Supplies					
Existing MWRP and LAWRP	18,657	18,657	18,657	18,657	18,657
MWD Imported (Baker, ILP)	20,380	20,380	20,380	20,380	20,380
Irvine Desalter	3,898	3,898	3,898	3,898	3,898
Native Water	4,000	4,000	4,000	4,000	4,000
Supplies Under Development					
Future MWRP and LAWRP	10,100	10,100	10,100	10,100	10,100
Maximum Supply Capability	57,035	57,035	57,035	57,035	57,035
Baseline Demand	36,335	32,303	33,198	34,948	36,019
Reserve Supply	**20,700**	**24,732**	**23,837**	**22,087**	**21,016**
Single Dry – Year					
Current Nonpotable Supplies					
Existing MWRP and LAWRP	18,657	18,657	18,657	18,657	18,657
MWD Imported (Baker, ILP)	20,380	20,380	20,380	20,380	20,380
Irvine Desalter	3,898	3,898	3,898	3,898	3,898
Native Water	1,000	1,000	1,000	1,000	1,000
Supplies Under Development					
Future MWRP and LAWRP	10,100	10,100	10,100	10,100	10,100
Maximum Supply Capability	54,035	54,035	54,035	54,035	54,035
Baseline Demand	38,878	34,565	35,521	37,394	38,541
Reserve Supply	**15,157**	**19,470**	**18,514**	**16,641**	**15,494**
Multiple Dry – Year					
Current Nonpotable Supplies					
Existing MWRP and LAWRP	18,657	18,657	18,657	18,657	18,657
MWD Imported (Baker, ILP)	20,380	20,380	20,380	20,380	20,380
Irvine Desalter	3,898	3,898	3,898	3,898	3,898
Native Water	1,000	1,000	1,000	1,000	1,000
Supplies Under Development					
Future MWRP and LAWRP	10,100	10,100	10,100	10,100	10,100
Maximum Supply Capability	54,035	54,035	54,035	54,035	54,035
Baseline Demand	38,878	34,565	35,521	37,394	38,541
Reserve Supply	**15,157**	**19,470**	**18,514**	**16,641**	**15,494**

Source: IRWD 2011
afy = acre feet per year
A full discussion of current and under-development water supply entitlements, water rights, and water service contracts can be found in the WSA.

Metropolitan Water District of Southern California

MWD has a 5,200-square-mile service area and imports about half of the water used in southern California. The other half of the water comes from local surface and groundwater supplies, recycled water, and water imported from the Owens Valley by the City of Los Angeles. Urban water demands use less than 20 percent of California's developed water supply, and agriculture uses more than 80 percent. MWD imports water from the Colorado River and, through a contract with the State of California, from northern California via the SWP. The SWP, MWD's Colorado River Aqueduct, and MWD's local water facilities and programs have many layers that provide reliability. The SWP includes the very large San Luis Reservoir, near the City of Los

Banos in Central California, and, closer to southern California, Pyramid and Castaic Lakes on the west branch, and Silverwood Lake and Lake Perris on the east branch of the SWP. MWD, in turn, has over one million acre-feet of surface water storage in southern California, including the new Diamond Valley Reservoir, in addition to large groundwater storage projects.

MWD Long-Term and Reliability Planning

MWD's framework for regional water resource planning for southern California is the Integrated Water Resources Plan ("IRP").The IRP is a long-term water resource strategy for the six-county area served by MWD, which covers parts of Ventura, Los Angeles, Riverside, San Bernardino, Orange, and San Diego Counties. The IRP was first adopted in 1996 and was last updated in 2010. It sets regional goals for the development of MWD's various water resources and calls for investments in water conservation, recycling, groundwater treatment, storage and transfers. In return, the IRP brings supply diversity and stability. The 2010 IRP Update showed that southern California continued to exceed projections laid out in the original IRP approved in 1996. The 2010 IRP Update also recommended development of a supply buffer of 200,000 acre-feet, half of which would come from local resources, and the other half through water transfers and storage programs outside MWD's service area. This supply buffer allows MWD and its member agencies to manage the uncertainties and unreliability of supply and demand. As part of the approval of the 2010 IRP Update, the MWD Board directed staff to provide an annual report on the progress toward implementing the IRP targets.

The 2010 IRP Update also noted various uncertainties that may affect long-term water supply for southern California. Specifically, it expressed concerns revolving primarily around current and future SWP supplies and operations due to impacts of actions to protect endangered fisheries, and emerging challenges facing planners due to global warming and climate change. To address some of these issues, the 2010 IRP Update places an increased emphasis on regional collaboration, with goals of stabilizing MWD's traditional imported water supplies and continuing to develop additional local resources. It also advances long-term planning for potential future contingency resources, such as storm water capture and large-scale seawater desalination, in close coordination with MWD's 26 member public agencies and other utilities.

MWD has found that current practices of diversifying water supplies and securing supply reserves allow MWD and its member agencies to adjust to changes in demands and supplies and to maintain a high degree of reliability. Planned water supply sources include resource improvement strategies and additions currently under development by MWD. Based on MWD's Findings and Conclusions as stated in the MWD 2010 IRP Update, MWD's reliability goal that full-service demands at the retail level will be satisfied for all foreseeable hydrologic conditions remains unchanged in the 2010 IRP Update, and MWD plans to accomplish this through its core resources strategies.

The 2010 IRP Update emphasizes an evolving approach and suite of actions to address the water supply challenges that are posed by uncertain weather patterns, regulatory and environmental restrictions, water quality impacts and changes in the state and the region. The three components of MWD's Adaptive Resource Management Strategy, which forms the basis for the 2010 IRP Update, include: Core Resources Strategy, Supply Buffer Implementation and Foundational Actions. The 2010 IRP Update expands the concept of developing a planning buffer from the 2004 IRP Update by implementing a supply buffer equal to 10 percent of the total retail demand. MWD will collaborate with the member agencies to implement this buffer through complying with Senate Bill 7 ("SB 7") which calls for the state to reduce per capita water use by 20 percent by the year 2020.

Recent Actions on Delta Pumping

The Sacramento/San Joaquin Delta ("Delta") is a vulnerable component of both the State and federal systems that convey water from portions of northern California to areas south of the Delta. Issues associated with the Delta have generally been known for years; however, most recently, the continuing decline in the number of endangered Delta smelt has resulted in litigation challenging permits for the pumping of water from the Delta area. On August 31, 2007, a federal court put in place interim measures to protect the endangered Delta smelt, including limitations Delta pumping. Those imitations have affected SWP operations and water supplies. On June 4, 2009, a federal biological opinion imposed rules that will further restrict water diversions from the Delta to protect endangered salmon and other endangered fish species. At present, several proceedings concerning Delta operations are ongoing to evaluate options for addressing impacts on the Delta smelt as well as other environmental concerns.

In addition to the regulatory and judicial proceedings that have addressed immediate environmental concerns, the Delta Vision process and the Bay-Delta Conservation Plan process are defining long-term solutions for the Delta (MWD 2010 IRP Update). Prior to the 2007 federal court decision concerning Delta water operations, MWD's Board approved a Delta Action Plan that described short, mid and long-term conditions of the Delta, and the actions needed to mitigate potential supply shortages and to develop and implement long-term solutions. To comprehensively address the impacts of the SWP cut-back on MWD's water supply development targets, MWD brought to its Board a strategy and work plan to update the long-term IRP, which led to the adoption of the 2010 IRP Update described above. As part of the IRP Update, MWD developed a region-wide collaborative process that included a broad-based stakeholder involvement. MWD held several stakeholder forums in 2006 and 2009 and the MWD Board adopted the 2010 IRP Update on October 12, 2010. In the 2010 IRP Update, MWD identified changes to the long-term plan and established direction to address the range of potential changes in water supply planning. The IRP also discusses dealing with uncertainties related to impacts of climate change (see additional discussion of this below) as well as actions to protect endangered fisheries. As discussed above, based on MWD's Findings and Conclusions as stated in the MWD 2010 IRP Update, MWD's reliability goal that full-service demands at the retail level will be satisfied for all foreseeable hydrologic conditions remains unchanged in the 2010 IRP Update, and MWD will accomplish this through its core resources strategies.

MWD Shortage Allocation Plan

On the regional level, MWD has taken a number of actions to secure a reliable water source for its member agencies. MWD adopted a water supply allocation plan ("WSAP") for dealing with potential shortages. The plan takes into consideration the impact on retail customers and the economy, changes and losses in local supplies, the investment in and development of local resources, and conservation achievements. The possible range of a reduction is 5 to 30 percent. Under MWD's shortage allocation approach, water would not be physically denied to an agency, but rather water obtained above an agency's allocation would be priced at a significant higher penalty rate. Development of an allocation would establish the amount of water available at the nonpenalty rate. The penalty rate is expected to be two to three times the nonpenalty rate.

Most recently, crediting improved water reserves and the public's ongoing conservation efforts, MWD's Board of Directors voted in April 2011 to lift mandatory water allocation restrictions that had been in place since July 2009. The action, which became effective April 13, 2011, was made possible by 2010-2011 winter storms and water-saving efforts by the region's consumers and businesses. But the improved conditions do not signal an end to long-term challenges.

Climate Change

In July 2006, the California Department of Water Resources ("DWR") released a report titled "Progress on Incorporating Climate Change into Management of California's Water Resources" which considers the impacts of climate change on the state's water supply. DWR emphasized that "the report represents an example of an impacts assessment based on four scenarios defining an expected range of potential climate change impacts." DWR's major goal is to extend the analysis for long-term water resource planning from "assessing impacts" to "assessing risk." The report presents directions for further work in incorporating climate change into the management of California's water resources. Emphasis is placed on associating probability estimates with potential climate change scenarios in order to provide policy makers with both ranges of impacts and the likelihoods associated with those impacts. DWR's report acknowledges "that all results presented in [the] report are preliminary, incorporate several assumptions, reflect a limited number of climate change scenarios, and do not address the likelihood of each scenario. Therefore, [the] results are not sufficient by themselves to make policy decisions."

In MWD's 2010 IRP Update, MWD recognizes that there is a significant uncertainty in the impact of climate change on water supply and changes in weather patterns could significantly affect water supply reliability. MWD plans to hedge against supply and environmental uncertainties by implementing a supply buffer equivalent to 10 percent of total retail demand. This buffer will be implemented through meeting SB 7 water use efficiency goals, implementing aggressive adaptive actions, developing local supplies and effecting transfers.

Per MWD's Regional Urban Water Management Plan ("RUWMP"), MWD continues to incorporate current climate change science into its planning efforts. As stated in MWD's RUWMP, the 2010 IRP Update supports the MWD Board adopted principles on climate change by: 1) supporting reasonable, economically viable and technologically feasible management strategies for reducing impacts on water supply; 2) supporting flexible "no regret" solutions that provide water supply and quality benefits while increasing the ability to manage future climate change impacts; and 3) evaluating staff recommendations regarding climate change and water resources against the California Environmental Quality Act to avoid adverse effects on the environment. Potential climate change impacts on state, regional and local water supplies and relevant information for the Orange County hydrologic basin and Santa Ana Watershed have not been sufficiently developed at this time to permit IRWD to assess and quantify the effect of any such impact on its conclusions in the WSA prepared for the Modified Project.

