

5. Environmental Analysis

5.13 UTILITIES AND SERVICE SYSTEMS

This Section of the DSSEIR addresses the potential impacts of the 2012 Modified Project as compared to the 2011 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 H of this DSSEIR. Storm drainage systems, and impacts to such systems, are discussed in Section 5.6 *Hydrology and Water Quality*, of this DSSEIR 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 DSSEIR 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 (AT&T and Cox Communications Orange County, Inc.)

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

- Sewer and Water Master Plan Study Heritage Fields Project 2012 General Plan Amendment and Zone Change, RBF Consulting, June 6, 2012.
- Planning Areas 30 & 51 Great Park/Great Park Neighborhoods Sub-Area Master Plan (2011 SAMP) Update, Irvine Ranch Water District, September 20, 2011.
- 2010 Urban Water Management Plan, Irvine Ranch Water District, June 2011.
- Water Resources Master Plan, Irvine Ranch Water District, March 2002, supplemented January, 2004.
- Regional Urban Water Management Plan, Metropolitan Water District of Southern California, November 2010.
- Water Supply Assessments for the Great Park Neighborhoods, Irvine Ranch Water District, May 2011.
- Water Supply Assessment for the Heritage Fields Project 2012 GPA/ZC, Irvine Ranch Water District, June 2012.

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- Integrated Water Resources Plan 2010 Update, Metropolitan Water District of Southern California, 2010.
- Orange County Water District, Water Master Plan Report, April 1999.

Complete copies of the Sewer and Water Master Plan Study, the 2011 SAMP Update and the Water Supply Assessment are included in Appendices J, K and L, respectively.

5.13.1 Water Services

5.13.1.1 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’s service area encompasses Irvine; parts of unincorporated Orange County north and south of Irvine; parts of the Cities of Orange, Tustin, Santa Ana, and Costa Mesa west of Irvine; part of the City of Newport Beach south of Irvine; and part of the City of Lake Forest east 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 supplies 19 million people with water including 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”), 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 section 10631 *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 most recent update to that document was adopted in June 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; recycled 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

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process and have the necessary contracts (if any) in place to move forward. These supplies are in various stages of planning, design, or construction.

- 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”) prepared for the 2012 Modified Project (Appendix L of this DSSEIR). The WSA has been prepared in compliance with SB 610 and SB 221 to identify adequate water supplies to serve the 2012 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 to this DSSEIR or the WSA, 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 the WSA. 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 5.13-1, below, shows IRWD’s water supply sources. IRWD does not allocate particular supplies to any project, but identifies total supplies for its service area.

Potable Water Supply

Less than 25 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 75 to 80 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 2012 Modified Project, but with the 2011 Approved Project) are shown in Table 5.13-2. Forecasts indicate that IRWD will continue to have a surplus supply of potable water through the year 2032 under Normal-, Single Dry- and Multiple Dry-Year conditions.

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Table 5.13-1
IRWD's Existing Sources of Water Supply

	<i>Max Day (cfs)</i>	<i>Avg. Annual (afy)</i>	<i>Annual by Category (afy)</i>
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	-
Wells 21 and 22	6.0	6,300 ²	-
Irvine Desalter	10.6	5,640 ³	49,840
Total Potable Current Supplies	232.1	-	99,756
Nonpotable – Recycled 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
Nonpotable Native			
Irvine Lake	5.5	4,000 ⁸	4,000
Total Nonpotable Current Supplies	160.8	-	55,475
Total Combined Current Supplies	392.9	-	155,231
Supplies Under Development			
Potable Supplies			
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	42.7	26,300	26,300
Nonpotable Supplies: Future MWRP & LAWRP Recycled	20.0	14,450¹⁰	14,450

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*Table 5.13-1
IRWD's Existing Sources of Water Supply*

	<i>Max Day (cfs)</i>	<i>Avg. Annual (afy)</i>	<i>Annual by Category (afy)</i>
Total Under Development	105.4		40,750
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

* 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). (DSSEIR Appendix L).

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) (DSSEIR Appendix L)

³ Contract amount - See WSA page A-25, Potable Supply-Groundwater (iv) and (v) (DSSEIR Appendix L). 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.

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). (DSSEIR Appendix L). 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 recycled water production.

Nonpotable Water Supply

Recycled water, groundwater, and imported water account for IRWD's nonpotable water supply. IRWD's total existing nonpotable water supply and demand (without the 2012 Modified Project, but with the 2011 Approved Project) are shown in Table 5.13-3. 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 2032 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.