Catastrophic Supply Interruption Planning

In 2005, MWD cooperated with the DWR on a preliminary study of the potential effects of extensive levee failures in the Delta. The study investigated two of a potential range of scenarios, and MWD's analysis showed that, due to its investment in local storage and water banking programs south of the Delta, MWD would be able to supply all firm requirements to its member agencies under both of the scenarios considered. However, MWD's analysis of a worst-case situation showed that MWD might need to reduce firm deliveries to its member agencies by as much as 10 percent. MWD reported this analysis in the 2005 Regional UWMP. IRWD has addressed supply interruption planning in its WRMP and UWMP.

MWD will continue to rely on the plans and polices outlined in its UWMP and IRP to address water supply shortages and interruptions (including potential shutdowns of SWP pumps) to meet water demands. MWD is engaged in planning processes that will identify solutions which, when combined with the rest of its supply portfolio, should ensure a reliable long-term water supply for its member agencies.

Orange County Water District

The primary source of water for the City is the Orange County Groundwater Basin. The Orange County Water District ("OCWD") is responsible for the protection of water rights to the Santa Ana River in Orange County, as well as for the management and replenishment of the Orange County Groundwater Basin. OCWD manages production in the basin through financial incentives and establishes the Basin Production Percentage each water year. Total water demand within OCWD's boundary for the 2008-09 water year (beginning July 1, 2008, and ending June 30, 2009) was 456,913 acre feet (af). With implementation of OCWD's proposed projects, the Orange County Groundwater Basin yield in the year 2025 would be up to 500,000 acre feet. (WSA pg. A-34.) Since the formation of OCWD in 1933, OCWD has made substantial investment in facilities, basin management, and water rights protection, resulting in the elimination and prevention of adverse long-term "mining" overdraft conditions. OCWD has invested in seawater intrusion control (injection barriers), recharge facilities, laboratories, and basin monitoring to effectively manage the basin. OCWD continues to develop new replenishment supplies, recharge capacity, and basin protection measures to meet projected production from the basin during average/normal rainfall and drought periods.

OCWD's long-range plans for protecting the water supply and maintaining reliability to its member agencies include:

OCWD Long Term Facilities Plan

OCWD has prepared a draft Long Term Facilities Plan ("LTFP") to evaluate potential basin and water quality enhancement projects that may be implemented in the 20-year planning period. The LTFP includes a master list of developed and proposed projects. The various projects are grouped into five categories: 1) recharge facilities, 2) water source facilities, 3) basin management facilities, 4) water quality management facilities, and 5) operational improvements facilities. Each project is evaluated using criteria such as technical feasibility, cost, institutional support, functional feasibility, and environmental compliance. The final LTFP will include an implementation plan for the 28 recommended projects over the 20-year planning period.

OCWD Groundwater Management Plan

OCWD finalized its Groundwater Management Plan ("GMP") in March 2004, which updated prior versions from 1989 and 1990. The GMP complies with Senate Bill 1938 ("SB 1938"), passed in 2002, which includes a list of items to be included in a GMP. The GMP's objectives are 1) protecting and enhancing groundwater quality, and 2) cost-effectively protecting and increasing the basin's sustainable yield. Various programs, policies, goals, and projects are defined in the GMP to assist OCWD staff in meeting these objectives. The potential projects described in the GMP are discussed in further detail in the LTFP.

OCWD 2020 Water Master Plan Report

OCWD's Water Master Plan Report ("MPR") was prepared in April 1999 and describes local water supplies and estimates their availability extending to the year 2020. Specifically, OCWD states in its 2020 Water MPR that significant water supply sources will be available in the future for potable, nonpotable, and recharge purposes. The 2020 Water MPR discusses source waters such as imported water from MWD, base flows from the Santa Ana River, treated wastewater through the OCWD/Orange County Sanitation District Groundwater Replenishment System program, and possibly desalinated ocean water. The local supply availability and projections from the 2020 Water MPR have been revised and are being pursued with the LTFP.

Principles Governing CEQA Analysis of Water Supply

In *Vineyard Area Citizens for Responsible Growth, Inc., v. City of Rancho Cordova* (February 1, 2007), the California Supreme Court articulated the following principles for analysis of future water supplies for projects subject to CEQA:

- To meet CEQA's informational purposes, the EIR must present sufficient facts to decision makers to evaluate the pros and cons of supplying the necessary amount of water to the project.

- CEQA analysis for large, multiphase projects must assume that all phases of the project will eventually be built and the EIR must analyze, to the extent reasonably possible, the impacts of providing water to the entire project. Tiering cannot be used to defer water supply analysis until future phases of the project are built.

- CEQA analysis cannot rely on "paper water." The EIR must discuss why the identified water should reasonably be expected to be available. Future water supplies must be likely, rather than speculative.

- When there is some uncertainty regarding availability of future water supply, an EIR should acknowledge the degree of uncertainty, include a discussion of possible alternative sources, and identify the environmental impacts of such alternative sources. Where a full discussion still leaves some uncertainly about the long-term water supply's availability, mitigation measures for curtailing future development in the event that intended sources become unavailable may become a part of the EIR's approach.

- The EIR does not need to show that water supplies are definitely assured because such a degree of certainty would be "unworkable, as it would require water planning to far outpace land use planning." The requisite degree of certainty of a project's water supply varies with the stage of project approval. CEQA does not require large projects, at the early planning phase, to provide high degree of assurances of certainty regarding long-term future water supplies.

- The EIR analysis may rely on existing urban water management plans, so long as the project's new demand was included in the water management plan's future demand accounting.

- The ultimate question under CEQA is not whether an EIR establishes a likely source of water, but whether it adequately addresses the reasonably foreseeable impacts of supplying water to the project.

Water Distribution

Potable Water

A Sub-Area Master Plan ("SAMP") was prepared by IRWD for the Orange County Great Park in March 2009. A revision to the March 2009 SAMP is currently being prepared that will identify additional facilities required for the Modified Project.

Planning Areas (PAs) 51 and 30 are located within Zone 3 North and Zone 4 of the IRWD water system. The original water system for the former MCAS El Toro property was designed and built as a stand-alone system. Currently, IRWD supplies potable water to the former base through four metered connections that connect to the IRWD Zone 3 North and Zone 4 water system. The on-site existing distribution system for the former

MCAS El Toro property consists of a network of distribution system pipelines, six reservoirs, and two pump stations (CBA 2003).

Recycled Water

Recycled water is currently supplied to PAs 51 and 30 via a 12-inch IRWD Zone B pipeline that runs perpendicular to Technology Drive and connects to an eight-inch pipeline in the southwest corner of the Proposed Project Site (CBA 2003).

PAs 51 and 30 lie within three separate IRWD recycled water system pressure zones, including Zone B East Irvine, Zone C East Irvine, and Zone D AMP East. Zone B East Irvine serves elevations from 114 to 300 feet, Zone C East Irvine serves elevations from 300 to 440 feet, and Zone D AMP East serves elevations above 440 feet (CBA 2003).

5.12.1.2 Thresholds of Significance

Based on Appendix G of the CEQA Guidelines, the City has determined that a project would have a significant effect on the environment if the project:

U-2 Would require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

U-4 Would not have sufficient water supplies available to serve the project from existing entitlements and resources, and new and/or expanded entitlements would be needed.

5.12.1.3 The Certified EIR

The 2003 OCGP EIR analyzed impacts on water supply and the ability of IRWD to provide water to the Proposed Project Site in accordance with SB 610 and SB 221. The 2003 OCGP EIR estimated that the originally approved 3,625 dwelling units and approximately 6.5 million square feet of non-residential development would consume approximately 1.75 million gallons (1,959 AFY) of water per day and concluded that adequate supplies were available to serve the land uses proposed at that time. Based on the findings of the water supply assessment prepared for the 2003 OCGP EIR, total water supplies available to IRWD during normal, single-dry and multiple-dry years within a 20-year projection would meet the water demand created by the originally approved 3,625 dwelling units and approximately 6.5 million square feet of non-residential development. No additional impacts were identified in the subsequent Addenda to the 2003 OCGP EIR.

5.12.1.4 Environmental Impacts of the Modified Project

Existing Plans, Programs, and Policies

The following measures are existing plans, programs, or policies ("PPPs") that apply to the Modified Project and would help to reduce and avoid potential impacts related to water services:

PPP 12-1 **Requirement to Use Recycled Water:** Irvine Ranch Water District (IRWD) will identify areas within the Sub Area Master Plan that are capable of receiving service from the IRWD's recycled water system, and will determine the feasibility of providing recycled water service to these

areas. IRWD will also review applications for new permits to determine the feasibility of providing recycled water service to these applicants. If recycled water service is determined by IRWD to be feasible, applicants for new water service shall be required to install on-site facilities to accommodate both potable water and recycled water service in accordance with IRWD's Rules and Regulations.

PPP 12-2 **Connection Fees:** The Project Applicant shall enter into agreement or agreements as necessary with IRWD to establish the appropriate financial fair share costs to be borne by the project proponent. Fair share costs may include, but are not limited to, those associated with the preparation of studies necessary to analyze the needs of the Modified Project and infrastructure expansion necessary to serve the Modified Project.

PPP 12-3 **Fire Flow Analysis:** In accordance with IRWD requirements, each tentative tract map in the Modified Project must provide a fire flow analysis. If the analysis identifies any deficiencies, the developer will be responsible for any water system improvements associated with the development project required to rectify the deficiencies and meet IRWD fire flow requirements.

Project Design Features

As discussed in Section 5.3, *Greenhouse Gas Emissions*, of this DSEIR, the following design features ("PDFs") have been incorporated into the Modified Project and have been assumed in the following analysis:

PDF 3-3 **Ultra-Low-Flow Fixtures:** The Modified Project incorporates ultra-low-flow water fixtures that meet requirements of the Uniform Plumbing Code. Prior to issuance of a building permit, the Applicant or its successor shall submit evidence to the satisfaction of the Director of Community Development that toilets, urinals, sinks, showers, and other water fixtures installed on-site are ultra-low-flow water fixtures that exceed the Uniform Plumbing Code requirements. Examples are: 1.28 average gallons per flush high efficiency toilets, 2 gallon per minute (gpm) efficient bathroom faucets, 2.2 gpm efficient kitchen faucets, and 2.2 gpm efficient shower heads.

PDF 3-4 **Landscaping and Irrigation Systems:** The Modified Project incorporates automated, high-efficiency landscaping irrigation systems on all master landscaped areas that reduce water use, such as evapotranspiration "smart" weather-based irrigation controllers, and bubbler irrigation; low-angle, low-flow spray heads; moisture sensors; and use of a California-friendly landscape palette. Prior to approval of landscape plans, the Applicant or its successor shall submit evidence to the satisfaction of the Director of Community Development that such landscaping irrigation systems will be installed so as to make the Modified Project consistent with the intent of the California Water Conservation in Landscaping Act of 2006 (AB 1881), including provisions to reduce the wasteful, uneconomic, inefficient, and unnecessary consumption of water.

PDF 3-5 **Use of Reclaimed Water on All Master Landscaped Areas:** Prior to approval of landscape plans, the Applicant or its successor shall submit evidence to the satisfaction of the Director of Community Development and IRWD that the Modified Project incorporates the use of reclaimed water in all master landscaped areas, including master landscaped commercial, multifamily, common, roadways, and park areas. Master landscapes will also incorporate weather-based controllers and efficient irrigation system designs to reduce overwatering, combined with the application of a California-friendly landscape palette.

The following impact analysis addresses thresholds of significance that the Initial Study disclosed as potentially significant impacts. The applicable impacts are identified in brackets after the impact statement.