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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 was 165 percent of average for that time of year. The snowpack was also slightly above average in 2010. The snowpack in 2011 was 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.

Table 5.13-2
IRWD Existing Supply and Demand for Potable Water
(afy)

<i>Source</i>	<i>2012</i>	<i>2015</i>	<i>2020</i>	<i>2025</i>	<i>2032</i>
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
Wells 21 and 22	-	6,300	6,300	6,300	6,300
Supplies Under Development					
Future Groundwater	-	9,300	15,800	26,300	26,300
Maximum Supply Capability	85,469	101,069	107,569	118,069	118,069
Baseline Demand	60,992	64,220	69,563	75,505	81,667
Reserve Supply	24,477	36,849	38,006	42,564	36,402
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
Wells 21 and 22	-	6,300	6,300	6,300	6,300
Supplies Under Development					
Future Groundwater	-	9,300	15,800	26,300	26,300
Maximum Supply Capability	85,469	101,069	107,569	118,069	118,069
Baseline Demand	65,262	68,716	74,432	80,791	87,384
Reserve Supply	20,207	32,353	33,137	37,278	30,685
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
Wells 21 and 22	-	6,300	6,300	6,300	6,300
Supplies Under Development					
Future Groundwater	-	9,300	15,800	26,300	26,300
Maximum Supply Capability	85,469	101,069	107,569	118,069	118,069
Baseline Demand	65,262	68,716	74,432	80,791	87,384
Reserve Supply	20,207	32,353	33,137	37,278	30,685

Source: IRWD 2012

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 (Appendix L to this DSSEIR).

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*Table 5.13-3
IRWD Existing Supply and Demand for Nonpotable Water
(afy)*

<i>Source</i>	<i>2012</i>	<i>2015</i>	<i>2020</i>	<i>2025</i>	<i>2032</i>
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	28,985	28,779	30,169	31,157	30,296
Reserve Supply	28,050	28,256	26,866	25,878	26,739
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	31,014	30,794	32,281	33,338	32,417
Reserve Supply	23,021	23,241	21,754	20,697	21,618
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	31,014	30,794	32,281	33,338	32,417
Reserve Supply	15,157	21,754	18,514	20,697	21,618

Source: IRWD 2012

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 (Appendix L to this DSSEIR).

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 OCWD and MWD, respectively.

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 approximately 20% of California's developed water supply, and agricultural uses consume approximately

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80%. 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 water demand 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

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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 2010 IRP Update 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 in water supply is between 5 and 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.

In April 2011, crediting improved water reserves and the public’s ongoing conservation efforts, MWD’s Board of Directors voted 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

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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 CEQA 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 2012 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

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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 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 2009-10 water year (beginning July 1, 2009, and ending June 30, 2010) was 428,720 acre feet (af) (OCWD 2011). 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-35). 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 Water MPR that significant water supply sources will be available in the future for potable, nonpotable, and recharge purposes. The 1999 Water MPR discusses source waters such as imported water from

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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 1999 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 uncertainty 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 SAMP was prepared by IRWD for the Great Park in March 2009. The 2011 SAMP, which was a revision to the March 2009 SAMP, was adopted in September of 2011. The 2011 SAMP identified additional facilities required for the 2011 Approved Project.

Existing PAs 30 and 51 are located within Zone 3 North, Zone 4, and Zone 5 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 potable water 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 Existing PAs 30 and 51 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).

Existing PAs 30 and 51 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).

5.13.1.2 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.¹
- 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.

5.13.1.3 The 2011 Approved Project

The 2011 Certified EIR analyzed impacts on water supply and the ability of IRWD to provide water to the 2011 Approved Project in accordance with SB 610 and SB 221. The 2011 Certified EIR estimated that the 2011 Approved Project would consume approximately 1.5 million gallons (1,680 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 2011 Approved Project, 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 2011 Approved Project.

¹ Wastewater treatment facilities are addressed below.