IMPACT 5.12.1-1 EXISTING AND PLANNED IRWD WATER SUPPLIES AND DELIVERY SYSTEMS ARE ADEQUATE TO MEET THE MODIFIED PROJECT'S FORECASTED WATER DEMAND. (IMPACT U-2 AND U-4)

Project Water Demands

The Modified Project would locate the Approved Project's 4,894 residential units on the five proposed Vesting Tentative Tracts Maps in Planning Area 51. Of those residential units, 1,269 are the density bonus units granted by the City in 2008 pursuant to state law that have not previously been generally located within the Proposed Project Site. In addition, the Modified Project relocates a portion of the original 3,625 in a different location than originally contemplated and analyzed. The Modified Project also relocates a portion of the Approved Project's 6,585,594 square feet of non-residential development within Planning Area 51, or between Planning Areas 51 and 30, as described more fully in Section 3, *Project Description*. However, none of these modifications to the Approved Project would alter the amount of water that would be demanded by the Modified Project as compared to the Approved Project.

As shown in Table 5.12-4, buildout of the Approved Project or the Modified Project would result in an average water demand of approximately 1,680 acre-feet per year (1.5 MGD).

Water Delivery Systems

Potable Water

The SAMP analyzed the domestic water and wastewater collection systems based on the Modified Project. The Proposed Project Site will be served by three domestic water pressure zones and one sub-zone. These pressure zones and their corresponding hydraulic grade lines (HGL) are Zone 5 with an HGL of 735 feet, Zone 4 with an HGL of 640 feet, Zone 4R with an HGL of 540 feet, and Zone 3 with an HGL of 470 feet. Pressure Zones 4 and 3 will be gravity fed, while Zones 5 and 4R will be pressure reduced zones.

When IRWD is importing water, the primary sources of supply will be the Allen-McCulloch Pipeline ("AMP") through the existing OC-72 and OC-73 turnouts. With recent modifications to the OC-72 turnout, the AMP is discharged directly into both the Zone 4 and 3 water distribution systems. The new Zone 4 Portola Springs transmission main that parallels the Eastern Transportation Corridor (SR-241) supplies the new Portola Springs Zone 4-6 Booster Pump Station.

When IRWD is utilizing its groundwater supplies, the primary source is the Dyer Road Well Field and the Irvine Desalter Project ("IDP"). The Central Zone 1-3 Booster Pump Station, the two Zone 3-4 booster pump stations, and the Portola Springs Zone 4-6 Booster Pump Station will supply the water to its required HGL.

Table 5.12-4
Total Water Demand Buildout of the Modified Project

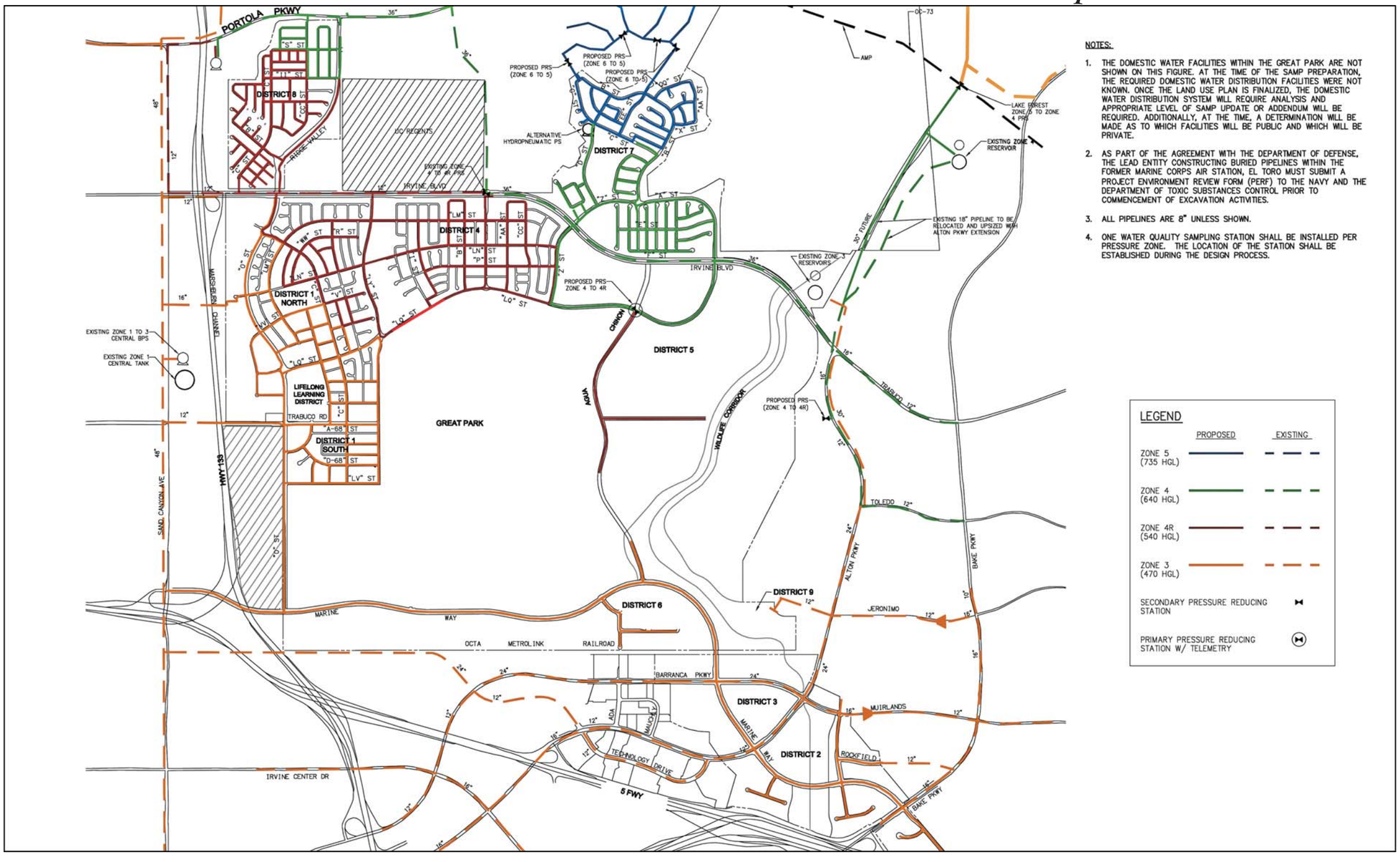
Land Use	Units	Water Demand Duty Factor[1]	Total Demand in Gallons Per Day (GPD)	Total Demand in Acre-Feet Per Year
Residential	4,894 du	200 gal/du/day	978,800	1,096
Commercial/Retail	402,000 sf	220 gal/ksf/day	88,440	99
Non-Residential	6,183,594 sf	70 gal/ksf/day	432,852	485
Total	**4,894 units/ 6,585,594 sf**		**1,500,092**	**1,680**

Source: IRWD UWMP 2005
du = dwelling unit
ksf = 1,000 square feet of building area
[1]Based on Average Day Demand

For purposes of determining the appropriate sizing for water distribution systems, maximum daily water demand was estimated by IRWD. Based on the development plan land uses, the Modified Project will require a maximum of 2,080 acre-feet per year of domestic water. With the assumed peaking factor, this equates to a maximum day demand of approximately 4.1 million gallons per day ("MGD"). Flow rates are estimated to be 1,290 gpm, 2,840 gpm, and 4,515 gpm for average day, maximum day and peak hour demands, respectively.

The Modified Project will require on-site transmission and distribution pipelines and three on-site pressure reducing stations ("PRS's"), as shown on Figure 5.12-1. The SAMP assumes that the two Zone 6-5 PRS's that are proposed for Planning Area 6 (Portola Springs) are installed and operational before the Zone 5 service zone of District 7 is required. If the northern portion of District 7 is developed before the Aqua Chinon Knolls Village of Portola Springs, a temporary hydropneumatic pump station will be required.

Proposed Domestic Water Facilities



0 2,500
Scale (Feet)

Source: RBF Consulting 2011

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Non-Potable Water

The Modified Project's nonpotable water demands will be served by three pressure zones, Zone D (HGL 850), Zone C (HGL 640), and Zone B (HGL 460). Zone D demands will be supplied from the Portola Springs Zone D Reservoir and the Zone C- D Booster Pump Station located in the Portola Springs development area. The Zone C demands will be supplied from the Portola Springs Zone C Reservoir, the Zone A-C Booster Pump Station located along Portola Parkway in the Orchard Hills development area, and the LAWD Zone B Reservoir, through the proposed LAWD Zone B to IRWD C PRS. Zone B will be gravity fed from the Northwood Zone B reservoir and the Zone B Laguna Tank. The Zone B Rattlesnake 75-1 Booster Pump Station and the LAWRP booster pump stations will also supply the Zone B system. The primary source water to the nonpotable system will be reclaimed water from the LAWRP and Michelson reclamation plant.

Based on the development plan land uses, the Modified Project will require a maximum of 4,520 acre-feet per year (4 MGD) of reclaimed water. With the assumed peaking factor, this equates to a maximum day demand of approximately 10.9 MGD. Flow rates were estimated to be 2,800 gpm, 7,600 gpm, and 12,600 gpm for average day, maximum day and peak hour demands, respectively.

The proposed reclaimed water system required to serve the Modified Project is shown on Figure 5.12-2. In addition to the on-site transmission and distribution pipelines, the lower portion of the Irvine Lake Pipeline Facility (ILP) will be converted from raw water to Zone C reclaimed water and a portion of the agricultural demands to PA 40 will be transferred from the ILP to Zone A. Other off-site improvements include the construction of the Alton Parkway 16-inch Zone C transmission main, the 12-inch LAWD Zone B transmission main along Alton Parkway and Commerce Centre Drive, and the proposed LAWD Zone B – Zone C PRS.

Water Supply

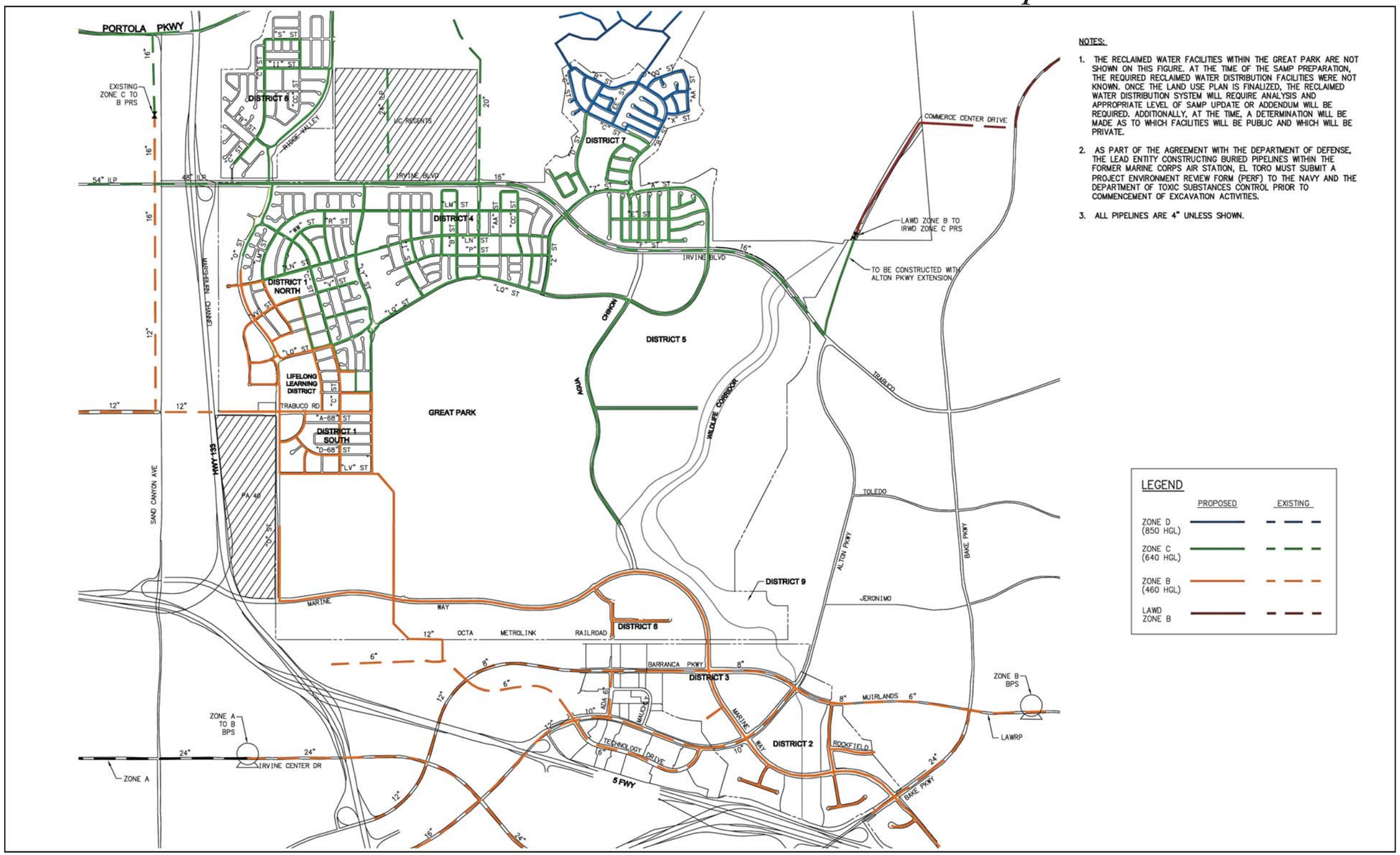
As Tables 5.12-5 and 5.12-6 demonstrate, there is sufficient supply capacity for both potable and nonpotable water to accommodate full buildout of the Modified Project through 2031, upon completion of under development supplies.

Table 5.12-5
IRWD Buildout Supply and Demand for Potable Water
(Acre-Feet Per Year)

Source	2010	2015	2020	2025	2031
Normal-Year					
Maximum Supply Capacity [1, 2]	85,469	101,069	107,569	118,069	118,069
Buildout Demand [3]	56,933	71,725	80,961	85,445	87,836
Reserve Supply	**28,536**	**29,344**	**26,608**	**32,624**	**30,233**
Single Dry-Year					
Maximum Supply Capability	85,469	101,069	107,569	118,069	118,069
Buildout Demand	60,919	76,746	86,629	91,426	93,985
Reserve Supply	**24,550**	**24,323**	**20,940**	**26,643**	**24,084**
Multiple Dry-Year					
Maximum Supply Capability	85,469	101,069	107,569	118,069	118,069
Buildout Demand	60,919	76,746	86,629	91,426	93,985
Reserve Supply	**24,550**	**24,323**	**20,940**	**26,643**	**24,084**

Source: IRWD WSA 2011
Notes:
[1] Includes current supplies and supplies under development.
[2] A full discussion of under-development water supply entitlement, water rights, and water service contracts can be found in the WSA.
[3] Full WRMP buildout, including the Modified Project.

Proposed Non-Potable Water Facilities



Source: RBF Consulting 2011

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Table 5.12-6
IRWD Buildout Supply and Demand for Nonpotable Water
(Acre-Feet Per Year)

Source	2010	2015	2020	2025	2031
Normal Year					
Maximum Supply Capacity [1, 2]	57,035	57,035	57,035	57,035	57,035
Buildout Demand [3]	36,376	32,560	33,661	35,608	36,845
Reserve Supply	**20,659**	**24,475**	**23,374**	**21,427**	**20,190**
Single Dry Year					
Maximum Supply Capability	54,035	54,035	54,035	54,035	54,035
Buildout Demand	38,922	34,839	36,017	38,101	39,424
Reserve Supply	**15,113**	**19,196**	**18,018**	**15,934**	**14,611**
Multiple Dry Year					
Maximum Supply Capability	54,035	54,035	54,035	54,035	54,035
Buildout Demand	38,922	34,839	36,017	38,101	39,424
Reserve Supply	**15,113**	**19,196**	**18,018**	**15,934**	**14,611**

Source: IRWD WSA 2011
Notes:
[1] Includes current supplies and supplies under development.
[2] A full discussion of under-development water supply entitlement, water rights, and water service contracts can be found in the WSA.
[3] Full WRMP buildout, including Modified Project.

Table 5.12-7 demonstrates that IRWD has sufficient supply capacity of potable water under MWD Allocation condition to accommodate full buildout (including the Modified Project) through 2031, upon completion of under development supplies.

Table 5.12-7
IRWD Buildout Supply and Demand for Potable Water
Under Temporary MWD Allocation Conditions
(Acre-Feet Per Year)

Source	2010	2015	2020	2025	2031
Normal Year					
Maximum Supply Capacity [1, 2]	68,540	85,415	93,256	105,164	105,748
Buildout Demand [3]	56,373	71,725	80,961	85,445	87,836
Reserve Supply	**12,167**	**13,690**	**12,295**	**19,719**	**17,912**
Single Dry Year					
Maximum Supply Capability	68,540	86,729	94,608	106,557	108,078
Buildout Demand	65,183	76,746	86,629	91,426	93,985
Reserve Supply	**3,357**	**9,983**	**7,979**	**15,131**	**14,093**
Multiple Dry Year					
Maximum Supply Capability	68,540	86,729	94,608	106,557	108,078
Buildout Demand	65,183	76,746	86,629	91,426	93,985
Reserve Supply	**3,357**	**9,983**	**7,979**	**15,131**	**14,093**

Source: IRWD WSA 2011
Notes:
1 Includes current supplies and supplies under development.
2 A full discussion of under-development water supply entitlement, water rights and water service contracts can be found in the WSA.
3 Full WRMP buildout, including Modified Project.

Conclusion Regarding Regulatory Uncertainties Affecting the Provision of State Water Project Supplies

There are clearly water supply regulatory uncertainties that could significantly impact the delivery of water supplies through the coordinated operations of the SWP. As reviewed in Section 5.12.1.1, MWD, OCWD and IRWD are actively planning for water uncertainties related to the Delta smelt and global climate change issues. As discussed, there are two major state-sponsored planning efforts, the Delta Vision Task Force and the Bay Delta Conservation Plan program, that are directed toward resolving these uncertainties. Given the significance of the SWP to public health and safety, as well as to the economy of the State of California, it would appear that major uncertainties will need to be comprehensively addressed in response to the needs of the aquatic environment. At the present time, the Governor and the Legislature are considering possible bond issues that would address the regulatory uncertainties, including measures that would be directed toward improving habitat conditions for the Delta smelt. Although it is not possible at this time to predict the outcome of these efforts with respect to specific levels of water supply under differing climate conditions, both cyclical and long term, the fact that 90 percent of the population of southern California lies within MWD's service area attests to the significance of planning efforts to resolve the regulatory and climate uncertainties. According to IRWD, the major water-supply planning efforts currently under way and current MWD efforts to address near-term uncertainties are, taken together, strong indicators that SWP water supply considerations will be comprehensively addressed and very likely resolved in the long term.

5.12.1.5 Cumulative Impacts

The geographic scope for cumulative water supply analysis is IRWD's service area. As described above, the total water supplies available to IRWD during MWD Allocation condition, Normal-, Single Dry-, and Multiple Dry-Year conditions within a 20-year projection will meet the projected water demand of the Modified Project and other cumulative development. IRWD supply and facilities planning is consistent with the general plans of the land use jurisdictions within IRWD's service area. Consequently, presuming future development is generally consistent with existing general plans, IRWD does not anticipate any problems supplying water to any current or reasonably foreseeable future development in the City of Irvine. Therefore, the Modified Project's demand for water services would not be cumulatively considerable.

As discussed above, IRWD's water reliability is dependent on OCWD groundwater and MWD imported water reliability. MWD will continue to rely on the plans and polices outlined in its UWMP and IRP to address water supply shortages and interruptions (including potential shut downs of SWP pumps) to meet water demands. MWD is engaged in planning processes both with its member agencies and through its involvement in the State Delta Vision and Bay Delta Conservation planning processes that are intended identify solutions that, when combined with the rest of its supply portfolio, would ensure a reliable long-term water supply for its member agencies.

5.12.1.6 Level of Significance Before Mitigation

There are adequate water supply and planned delivery systems to adequately serve the Modified Project. IRWD does not anticipate any problems supplying water to any current or reasonably foreseeable future development in the City of Irvine. In addition, PPP 3-3 through PPP 3-5 would lessen the impact of the Modified Project on future water supply and IRWD, and impacts have been determined to be less than significant.

5.12.1.7 Mitigation Measures

Applicable Mitigation Measures from the Certified EIR

No mitigation measures specific to impacts on potable and nonpotable water supplies and treatment were identified in the Certified EIR.

Additional Mitigation Measures for the Modified Project

No mitigation measures are required since the Modified Project will have a less than significant impact on potable and recycled water supplies and treatment without mitigation. The impacts of installing new water delivery lines and facilities are addressed in the other sections of this DSEIR.

5.12.1.8 Level of Significance After Mitigation

The Modified Project's impacts concerning potable and non-potable water are less than significant without mitigation. No significant impacts relating to potable water supply, treatment, or distribution have been identified.

5.12.2 Wastewater

5.12.2.1 Environmental Setting

Wastewater Treatment

Wastewater treatment for wastewater generated from the Proposed Project Site is provided by IRWD at its Michelson Wastewater Reclamation Plant ("MWRP"; IRWD 2011). The MWRP has a capacity of 18 mgd; expansion of the MWRP to a capacity of 28 mgd is underway, with planned completion in August 2012; average wastewater flows at the MWRP are approximately 18 mgd (Busald 2011).

Wastewater Collection

The primary sewer collection system that serves PAs 51 and 30 is a two-branched system with flow from the northeast to the southwest, mainly by gravity. One lift station with two pumps is located in the southwest portion of PA 51 in Building 375. The existing sewer infrastructure system on PAs 51 and 30 consists of a series of polyvinyl chloride ("PVC") pipes and vitrified clay pipes ("VCP") ranging in size from 6-inches to 15-inches in diameter (CBA 2003).

Sewer discharge exits PAs 51 and 30 via two 12-inch lines at the southwest boundary of the Proposed Project Site into the IRWD sewer system. The two 12-inch lines cross under the Metrolink railroad tracks and connect southwest of the tracks. The flows then combine and exit via an 18-inch VCP pipe. The design capacity of this 18-inch pipe is about 1,200 gallons per minute (GPM), or 1.73 MGD. The flow continues through the IRWD Alton-Bake Parkway Trunk Sewer System to the San Diego Creek Interceptor on the north side of the San Diego (I-405) Freeway (CBA 2003).

5.12.2.2 Thresholds of Significance

Based on Appendix G to the CEQA Guidelines, the City has determined that a project would have a significant effect on the environment if the project:

U-2 Would require or result in the construction of new wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

U-5 Would result in a determination by the wastewater treatment provider which serves or may serve the project that is has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments.