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5.13.1.4 Environmental Impacts of the 2012 Modified Project

Existing Plans, Programs, and Policies

The following measures are existing plans, programs, or policies (“PPPs”) that apply to the 2012 Modified Project and would help to reduce and avoid potential impacts related to water services:

- PPP 13-1 **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 13-2 **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 2012 Modified Project and infrastructure expansion necessary to serve the 2012 Modified Project.
- PPP 13-3 **Fire Flow Analysis:** In accordance with IRWD requirements, each tentative tract map in the 2012 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

The following project design features (“PDFs”) have been incorporated into the 2012 Modified Project to help to reduce and avoid potential impacts related to water services and have been assumed in this section’s analysis:

- PDF 4-3 **Low-Flow Fixtures:** The 2012 Modified Project incorporates low-flow water fixtures that will meet the requirements of the California Green Building Standards Code standards. Prior to issuance of 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 low-flow water fixtures that meet the California Green Building Standards Code standards.
- PDF 4-4 **Landscaping and Irrigation Systems:** The 2012 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

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2012 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 4-5 **Use of Recycled 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 2012 Modified Project incorporates the use of recycled 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 impacts related to water services that the Initial Study for the 2012 Modified Project disclosed as potentially significant impacts. The applicable impacts are identified in brackets after the impact statement.

IMPACT 5.13.1-1 EXISTING AND PLANNED IRWD WATER SUPPLIES AND DELIVERY SYSTEMS ARE ADEQUATE TO MEET THE 2012 MODIFIED PROJECT'S FORECASTED WATER DEMAND AS COMPARED TO THE 2011 APPROVED PROJECT. (IMPACT U-2 AND U-4)

The modifications to the 2011 Approved Project that are proposed by the 2012 Modified Project would alter the amount of water that would be demanded by the 2012 Modified Project as compared to the 2011 Approved Project, as discussed below.

Potable Water Demand

The Sewer and Water Master Plan Study prepared for the 2012 Modified Project (see Appendix J), calculated the projected water demand for the 2012 Modified Project and compared the demand to that of the 2011 Approved Project. As shown on Table 5.13-4, buildout of the 2012 Modified Project without the optional conversion would result in an average water demand of approximately 0.8 million gallon per day (mgd) (896 acre-feet per year) more than the demand created by the 2011 Approved Project. Buildout of the 2012 Modified Project with the optional conversion would result in an average water demand of approximately 1.0 mgd (1,120 acre-feet per year) more than the demand created by the 2011 Approved Project.

Although the 2012 Modified Project will increase water consumption, as compared to the 2011 Approved Project, the 2011 SAMP included a Sensitivity Analysis which considered development of up to 9,500 residential units on the Proposed Project Site. The 2011 SAMP Sensitivity Analysis estimated peak water demand under such a scenario to be 2,021 gallons per minute (gpm) (2.9 mgd). As discussed in the Sewer and Water Master Plan Study prepared for the 2012 Modified Project (see Appendix J), peak water demand is estimated to be 1,896 gpm (2.7 mgd) for the 2012 Modified Project without the optional conversion, and 2,029 gpm (2.9 mgd) for the 2012 Modified Project with optional conversion. Neither scenario is considered a noteworthy change in comparison to the demand considered in the 2011 SAMP Sensitivity Analysis. Therefore, no significant changes to the planned on-site water infrastructure are necessary to serve the 2012 Modified Project.

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Table 5.13-4
Domestic Water Demand Summary
(Average Day Demand)

	<i>2011 Approved Project</i>	<i>2011 SAMP Sensitivity Analysis</i>	<i>2012 Modified Project (without Optional Conversion)</i>	<i>2012 Modified Project (with Optional Conversion)</i>
Heritage Fields	1.8 mgd	2.8 mgd	2.6 mgd	2.8 mgd
OCGP/Public Ownership	0.1 mgd	0.1 mgd	0.1 mgd	0.1 mgd
Total	1.9 mgd	2.9 mgd	2.7 mgd	2.9 mgd

Source: RBF Consulting, 2012
mgd = million gallons per day

Non-Potable Water Demand

The Sewer and Water Master Plan Study prepared for the 2012 Modified Project (see Appendix J), calculated the projected recycled water demand for the 2012 Modified Project and compared it to that of the 2011 Approved Project. As shown in Table 5.13-5, buildout of the 2012 Modified Project with or without the optional conversion would result in an average recycled water demand of approximately 1.5 mgd (1,679 acre-feet per year) less than the demand for the 2011 Approved Project. This reduction is largely due to the already approved removal of the golf course on the Proposed Project Site.

Table 5.13-5
Recycled Water Demand Summary
(Average Day Demand)

	<i>2011 Approved Project</i>	<i>2011 SAMP Sensitivity Analysis</i>	<i>2012 Modified Project (without Optional Conversion)</i>	<i>2012 Modified Project (with Optional Conversion)</i>
Heritage Fields	2.4 mgd	0.9 mgd	0.9 mgd	0.9 mgd
OCGP/Public Ownership	1.6 mgd	1.6 mgd	1.6 mgd	1.6 mgd
Total	4.0 mgd	2.5 mgd	2.5 mgd	2.5 mgd

Source: RBF Consulting, 2012
mgd = million gallons per day

Water Supply

As Tables 5.13-6 and 5.13-7 demonstrate, there is sufficient supply capacity for both potable and nonpotable water to accommodate full buildout of the 2012 Modified Project (with or without the optional conversion) through 2032, upon completion of water supplies that are under development.

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Table 5.13-6
IRWD Buildout Supply and Demand for Potable Water
(Acre-Feet Per Year)

<i>Source</i>	<i>2012</i>	<i>2015</i>	<i>2020</i>	<i>2025</i>	<i>2032</i>
Normal-Year					
Maximum Supply Capacity ^{1,2}	85,469	101,069	107,569	118,069	118,069
Buildout Demand ^{3,4}	60,988	64,182	70,713	77,759	83,807
Reserve Supply	24,481	36,877	36,856	40,310	34,262
Single Dry-Year					
Maximum Supply Capacity ^{1,2}	85,469	101,069	107,569	118,069	118,069
Buildout Demand ^{3,4}	65,257	68,674	75,663	83,202	89,674
Reserve Supply	20,212	32,395	31,906	34,867	28,395
Multiple Dry-Year					
Maximum Supply Capacity ^{1,2}	85,469	101,069	107,569	118,069	118,069
Buildout Demand ^{3,4}	65,257	68,674	75,663	83,202	89,674
Reserve Supply	20,212	32,395	31,906	34,867	28,395

Source: IRWD WSA 2012

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 2012 Modified Project.

⁴ The WSA analyzed water demand for the 2012 Modified Project's based on a potential maximum number of 10,700 units.

Table 5.13-7
IRWD Buildout Supply and Demand for Nonpotable Water
(Acre-Feet Per Year)

<i>Source</i>	<i>2012</i>	<i>2015</i>	<i>2020</i>	<i>2025</i>	<i>2032</i>
Normal Year					
Maximum Supply Capacity ^{1,2}	57,035	57,035	57,035	57,035	57,035
Buildout Demand ^{3,4}	18,985	28,281	29,856	30,757	29,972
Reserve Supply	38,050	28,754	27,179	26,278	27,063
Single Dry Year					
Maximum Supply Capacity ^{1,2}	54,035	54,035	54,035	54,035	54,035
Buildout Demand ^{3,4}	31,014	30,261	31,946	32,910	32,070
Reserve Supply	23,021	23,774	22,089	21,125	21,965
Multiple Dry Year					
Maximum Supply Capacity ^{1,2}	54,035	54,035	54,035	54,035	54,035
Buildout Demand ^{3,4}	31,014	30,261	31,946	32,910	32,070
Reserve Supply	23,021	23,774	22,089	21,125	21,965

Source: IRWD WSA 2012

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 2012 Modified Project.

⁴ The WSA analyzed water demand for the 2012 Modified Project's based on a potential maximum number of 10,700 units.

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Supplies Under Development

In addition to currently available water supplies, there are other new sources of water supply under development by IRWD. These sources include new production facilities in the west Irvine, Anaheim, Tustin Legacy, and Tustin Ranch portions of the Orange County Groundwater Basin. The facilities, referred to in the WSA as the “Irvine Wells,” include four wells that have been drilled and have previously produced groundwater.

IRWD is also evaluating the development of additional supplies that are not included in either “currently available” or “under-development” supplies for purposes of the assessment found in the WSA. As outlined in the WRMP, prudent water supply and financial planning dictates that development of supplies be phased over time with the growth in demand. (IRWD 2012)

Water Supply Contingency Planning

IRWD considers a variety of factors when assessing its ability to meet water needs in the IRWD service area, including the possibility of supply shortfalls caused by natural disasters or delays in the completion of necessary infrastructure or water supplies. IRWD’s assessment of supply availability contains several margins of safety, including:

- The identification of “reserve” water supplies that are available to serve as a buffer against inaccuracies in demand projections, future changes in land use, or alterations in supply availability.
- The identification of nonpotable water reserves that can be treated and converted into potable water reserves.
- The use of conservative estimates for annual imported potable and nonpotable supplies.
- The ability of groundwater production to exceed applicable basin production percentages on a short-term basis, providing additional reliability during dry years or emergencies.