5.12.2.3 The Certified EIR

The Certified EIR concluded that the originally approved 3,625 dwelling units and approximately 6.5 million square feet of non-residential development would generate 0.89 MGD of wastewater. The Certified EIR concluded that IRWD has adequate wastewater treatment capacity for that wastewater generation. In addition, the Certified EIR identified the necessary backbone infrastructure. No significant impacts related to wastewater treatment were identified in the Certified EIR.

5.12.2.4 Environmental Impacts of the Modified Project

Existing Plans, Programs, and Policies

PPP 12-2 listed above applies to the Modified Project and would help reduce and avoid potential impacts related to wastewater services.

Project Design Features

PDF 3-3 listed above has been incorporated into the Modified Project and would help reduce and avoid potential impacts related to wastewater services.

The following impact analysis addresses thresholds of significance that the Initial Study disclosed as potentially significant impacts. The applicable impacts are identified in brackets after the impact statement.

IMPACT 5.12.2-1 IRWD HAS ADEQUATE WASTEWATER TREATMENT CAPACITY TO MEET THE MODIFIED PROJECT'S ESTIMATED WASTEWATER GENERATION, AND PROJECT DEVELOPMENT WOULD NOT REQUIRE CONSTRUCTION OF NEW OR EXPANDED WASTEWATER TREATMENT FACILITIES. (IMPACT U-2 [PART])

The Modified Project would locate the Approved Project's 4,894 residential units on the five proposed Vesting Tentative Tracts Maps in Planning Area 51. Of those residential units, 1,269 are the density bonus units granted by the City in 2008 pursuant to state law that have not previously been generally located within the Proposed Project Site. In addition, the Modified Project relocates a portion of the original 3,625 units in a different location than originally analyzed. The Modified Project also relocates a portion of the Approved Project's 6,585,594 square feet of non-residential development within Planning Area 51, or between Planning Areas 51 and 30, as described more fully in Section 3, *Project Description*. However, none of these modifications to the Approved Project would alter the amount of wastewater generated by the Modified Project as compared to the Approved Project.

As shown on Table 5.12-8, the Modified Project is estimated to generate approximately 1,337,875 gallons of wastewater per day.

Table 5.12-8
Estimated Modified Project Wastewater Generation

Land Use	Units[a]	Duty Factor (gpd/unit)	Average Dry Weather Flow		Peak Dry Weather Flow (cfs)
			gpd	cfs	
District 1					
Residential - Low Density	262	225	58,950	0.091	
Residential - Medium Density	378	220	83,160	0.129	
Residential - Medium-High Density	809	150	121,350	0.188	
Residential - High Density	611	145	88,595	0.137	
Residential - High Density	166	145	24,070	0.037	
Commercial - Community	180	150	27,000	0.042	
Commercial - General Office	124	52	6,432	0.010	
Commercial - Institutional	579	30	17,355	0.027	
Commercial - School	369	12	4,422	0.007	
District 1 Subtotal			**431,334**	**0.667**	**1.657**
District 2					
Commercial - Community	102	150	15,300	0.024	
Commercial - General Office	1600	52	83,200	0.129	
District 2 Subtotal			**98,500**	**0.152**	**0.346**
District 3					
Commercial - General Office	951	52	49,468	0.077	
Commercial – Institutional	144	30	4,332	0.007	
District 3 Subtotal			**53,800**	**0.083**	**0.189**
District 4					
Residential - Low Density	66	225	14,850	0.023	
Residential - Medium Density	428	220	94,160	0.146	
Residential - Medium-High Density	608	150	91,200	0.141	
Commercial – Community	70	150	10,500	0.016	
District 4 Subtotal			**210,710**	**0.326**	**0.716**
District 5					
Commercial – Community	783	150	117,450	0.182	
District 5 Subtotal			**117,450**	**0.182**	**0.413**
District 6					
Commercial – Institutional	495	30	14,838	0.023	
District 6 Subtotal			**14,838**	**0.023**	**0.052**
District 7					
Residential - Low Density	341	225	76,725	0.119	
Residential - Medium Density	499	220	109,780	0.170	
District 7 Subtotal			**186,505**	**0.289**	**0.824**
District 8					
Residential - Low Density	123	225	27,675	0.043	
Residential - Medium Density	515	220	113,300	0.175	
Residential - Medium-High Density	88	150	13,200	0.020	
District 8 Subtotal			**154,175**	**0.239**	**0.788**

Table 5.12-8
Estimated Modified Project Wastewater Generation

Land Use	Units[a]	Duty Factor (gpd/unit)	Average Dry Weather Flow		Peak Dry Weather Flow (cfs)
			gpd	cfs	
District 9					
Agricultural	0		-		
District 9 Subtotal					
Great Park/Public Ownership					
Commercial – Community	229	150	34,395	0.053	
Commercial – Institutional	1,171	30	35,115	0.054	
Commercial – Recreation	26	41	1,053	0.002	
Great Park/Public Subtotal			**70,563**	**0.109**	**0.248**
TOTAL			**1,337,875**	**2.070**	**4.641**

Source: IRWD 2011
Note: "Commercial" refers to the non-residential land uses within the Modified Project.

As stated above, wastewater treatment for wastewater generated from the Proposed Project Site is provided by IRWD at its MWRP (IRWD 2011). The MWRP has a capacity of 18 mgd; expansion of the MWRP to a capacity of 28 mgd is underway, with planned completion in August 2012. Average wastewater flows at the MWRP are approximately 18 mgd (Busald 2011). Since expansion of the MWRP will be completed prior to development of the Modified Project, no significant impacts are anticipated.

IRWD has adequate wastewater treatment capacity for the Modified Project's estimated wastewater generation (IRWD 2011b). Therefore, development of the Modified Project would not require construction of new or expanded wastewater treatment facilities.

IMPACT 5.12.2-2 PROJECT DEVELOPMENT WOULD REQUIRE EXPANSION AND EXTENSIONS OF EXISTING IRWD SEWERS. (IMPACT U-5)

An increase of sewer collection and transmission capacity will be required in order to serve the Modified Project. Locations of proposed sewers are shown in Figure 5.12-3, *Proposed Sewer Collection System*. Wastewater generated by the Modified Project would generally flow to the southwest, towards the intersection of the Santa Ana Freeway (I-5) and the Eastern Transportation Corridor (SR-133). All flows will be conveyed to IRWD's off-site wastewater collection system by gravity sewer. No sewage lift stations will be required. Based on the Modified Project's land uses, the average day dry weather flow generated by the Proposed Project Site will be approximately 1.3 MGD, or about 2.1 cfs.

In addition to the on-site wastewater generated, off-site flows will be routed through the Proposed Project Site. The flows from the UC Regents parcel (located west of District 7) and the eastern portion of PA 40 are proposed to be routed through the Proposed Project Site.

As shown on Table 5.12-9, on-site wastewater collection facilities will be comprised of 8-inch, 10-inch, 12-inch, 15-inch, 18-inch and 21-inch diameter sewers.

Table 5.12-9
Proposed Sewers On the Proposed Project Site

Diameter, Inches	Total Length, Feet
21	5,700
18	4,600
15	3,400
12	17,500
10	5,600
8	135,300

Source: RBF 2011

In addition to construction of sewers on-site, development of the Modified Project would require replacement of certain off-site sewers with larger sewers. Off-site downstream improvements will include upsizing of portions of the existing 10-inch and 12-inch Reach "A" sewer to 15-inches in diameter. This trunk sewer parallels SR-133 from north of I-5 to the San Diego Creek Interceptor. Portions of the existing Reach "B" sewer, routed from the southern boundary of the Proposed Project Site to Technology Drive and then along Technology Drive to Alton Parkway, will require upsizing from 18-inches to 21-inches in diameter. Lastly, the Alton trunk sewer will be relocated from the Serrano Creek to Alton Parkway from the intersection of Alton Parkway and Barranca Parkway to the San Diego Creek Interceptor.

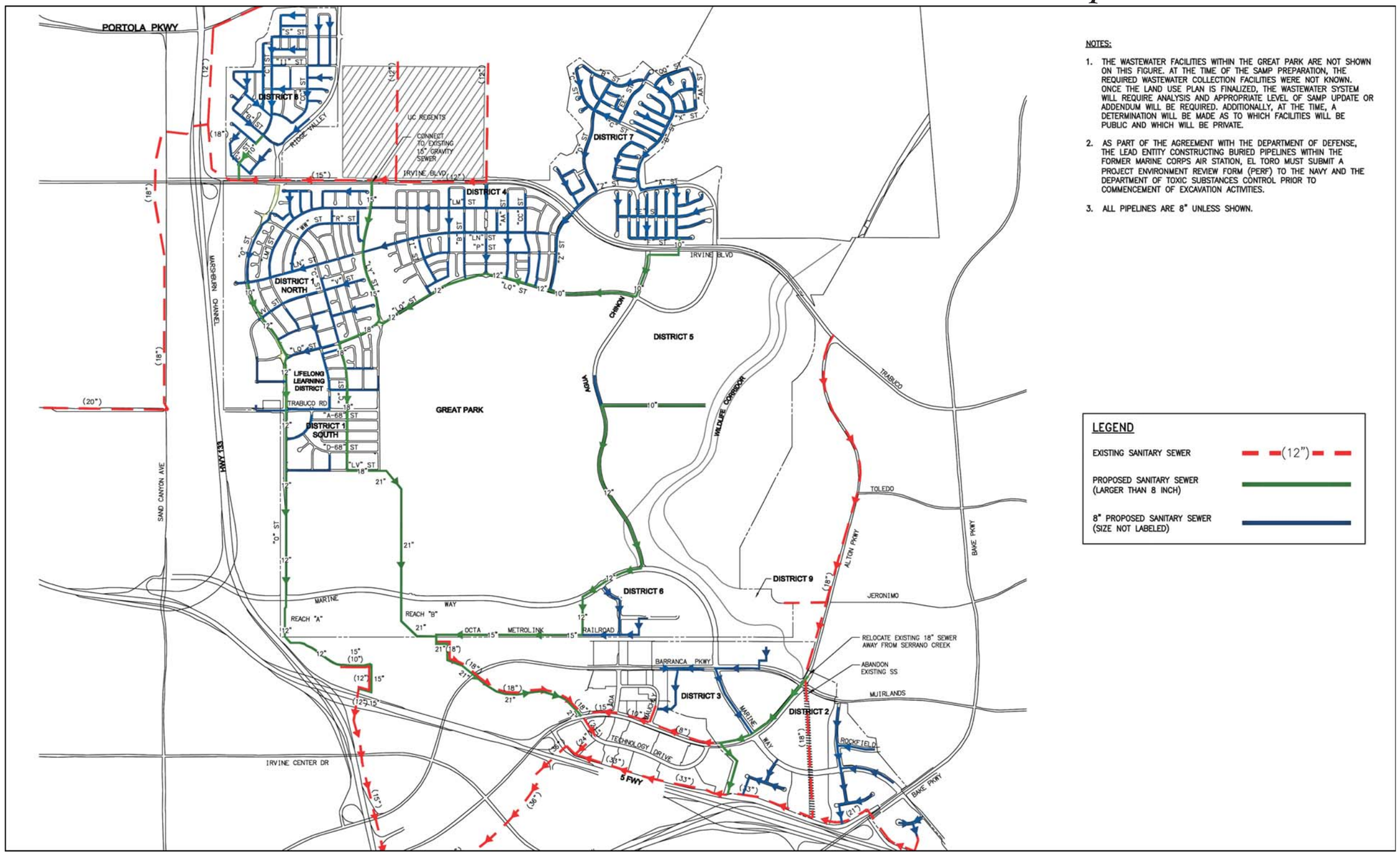
These off-site improvements are within existing street rights-of-way, and therefore will not have any biological or cultural resource impacts. The construction of sewer infrastructure on- and off-site has the potential for impacts such as construction-related dust and noise, construction-related air emissions, etc. However, these construction-related impacts have been analyzed in Section 5.2, *Air Quality* and Section 5.7, *Noise*, of this DSEIR, and any applicable mitigation measures identified in those sections would address potential significant impacts associated with construction of sewer facilities necessary to serve the Proposed Project Site. Therefore, no additional impacts related to construction and operation of the sewer system would occur.