These strategies assist IRWD in preparing for water needs in scenarios where “under development” supplies are not completed as planned. Loss of planned water supply is also addressed through catastrophic supply interruption planning, as described below. (IRWD 2012)

Catastrophic Supply Interruption Planning

MWD has developed “Emergency Storage Requirements” (2010 RUWMP) to safeguard the region from catastrophic loss of water supply. MWD has made substantial investments in emergency storage and has based its planning on a 100% reduction in its supplies for a period of six months. The emergency plan outlines that under such a catastrophe, non-firm service deliveries would be suspended, and firm supplies would be restricted by a mandatory cutback of 25 percent from normal year demand deliveries. In addition, MWD discusses the long term Delta plan in its 2010 RUWMP. IRWD has also addressed supply interruption planning in its WRMP and UWMP. (IRWD 2012)

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Temporary MWD Allocation

The potential for federal court-ordered sanctions restricting water diversion from the Sacramento/San Joaquin Delta to result in reduced MWD water supplies to IRWD has been evaluated by IRWD. Such a scenario has been modeled by IRWD and would involve a temporary reduced allocation of water from MWD to IRWD for the years 2010 through 2035. Use of local supplies, storage, and other supply augmentation measures would mitigate shortages resulting from a temporary MWD allocation condition, and are assumed to be in use to maximum extent possible during declared shortage levels in the analysis below.

Table 5.13-8 demonstrates that, as was the case for the 2011 Approved Project, IRWD has sufficient supply capacity of potable water under a temporary MWD Allocation condition to accommodate full buildout (including the 2012 Modified Project with or without the optional conversion) through 2032, upon completion of water supplies that are under development.

*Table 5.13-8
IRWD Buildout Supply and Demand for Potable Water
Under Temporary MWD Allocation Conditions
(Acre-Feet Per Year)*

<i>Source</i>	<i>2012</i>	<i>2015</i>	<i>2020</i>	<i>2025</i>	<i>2032</i>
Normal Year					
Maximum Supply Capacity ^{1,2}	68,540	85,415	93,256	105,164	105,748
Buildout Demand ^{3,4}	60,988	64,182	70,713	77,759	83,807
Reserve Supply⁵	7,552	21,233	22,543	27,405	21,941
Single Dry Year					
Maximum Supply Capability ^{1,2}	68,540	86,729	94,608	106,557	108,078
Buildout Demand ^{3,4}	69,825	68,674	75,663	83,202	89,674
Reserve Supply⁵	(1,285)	18,055	18,945	23,355	18,404
Multiple Dry Year					
Maximum Supply Capability ^{1,2}	68,540	80,429	88,308	100,257	101,778
Buildout Demand ^{3,4}	69,825	68,674	75,663	83,202	89,674
Reserve Supply⁵	(1,285)	11,755	12,645	17,055	12,104

Source: IRWD WSA 2012

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 2012 Modified Project.

⁴ The WSA analyzed water demand for the 2012 Modified Project's based on a potential maximum number of 10,700 units.

⁵ Under shortage scenarios, IRWD may need to supplement supplies with production of groundwater, which can exceed the applicable basin production percentage on a short-term basis, providing additional reliability during dry years or emergencies. In addition, if needed resultant net shortage levels can be addressed by demand reduction programs as described in IRWD's Water Shortage Contingency Plan.

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

There are water supply regulatory uncertainties that could significantly impact the delivery of water supplies through the coordinated operations of the SWP. As discussed above in Section 5.13.1.1, 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. An approximately \$11.14 billion bond measure is targeted for the November 2012 ballot. 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.

5.13.1.5 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 2012 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 2012 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 to identify solutions that, when combined with the rest of its supply portfolio, would ensure a reliable long-term water supply for its member agencies.

5.13.1.6 Applicable Mitigation Measures from the 2011 Certified EIR

No mitigation measures specific to impacts on potable and nonpotable water supplies and treatment were identified in the 2011 Certified EIR or associated MMRP.