5.12.2.5 Cumulative Impacts

The geographic scope for cumulative wastewater analysis is IRWD's service area. As the agency charged with providing water treatment and sewer systems within Irvine, IRWD regularly updates its WRMP and creates SAMPs in an effort to conserve water resources, ascertain changed conditions, and accurately plan for land use changes associated with the evolving Zoning Codes and General Plans of the jurisdictions within IRWD's service area. (IRWD 2011)

As discussed above, development of the Modified Project would require several extensions of existing IRWD sewers, including upsizing of some wastewater and nonpotable water pipe segments. No increase in wastewater treatment capacity would be required to serve the Modified Project. As such, the Modified Project would not result in a significant impact related to wastewater transmission or treatment capacity.

Proposed Sewer Collection System



0 2,500
Scale (Feet)

Source: RBF Consulting 2011

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Through its SAMP, IRWD has identified areas within its jurisdiction in need of wastewater infrastructure improvements and has determined the cost of those improvements. The Applicant or its successor would be responsible for the cost of building the sewer extensions within the Proposed Project Site, as well as needed sewer expansions in and near Technology Drive south of the Proposed Project Site. The IRWD has adequate wastewater treatment capacity for the Modified Project's estimated wastewater generation. Additionally, the long-range planning efforts of IRWD take into account cumulative development projects, including the Modified Project, to eliminate the potential for cumulative impacts. IRWD plans and builds wastewater treatment capacity to accommodate planned growth in its service area. The Modified Project is required to fund an analysis of Modified Project sewer requirements (completed as part of the SAMP) and to finance all sewer improvements required by the Modified Project. Other new and redevelopment projects in IRWD's service area are required to fund corresponding analyses and improvements. Therefore, substantial cumulative impacts to wastewater treatment and wastewater conveyance are not expected, and the Modified Project's impacts on wastewater treatment and conveyance would not be cumulatively considerable.

5.12.2.6 Level of Significance Before Mitigation

Impacts of building and operating sewer extensions would be part of the impacts of the Modified Project that are analyzed throughout the various sections of this DSEIR. No significant sewer impacts would occur beyond those impacts identified in other sections of this DSEIR. Potential wastewater impacts have been determined to be less than significant.

5.12.2.7 Mitigation Measures

Applicable Mitigation Measures from the Certified EIR

No mitigation measures specific to the impacts of the Approved Project on wastewater collection or treatment were recommended in the Certified EIR.

Additional Mitigation Measures for the Modified Project

No mitigation measures are required since the Modified Project will have a less than significant impact on wastewater collection and treatment without mitigation. The impacts of installing new sewer lines to serve the Proposed Project Site are addressed in the other sections of this DSEIR.

5.12.2.8 Level of Significance After Mitigation

The Modified Project's impacts concerning wastewater treatment and facilities are less than significant without mitigation. No significant impacts relating to wastewater treatment or collection due to the Modified Project have been identified.

5.12.3 Solid Waste

5.12.3.1 Environmental Setting

OC Waste & Recycling ("OCWR") is the government agency that regulates and operates the local Orange County landfills, including the Frank R. Bowerman Landfill which is located in the City. Waste Management of Orange County is the private contract waste hauler for all residential developments in Irvine.

OCWR operates three landfills in Orange County, which are listed below in Table 5.12-10. Table 5.12-10 also sets forth the actual average daily rate of disposal, the maximum daily permitted capacity, the remaining capacity and the estimated closure date of each of the three landfills.

Table 5.12-10
OCWR Landfills

Landfill	City or Community	Disposal Rate, Tons per Day		Remaining Capacity, Cubic Yards	Estimated Closure Date
		Maximum Permitted	Actual		
Frank R. Bowerman	Irvine	11,500	5,500	199.6 million	2053
Prima Deschecha	San Juan Capistrano	4,000	1,000	133.8 million	2067
Alpha Olinda	Brea	8,000	5,000	50.6 million	2021

Source: OCWR 2011.

Assembly Bill ("AB") 939 requires that each county and city prepare a source reduction and recycling element showing how it will meet diversion of solid waste from landfills goals of 25 percent by the year 1995, and 50 percent by the year 2000 and every year after. Compliance with AB 939 is now measured in terms of actual disposal amounts per person compared to target amounts; actual disposal amounts at or below targets are in compliance with AB 939. For 2008, the most recent year for which data is available, target disposal rates for Orange County in pounds per person per day ("ppd") were 10.1 for residences and 9.3 for businesses. Actual disposal rates in the City of Irvine were 6.8 ppd for residences and 6.6 ppd for businesses (CalRecycle 2011). Thus, the City is in compliance with AB 939 goals.

There are 39 programs currently in place in the City for diversion of solid waste from landfills. These include programs for composting, household hazardous waste, recycling, source reduction, and special waste materials such as construction and demolition debris (CalRecycle 2011).

5.12.3.2 Thresholds of Significance

Based on Appendix G of the CEQA Guidelines, the City has determined that a project would have a significant effect on the environment if the project:

U-6 Would be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs.

U-7 Would not comply with federal, state, and local statutes and regulations related to solid waste.

In the Initial Study for the Modified Project, included as Appendix A to this DSEIR, the City determined that that the following impact would not be significant: U-7. The City determined that that impact was sufficiently analyzed in the Certified EIR and that implementation of the modifications proposed by the Modified Project would not change the conclusions of the Certified EIR with respect to that impact. Chapter 8, *Impacts Found Not to Be Significant*, of this DSEIR, substantiates the City's determination that impacts associated with Impact U-7 would be less than significant, as concluded in the Certified EIR. Therefore, Impact U-7 will not be addressed further in this Section.

5.12.3.3 The Certified EIR and the Approved Project

The Certified EIR concluded that the originally approved 3,625 dwelling units and 6,585,594 square feet of non-residential uses would generate approximately 70,771 ppd of solid waste. The Certified EIR identified that solid waste reduction would be achieved through the City requirement for recycling of construction and demolition material to reduce waste, as well as through compliance with AB 939, which requires that a minimum of 50 percent of the solid waste generated in cities in California be diverted from landfills. Further, Senate Bill 1374 requires that all cities implement measures that require diversion of 75 percent of all construction and demolition waste from landfills. The Approved Project incorporates already-imposed Mitigation Measures SW-1 through SW-5 from the Certified EIR. While the Certified EIR identified a potential impact related to solid waste, it concluded that, with the recommended City-adopted mitigation measures, the impact would be less than significant.

As discussed further below, due to new solid waste generation rates provided by the California Department of Resources Recycling and Recovery ("CalRecycle"), the Approved Project is now estimated to generate a total of 136,520 ppd or 68.26 tons per day ("tpd"). Demolition of existing buildings and runways would also generate demolition debris in the short-term. Green waste will be also be generated as a result of ongoing park and landscaping maintenance.

5.12.3.4 Environmental Impacts of the Modified Project

Existing Plans, Programs, and Policies

The following City plans, programs and policies would apply to the Modified Project, and would help reduce the Modified Project's solid waste impacts:

PPP 12-4 The City of Irvine Construction and Demolition (C&D) Debris Recycling and Reuse ordinance requires that 1) all residential projects of more than one unit, 2) nonresidential developments on 5,000 square feet or larger, and 3) nonresidential demolition/renovations with more than 10,000 square feet of building recycle or reuse a minimum of 75 percent of concrete and asphalt and 50 percent of nonhazardous debris generated.

PPP 12-5 The City adopted a Zero Waste program in 2007 to approach waste management. The City recovers approximately 66 percent of its waste for recycling and composting, which exceeds the state's AB 939 waste diversion goals. Furthermore, waste haulers establish rate schedules according to bin size and frequency of collection. Commercial customers that subscribe to smaller bins (e.g., 2 cubic-yard bins) are routinely charged less by haulers. This pricing structure encourages waste reduction and recycling, and tends to minimize hauler pickups.

PPP 12-6 The Irvine Sustainable Community Initiative (Initiative Ordinance 10-11), adopted by the voters of the City as Initiative Measure S on November 2, 2010, and certified by the City Council on December 14, 2010, became effective December 24, 2010. The ordinance was adopted to ratify and implement policies in support of renewable energy and environmental programs for a sustainable community. It outlines the City's direction for continuing to develop and implement programs geared towards green building, renewable energy and sustainability. For example, the City would continue to develop and implement recycling, zero waste or other innovative onsite business programs to divert waste from landfills and also continue to develop and implement the use of native, California-friendly and drought-tolerant landscaping.

PPP 12-7 Prior to the issuance of grading permits for a project that involves the demolition of an asphalt or concrete parking lot on site, the applicant shall submit a waste management plan demonstrating compliance with the requirements of Title 6, Division 7 of the City of Irvine Municipal Code relating to recycling and diversion of demolition waste as applicable to said project. Over the course of demolition or construction, the applicant shall ensure compliance with all code requirements related to the use of City-authorized waste haulers (Standard Condition 2.24).

PPP 12-8 Prior to the issuance of building permits for a project that involves new construction or that involves the demolition or renovation of existing buildings on site, the applicant shall comply with requirements of Title 6, Division 7 of the City of Irvine Municipal Code relating to recycling and diversion of construction and demolition waste as applicable to said project. Over the course of demolition or construction, the applicant shall ensure compliance with all code requirements related to the use of City-authorized waste haulers (Standard Condition 3.7).

Project Design Features

There are no project design features that apply to the Modified Project to help to reduce and avoid potential impacts related to solid waste disposal.

The following impact analysis addresses the thresholds of significance for which the Modified Project's Initial Study disclosed a potentially significant impact. The applicable impact is identified in brackets after the impact statement.

IMPACT 5.12-3: THERE IS SUFFICIENT LANDFILL CAPACITY IN THE REGION FOR PROJECT-GENERATED SOLID WASTE [IMPACTS U-6]

Impact Analysis: Like the Approved Project, the Modified Project includes 4,894 residential units of varying sizes and affordability and approximately 6,586,000 square feet of non-residential uses; it also incorporates the mitigation measures incorporated into the Approved Project, including, without limitation SW1 through SW5. Like the Approved Project, the Modified Project's land uses would generate the typical range of recyclable and non-recyclable waste that other such uses create, including green waste (i.e., lawn and tree trimmings), cardboard, paper, glass, plastic, aluminum cans, diapers, food, and household hazardous waste (paint, motor oil, antifreeze, batteries). Solid waste disposal services for the Modified Project would be provided by Waste Management of Orange County, a private contract hauler that serves all residential developments in Irvine.

The Modified Project would locate the Approved Project's 4,894 residential units as indicated on the five proposed Vesting Tentative Tracts Maps. Of those residential units, 1,269 are the density bonus units granted by the City in 2008 pursuant to state law that have not previously been generally located within the Proposed

Project Site. The Modified Project also proposes to relocate a portion of the Approved Project's 6,585,594 square feet of non-residential development either within Planning Area 51, or between Planning Areas 51 and 30, as described more fully in Section 3, *Project Description*, of this DSEIR. However, none of these modifications to the Approved Project would alter the amount of solid waste generated by the Modified Project as compared to the Approved Project as the quantity of uses is not being modified.