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5.13.1.7 Level of Significance Before Additional Mitigation

There are adequate water supply and planned delivery systems to adequately serve the 2012 Modified Project. IRWD does not anticipate any problems supplying water to any current or reasonably foreseeable future development in Irvine. In addition, PPP 13-1 through PPP 13-3 and PDFs 4-3 through 4-5 adopted in the MMRP for the 2011 Approved Project would lessen the impact of the 2012 Modified Project on future water supply and IRWD, and impacts have been determined to be less than significant.

5.13.1.8 Additional Mitigation Measures for the 2012 Modified Project

No mitigation measures are required since the 2012 Modified Project will have a less than significant impact on potable and recycled water supplies and treatment without mitigation.

5.13.1.9 Level of Significance After Additional Mitigation

The 2012 Modified Project's impacts concerning potable and non-potable water are less than significant without mitigation. No significant impacts relating to water supply have been identified.

5.13.2 Wastewater

5.13.2.1 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 Existing PAs 30 and 51 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 Existing PA 51 in Building 375. The existing sewer infrastructure system on Existing PAs 30 and 51 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 Existing PAs 30 and 51 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).

5.13.2.2 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:

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

5.13.2.3 The 2011 Approved Project

The 2011 Certified EIR concluded that IRWD has adequate wastewater treatment capacity to meet the estimated wastewater generation of the 2011 Approved Project.

The 2011 Certified EIR concluded that the 2011 Approved Project would not require construction of new or expanded wastewater treatment facilities but would require expansion of existing IRWD sewers. No significant impacts related to wastewater treatment were identified in the 2011 Certified EIR.

5.13.2.4 Environmental Impacts of the 2012 Modified Project

Existing Plans, Programs, and Policies

PPP 13-2 listed above applies to the 2012 Modified Project and would help reduce and avoid potential impacts related to wastewater services.

Project Design Features

PDF 4-3 listed above has been incorporated into the 2012 Modified Project and would help reduce and avoid potential impacts related to wastewater services.

The following impact analysis addresses impacts that the Initial Study for the 2012 Modified Project disclosed as potentially significant impacts. The applicable impacts are identified in brackets after the impact statement.

IMPACT 5.13.2-1 IRWD HAS ADEQUATE WASTEWATER TREATMENT CAPACITY TO MEET THE 2012 MODIFIED PROJECT'S ESTIMATED WASTEWATER GENERATION, AND PROJECT DEVELOPMENT WOULD NOT REQUIRE CONSTRUCTION OF NEW OR EXPANDED WASTEWATER TREATMENT FACILITIES AS COMPARED TO THE 2011 APPROVED PROJECT. (IMPACT U-2)

The modifications to the 2011 Approved Project proposed by the 2012 Modified Project would alter the amount of wastewater generated by the 2012 Modified Project as compared to the 2011 Approved Project.

Wastewater generation values were calculated for the 2012 Modified Project, including the optional conversion, and compared to the values in the 2011 SAMP calculated for the 2011 Approved Project. The values for the 2012 Modified Project were derived using the IRWD Generation Factors and Peak Flow Factors that were used as part of the 2011 SAMP. As shown below in Table 5.13-9, the 2012 Modified Project is estimated to generate a total of approximately 2.1 mgd of wastewater without the optional

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conversion and approximately 2.3 mgd of wastewater with the optional conversion. This is an increase of approximately 0.9 mgd (without optional conversion) or 1.1 mgd (with optional conversion) as compared to the 2011 Approved Project.

Table 5.13-9
Sewer Demand Summary
(Average Day Demand)

	<i>2011 Approved Project</i>	<i>2011 SAMP Sensitivity Analysis</i>	<i>2012 Modified Project (without Optional Conversion)</i>	<i>2012 Modified Project (with Optional Conversion)</i>
Heritage Fields	1.3 mgd	2.0 mgd	2.0 mgd	2.2 mgd
OCGP/Public Ownership	0.1 mgd	0.1 mgd	0.1 mgd	0.1 mgd
Total	1.4 mgd	2.1 mgd	2.1 mgd	2.3 mgd

Source: RBF Consulting, 2012
mgd = million gallons per day

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 (IRWD 2012). Since expansion of the MWRP will be completed prior to development of the 2012 Modified Project, no significant impacts are anticipated.

IRWD has adequate wastewater treatment capacity for the 2012 Modified Project's estimated wastewater generation (IRWD 2012). Therefore, development of the 2012 Modified Project would not require construction of new or expanded wastewater treatment facilities as compared to the 2011 Approved Project.