Development of the Modified Project would increase the amount of solid waste generated by the land uses at the Proposed Project Site, and would thereby increase the demand for solid waste services, by the same amount as the Approved Project. Pursuant to new solid waste generation rates provided by CalRecycle, on average, residential land uses generate approximately 12.23 ppd of solid waste per household and commercial uses generate an average of 3.12 ppd of solid waste per 100 square feet, as listed in Table 5.12-11.

Table 5.12-11
Estimated Solid Waste Generation Rates by Land Use Type

Land Use	*Generation Factor*
Residential	12.23 lbs/household/day
Offices	1 lb/100 sf/day
Commercial/Retail	3.12 lbs/100 sf/day
Restaurants	.005 lbs/sf/day
Industrial/Warehouse	1.42 lbs/100 sf/day
Schools	1 lb/student/day
Hotel/Motel	4 lbs/room/day
Public/Institutional	.007 lbs/sf/day

Source: CalRecycle, 2010.

As shown in Table 5.12-12, the Modified Project's 4,894 residential units would generate approximately 59,854 ppd (or 29.93 tpd) of solid waste, and the 6,585,594 square feet of non-residential uses would generate 76,666 ppd (or 38.33 tpd) of solid waste. Therefore, the Modified Project, like the Approved Project, would generate a total of 136,520 ppd (or 68.26 tpd) of solid waste. Solid waste from the Modified Project would be disposed of at the Frank R. Bowerman Landfill. As described above in Table 5.12-10, the average daily rate of disposal for the Frank R. Bowerman Landfill is 5,500 tpd, with a maximum daily permitted capacity of 11,500 tpd. OCWR has stated that its landfills can accommodate the solid waste generated by the Modified Project, as well as that generated by cumulative development (OCWR 2011).

Table 5.12-12
Modified Project Estimated Solid Waste Generation

Land Use	Units/Square Feet	Generation Factor	Amount of Solid Waste (lbs/day)
Residential	4,894	12.23 lbs/household/day	59,854
Institutional (school and college/university)	1,492,594	.007 lbs/sf/day	10,448
Institutional (OCTA facility and remote airport terminal)	176,000	.007 lbs/sf/day	1,232
Institutional (other)	300,000	.007 lbs/sf/day	2,100
R&D	2,600,000	1.42 lbs/100 sf/day	36,920
Cultural (museum/library and fairgrounds/expo)	1,176,000	.007 lbs/sf/day	8,232
Office	75,000	1 lb/100 sf/day	750
Commercial (retail and auto sales)	402,000	3.12 lbs/100 sf/day	12,542
Recreational (sports park and golf course)	51,000	.007 lbs/sf/day	357
Public Facility	50,000	.007 lbs/sf/day	350
Warehouse	263,000	1.42 lbs/100 sf/day	3,735
Total	**4,894 units/ 6,585,594 sf**		**136,520**

There is adequate capacity at the Frank R. Bowerman Landfill for the solid waste generated by the Modified Project, and implementation of the Modified Project would not require increased permitted landfill capacity either there or in any other landfill. Therefore, like the Approved Project, the Modified Project's impacts with respect to solid waste would be less than significant.

5.12.3.5 Cumulative Impacts

The Modified Project, in combination with other projects in the county, would increase demand for landfills and solid waste services in Orange County. However, the Modified Project would not increase demand over that of the Approved Project. In addition, the Orange County Landfill System is required to have available disposal capacity for a projected period of 15 years. The Orange County Landfill System has demonstrated this capacity and even has sufficient excess capacity to enable it to regularly import solid waste from Los Angeles County. The rate of disposal at the Frank R. Bowerman Landfill serving the Proposed Project Site is 5,500 tpd, with a maximum daily permitted capacity of 11,500 tpd, and that landfill has capacity through the year 2053. OCWR has confirmed that it can accommodate the solid waste generated by the Modified Project as well as that generated by cumulative development (OCWR 2011). Therefore, like the Approved Project, the Modified Project's impacts with respect to solid waste would not be cumulatively considerable.

5.12.3.6 Level of Significance Before Mitigation

No significant impacts relating to solid waste have been identified. All Modified Project impacts related to solid waste will be less than significant without additional mitigation beyond mitigation measures SW-1 through SW-5 already incorporated in the Approved Project, which are incorporated into the Modified Project.

5.12.3.7 Mitigation Measures

Mitigation Measures from the Certified EIR

Five mitigation measures for solid waste impacts were recommended in the Certified EIR, were adopted by the City, and are incorporated into the Modified Project. They include the following:

SW1 It is anticipated that much of the solid waste resulting from the demolition, dismantling, or other deconstruction of the aged structures and property, including but not limited to buildings and runways, at MCAS El Toro is contaminated with lead-based paints, asbestos, or other materials that may render it unsuitable for recycling or reuse. At the sole cost and expense of the project applicant, in order to evaluate this condition and determine the feasibility of recycling of solid waste material from the MCAS El Toro site by ordinary means, a technical evaluation by a qualified environmental consultant must be conducted. The technical evaluation shall include sufficient sample testing of all types of solid waste materials to be generated by the project to analyze its composition. A copy of the full technical evaluation and its findings must be submitted to the City of Irvine Community Development Department. The City of Irvine must confirm the adequacy of the technical evaluation prior to authorizing the demolition, dismantling, or deconstruction project to proceed. If it is determined by the technical evaluation that material is contaminated and prohibited from being recycled by ordinary means, a further evaluation must be conducted to identify and evaluate other feasible methods approved by state law to divert the material from landfills. This may include the delivery of the waste material to other appropriate non-disposal or transformation facilities, such as “waste-to-energy” (WTE) plants.

SW2 For that solid waste which is determined to be inappropriate for recycling (as that term is defined by California Public Resources Code Section 40180), the project applicant must submit a written plan to the City and implement such plan to ensure that 75% of the material, or the maximum amount feasible as determined by the technical evaluation, is diverted from the landfill through other methods that comply with state statutes and regulations.

SW3 For that solid waste which the technical study deems to be suitable for recycling, the project applicant must submit a written plan to the City and implement such plan to ensure that solid waste material generated by the demolition, dismantling, or deconstruction project, land use operations and maintenance is collected by a City authorized solid waste hauler or recycling agent, and that a minimum of 75% of the solid waste from the project is diverted from landfills by recycling, as that term is defined by California Public Resources Code Section 40180 (“Recycling” does not include transformation, as defined in Public Resources Code Section 40201).

SW4 To ensure ongoing compliance with these mitigation measures, the project applicant will be required to submit solid waste tonnage reports to the City of Irvine on City approved forms, accompanied by “weight ticket” receipts from state-certified disposal, nondisposal, or transformation facilities, on a quarterly basis to demonstrate that solid waste diversion has occurred in accordance with these required mitigation measures and in a manner that is consistent with, and not detrimental to, the efforts of the City of Irvine to comply with AB939.

To assure compliance with applicable statutes related to the disposal of solid waste, it is necessary for the City to require appropriate and effective mitigation measures to limit the disposal and ensure significant recycling of solid waste on-site.

SW 5 For green waste, the project applicant must submit a written plan to the City and implement such plan to ensure that the green waste material generated by landscape maintenance operations is collected by a City authorized waste hauler or recycling agent, that the maximum feasible amount of that collected green waste is recycled, and that a minimum of 50% of the green waste from the project is diverted from landfills by recycling, as that term is defined by California Public Resources Code Section 40180.

Additional Mitigation Measures for the Modified Project

No additional mitigation measures are recommended, since the Modified Project will have a less than significant impact on solid waste as compared to the Approved Project.

5.12.3.8 Level of Significance After Mitigation

No significant and unavoidable adverse impacts relating to solid waste have been identified.

5.12.4 Electricity, Natural Gas, and Telecommunications

5.12.4.1 Environmental Setting

Electricity

The Proposed Project Site is located within the electricity service territory of Southern California Edison ("SCE"). SCE provides electrical service to 430 cities and communities covering approximately 50,000 square miles of service area and encompassing 11 counties in central and coastal Southern California. The Proposed Project Site has electricity service, currently used by office uses and the Orange County Great Park Balloon Preview Park. SCE estimated total electricity consumption in its service area to be 100,907 gigawatt-hours (GWh) in 2008, and forecasts total consumption in its service area to be 112,964 GWh in 2020 (CEC 2009).

Natural Gas

The Proposed Project Site lies entirely within the natural gas service territory of the Southern California Gas Company ("SCGC"). SCGC's service territory encompasses approximately 23,000 square miles of central and Southern California. SCGC projects total consumption of natural gas in its service area to be 7,422 million therms[6] in 2011, and forecasts consumption to increase to 7,829 million therms by 2020 (CEC 2009). SCGC has an existing gas main located near the Proposed Project Site (Harriel 2011).

Telecommunications

AT&T provides telephone service to the Proposed Project Site. There are AT&T fiber and copper facilities on Trabuco Road extending into 'Building One' on the Proposed Project Site. There is a conduit system in Irvine

[6] One therm is the energy in approximately 97.1 cubic feet of natural gas; or 100,000 BTU.

Boulevard, but no feeder cable extends from Irvine Boulevard into the Proposed Project Site (Akin 2011). Cox Communications provides cable video, data, and telephone service to south Orange County, including Irvine, and has fiber-optic and coax infrastructure in and around the Proposed Project Site (Weibel 2011). AT&T and Cox Communications would serve the Proposed Project Site with communication facilities and services.

5.12.4.2 Thresholds of Significance

Based on Appendix G of the CEQA Guidelines, the City has determined that a project would have a significant effect on the environment if the project would:

U-8 Require substantial new or expanded electricity supplies.

U-9 Require substantial new or expanded supplies of natural gas.

5.12.4.3 The Certified EIR

The Certified EIR concluded that the originally approved 3,625 dwelling units and 6,585,594 square feet of non-residential uses would consume 131.9 million kilowatt-hours (kWh) of electricity per year, and would have a peak load of 34,978 kW. The Certified EIR concluded that sufficient available capacity existed at the Irvine and Limestone SCE substations to serve that level of development, but that the then-existing overhead 4 kilovolt (kV) distribution system serving the Proposed Project Site would be replaced with an underground 12kV distribution system. The Certified EIR determined that no significant impact concerning electricity services would occur.

The Certified EIR concluded that the originally approved 3,625 dwelling units and 6,585,594 square feet of non-residential uses would consume 31,123,576 cubic feet per month (cu./ft./mo.) of natural gas[7]. The Certified EIR concluded that sufficient natural gas infrastructure existed to serve that level of development and that no significant impact concerning natural gas services would occur.

The Certified EIR concluded that impacts of installation of new utility infrastructure were sufficiently addressed in sections of the environmental analysis (Chapter 5) of that EIR other than Section 5.15, Utilities. After implementation of mitigation measures for impacts other than Utilities, impacts from installation of utility infrastructure would be less than significant.

5.12.4.4 Environmental Impacts of the Modified Project

Existing Plans, Programs, and Policies

The following City plans, programs and policies would apply to the Modified Project, and would help reduce the Modified Project's impacts related to electricity, natural gas and telecommunications facilities and services:

PPP 3-2 **SCAQMD Rule 445 – Wood-Burning Devices:** SCAQMD prohibits installation of wood-burning devices such as fire places and wood-burning stoves in new development unless the development is located at elevations above 3,000 feet or the if existing infrastructure for natural

[7] Equivalent to 320,531 therms per month, or 32 billion BTU per month.

gas service is not available within 150-feet of the development. All fireplaces installed within the Proposed Project Site will be natural gas fueled fireplaces.

PPP 3-3 **2008 Building and Energy Efficiency Standards (CCR Title 24):** Prior to the issuance of a building permit for residential, commercial, or office structures in the Proposed Project Site, development plans for these structures shall be required to demonstrate that the project meets the 2008 Building and Energy Efficiency Standards. Commonly known as Title 24, these standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. The 2008 standards are approximately 15 percent more energy efficient than the 2005 Building and Energy Efficiency Standards. Plans submitted for building permits shall include written notes demonstrating compliance with the 2008 energy standards and shall be reviewed and approved by the Public Utilities Department prior to issuance of building permits. Design strategies to meet this standard may include maximizing solar orientation for daylighting and passive heating/cooling, installing appropriate shading devices and landscaping, utilizing natural ventilation, and installing cool roofs. Other techniques include installing insulation (high R value) and radiant heat barriers, low-e window glazing, or double-paned windows.

PPP 3-4 **Title 24 Code Cycles: Net-Zero Buildings (Residential & Non-Residential):** The California Public Utilities Commission adopted its Long-Term Energy Efficiency Strategic Plan on September 18, 2008, presenting a roadmap for all new residential and commercial construction to achieve a zero-net energy standard. This Plan outlines the goal of reaching zero net energy in residential construction by 2020 and in commercial construction by 2030. Achieving this goal will require increased stringency in each code cycle of California's Energy Code (Title 24).

Project Design Features

The following project design features ("PDFs") have been incorporated into the Modified Project and are applicable here.

PDF 3-7 **Energy Star Appliances:** EnergyStar appliances (excluding refrigerators), such as dishwashers, clothes washers, clothes dryers, air conditions, furnaces, and water heaters, shall be offered or installed in all residential dwelling units.

PDF 3-8 **Building Energy Efficiency:** Residential dwellings and non-residential buildings will be constructed so that they achieve 15 percent higher energy efficiency than the 2008 Building and Energy Efficiency Standards (Title 24 part 6 of the California building code).

The following impact analysis addresses thresholds of significance for which the Modified Project's Initial Study disclosed as potentially significant impacts.

IMPACT 5.12-4: EXISTING AND/OR PROPOSED FACILITIES WOULD BE ABLE TO ACCOMMODATE PROJECT-GENERATED UTILITY DEMANDS [IMPACTS U-8 AND U-9].

Impact Analysis:

Project Electricity Demand

Electricity demand for the Modified Project, which is the same as for the Approved Project, is shown below in Table 5.12-13. Energy use from future development is based on energy generation rates available from the Database for Energy Efficient Resources ("DEER") issued by the California Public Utilities Commission (CPUC 2008).

At buildout, the Approved Project and Modified Project would each generate a demand for 69.51 Gwh/year of electricity. Demand for electricity service would be accommodated by SCE (Lees 2011). New facilities to support the demand for electric service in the Modified Project would be constructed by SCE as necessitated by the demand for new service (Lees 2011). In addition, new structures within the Proposed Project Site would be built in accordance with the adopted 2008 Building and Energy Efficiency Standards, the 2010 Green Building Code, and the PDFs listed above in Section 5.12.4.4. The 2008 Building and Energy Efficiency Standards are approximately 15 percent more energy efficient than the previous 2005 Building and Energy Efficiency Standards, and the Applicant has committed to making development under the Modified Project be 15 percent more energy efficient than the 2008 Building and Energy Efficiency Standards. SCE would be able to supply electricity to meet the demand for electricity generated by the Modified Project (SCE 2011). Therefore, like the Approved Project, the Modified Project would not create a significant impact with respect to electricity facilities and services.

Project Natural Gas Demand

The Modified Project is forecast to consume roughly 324 billion British thermal units (BTUs) of natural gas per year[8], as shown below in Table 5.12-14. Because the Approved Project and the Modified Project, as compared to one another, contain the same population in the same number of residential units (4,894 units) and the same amount of non-residential uses, the natural gas demand for both is the same. SCGC expects to have adequate supplies of natural gas for this forecasted natural gas demand, and development of the Modified Project would not require expanded natural gas supplies (Harriel 2011). SCGC has existing gas mains in and/or near the Proposed Project Site from which it could provide service to the Modified Project (Harriel 2011). Therefore, like the Approved Project, the Modified Project would not create a significant impact with respect to natural gas facilities or services.

[8] 1 cubic foot of natural gas has the energy content of 1,030 BTU.

Table 5.12-13
Total Projected Electricity Demand
For the Modified Project

Land Use	Units	Electricity Generation Factor[1]	Total Demand in kilowatt-hours per year (kwh/year)	Total Demand in gigawatt-hours per year (Gwh/year)[2]
Residential				
Residential	4,894	4,333 kWh/DU	21,205,702	21.21
Non-residential				
Institutional (school and college/university)	1,492,594	6.995 kWh/SF	10,440,695	10.44
Institutional (OCTA facility and remote airport terminal)	176,000	6.995 kWh/SF	1,231,120	1.23
Institutional (other)	300,000	6.995 kWh/SF	2,098,500	2.09
R&D	2,600,000	6.995 kWh/SF	18,187,000	18.19
Cultural (museum/library and fairgrounds/expo)	1,176,000	6.995 kWh/SF	8,226,120	8.23
Office	75,000	13.604 kWh/SF	1,020,300	1.02
Commercial (retail and auto sales)	402,000	11.329 kWh/SF	4,554,258	4.55
Recreational (sports park and golf course)	51,000	6.995 kWh/SF	356,745	.36
Public Facility	50,000	6.995 kWh/SF	349,750	.35
Warehouse	263,000	6.995 kWh/SF		1.84
Subtotal, Non-residential	6,585,594	6.995 kWh/SF	48,304,173	48.30
Total Buildout Demand			**69,509,875**	**69.51**

Notes: The electricity demand for both the Approved Project and the Modified Project are the same.
du = dwelling unit
[1] Source: DEER, 2008.
[2] 1 Gwh = 1,000,000 kwh

Table 5.12-14
Estimated Natural Gas Demand
For the Modified Project

Land Use	Quantity	Annual Natural Gas Demand, million BTU	
		Per Unit[1]	Total
Residential Land Uses	**Residents**		
4,894 residential units	12,405	13.7 per capita	**169,945.50**
Non-residential Land Uses	**Square Feet**		
Institutional (school and college/university)	1,492,594	0.0342	51,046.71
Institutional (OCTA facility and remote airport terminal)	176,000	0.0342	6,019.20
Institutional (other)	300,000	0.0342	10,260.00
R&D	2,600,000	0.0219	56,940.00
Cultural (museum/library and fairgrounds/expo)	1,176,000	0.0158	18,580.80
Office	75,000	0.0219	1,642.50
Commercial (retail and auto sales)	402,000	0.0046	1,849.20
Recreational (sports park and golf course)	51,000	0.0158	805.80
Public Facility	50,000	0.0158	790.00
Warehouse	263,000	0.0219	5,759.70
Subtotal, Non-residential Land Uses	**6,585,594**		**153,693.91**
		Total	**323,639.41**

Notes: The natural gas demand for both the Approved Project and the Modified Project are the same.
[1] Sources:
Residential rates: USDOE 2008. No rates for different residential unit types were available.
Nonresidential rates: Itron 2006. Rate for college was used for institutional use.

Telecommunications

The Approved Project and the Modified Project both require the same level of telecommunications services, as both contain the same population in the same number of residential units (4,894 units) and the same amount of non-residential uses. The impacts of both the Approved Project and the Modified Project related to telecommunications facilities and services would be less than significant for the reasons described below.

AT&T would be able to provide telephone infrastructure and service upon request for the Modified Project (Akin, 2011). As is true for the Approved Project, an extension of underground cable and conduit and the placement of above-ground telephone equipment cabinets are required to provide service to the Modified Project. Line extensions charges may apply per Tariff A2 Rule 16. Some relocation of existing telephone infrastructure may be required in order for AT&T to serve the Modified Project; the cost of any required relocations would be the responsibility of the project applicant or its successor.

As is true for the Approved Project, the installation and construction of telephone infrastructure would be part of the construction of the Modified Project; those impacts are analyzed throughout the various sections of this DSEIR, and such installation would not cause significant impacts beyond those identified in other sections of this DSEIR.

Cox Communications will be able to provide cable services to the Proposed Project Site (Weibel 2011). Relocation of existing facilities may be required, and placement of new facilities, including above ground

cabinets and power supplies, will be required to extend existing infrastructure to serve the Modified Project. As is true for the Approved Project, the installation and construction of cable infrastructure would be part of the construction of the Modified Project; the impacts associated with such installation and construction are analyzed throughout the various sections of this DSEIR, and such installation and construction would not cause significant impacts beyond those identified in other sections of this DSEIR.

5.12.4.5 Cumulative Impacts

The Modified Project, in combination with other projects in the area, would increase the overall demand for electricity, natural gas, and telecommunications in Orange County. The total forecasted increase in electricity demand in SCE's service area between 2008 and 2016 is 13,443 GWh, or 13,443,000,000 kWh. According to the California Energy Commission ("CEC"), energy use in the state is growing at a rate of 1.25 percent per year and peak demand is growing at a rate of 1.35 percent per year (CEC 2009). Air conditioning use is the primary contributor to the growth in peak electricity demand. To meet the growing energy demands of the state, the CEC is implementing metering infrastructure to support stronger demand-response policies. The California Public Utilities Commission has authorized installation of 11.7 million smart electric meters and 5.1 million smart natural gas meters. Smart meters measure energy consumption at intervals of one hour or less, and enable utilities to offer their customers time-based rates for electricity and natural gas (CPUC 2010). In addition, many utility companies offer incentives for recycling older inefficient air conditioners. In addition, the CEC is working to develop dynamic pricing tariffs to reduce demand for electricity at peak periods (CEC 2009). According to SCE, the electrical demands of the Modified Project at buildout are within the parameters of projected load growth in the Orange County area which SCE is planning to meet (Lees 2011).

Cumulative development, including the Modified Project, in the vicinity of the Proposed Project Site would increase the overall demand for natural gas. Based on present conditions of natural gas supply and regulatory policies, SCGC expects to have adequate supplies of natural gas to serve cumulative development, including the Modified Project (Harriel 2011). The 2010 California Gas Report projects that natural gas consumption in the SCGC service area will decrease from 2,582 million cubic feet ("MMCF") per day in 2010 to 2,467 MMCF per day in 2030. Total supplies are projected to be 3,875 MMCF per day. Therefore, no cumulative impacts related to natural gas are anticipated.

Cox and AT&T would be able to accommodate the needs for telephone, internet, wireless, and cable service for the Modified Project and other projects in the area (Weibel 2011; Akin 2011). Accordingly, no adverse impacts on such services are anticipated.

5.12.4.6 Level of Significance Before Mitigation

No significant impacts relating to electric services, natural gas services or telecommunications services have been identified. All Modified Project impacts related to those services will be less than significant without mitigation.

5.12.4.7 Mitigation Measures

Mitigation Measures from Certified EIR

No mitigation measures were recommended in the Certified EIR since the Approved Project's impacts were less than significant without mitigation.

Mitigation Measures for the Modified Project

No additional mitigation measures are recommended by this DSEIR since the Modified Project's impacts are less than significant without mitigation.

5.12.4.8 Level of Significance After Mitigation

No significant impacts relating to electric, natural gas or telecommunications services have been identified for the Modified Project.

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