IMPACT 5.13.2-2 PROJECT DEVELOPMENT WOULD NOT REQUIRE EXPANSION AND EXTENSIONS OF EXISTING IRWD SEWERS AS COMPARED TO THE 2011 APPROVED PROJECT. (IMPACT U-5)

As described in the 2011 Certified EIR, wastewater generated by the 2011 Approved 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.

Although the 2012 Modified Project will increase wastewater generation, as compared to the 2011 Approved Project, the 2011 SAMP included a Sensitivity Analysis which considered up to 9,500 residential units on the Proposed Project Site. The 2011 SAMP Sensitivity Analysis estimated peak wastewater generation under such a scenario to be 1,440 gpm (2.1 mgd). As discussed in the Sewer and Water Master Plan Study prepared for the 2012 Modified Project (see Appendix J), peak wastewater generation is estimated to be 1,396 gpm (2.1 mgd) for the 2012 Modified Project without the optional conversion or 1,490 gpm (2.3 mgd) for the 2012 Modified Project with the optional conversion. Neither scenario is considered a noteworthy change in comparison to the scenario considered in the 2011 SAMP Sensitivity Analysis. Therefore, no significant changes to the planned on-site backbone sewer

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infrastructure are necessary to serve the 2012 Modified Project. Final design of local sewer lines will occur at the time individual tract maps are submitted.

5.13.2.5 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 2012 Modified Project would not require additional wastewater infrastructure, including upsizing of wastewater and nonpotable water pipe segments, as compared to the 2011 Approved Project. No increase in wastewater treatment capacity would be required to serve the 2012 Modified Project. As such, like the 2011 Approved Project, the 2012 Modified Project would not result in a significant impact related to wastewater transmission or treatment capacity.

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 will have adequate wastewater treatment capacity to serve the 2012 Modified Project's estimated wastewater generation. Additionally, the long-range planning efforts of IRWD take into account cumulative development projects, including the 2012 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 2012 Modified Project is required to fund an analysis of 2012 Modified Project sewer requirements (completed as part of the SAMP) and to finance all sewer improvements required by the 2012 Modified Project. Other new and redevelopment projects in IRWD's service area are required to fund corresponding analyses and improvements. Therefore, as with the 2011 Approved Project, substantial cumulative impacts to wastewater treatment and wastewater conveyance are not expected, and the 2012 Modified Project's impacts on wastewater treatment and conveyance would not be cumulatively considerable.

5.13.2.6 Applicable Mitigation Measures from the 2011 Certified EIR

No mitigation measures specific to the impacts of the 2011 Approved Project on wastewater collection or treatment were recommended in the 2011 Certified EIR or associated MMRP.

5.13.2.7 Level of Significance Before Additional Mitigation

Impacts of building and operating sewer extensions were part of the impacts of the 2011 Approved Project that were analyzed in the 2011 Certified EIR. No significant sewer impacts would occur beyond those impacts identified in the 2011 Certified EIR. Therefore, potential wastewater impacts of the 2012 Modified Project have been determined to be less than significant without mitigation.

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5.13.2.8 Additional Mitigation Measures for the 2012 Modified Project

No mitigation measures are required since the 2012 Modified Project will have a less than significant impact on wastewater collection and treatment without mitigation.

5.13.2.9 Level of Significance After Additional Mitigation

The 2012 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 2012 Modified Project have been identified.

5.13.3 Solid Waste

5.13.3.1 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 5.13-10. Table 5.13-10 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 5.13-10
OCWR Landfills*

<i>Landfill</i>	<i>City or Community</i>	<i>Disposal Rate, Tons per Day</i>		<i>Remaining Capacity, Cubic Yards</i>	<i>Estimated Closure Date</i>
		<i>Maximum Permitted</i>	<i>Actual</i>		
Frank R. Bowerman	Irvine	11,500	5,500	198.1 million	2053
Prima Deschecha	San Juan Capistrano	4,000	1,000	133.4 million	2067
Alpha Olinda	Brea	8,000	5,000	48.8 million	2021

Source: OCWR 2012

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 Irvine were 5.7 ppd for residences and 6.6 ppd for businesses in 2010, the most recent year for which data is available (CalRecycle 2012b). Thus, the City is in compliance with AB 939 goals.

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As of 2010, there were 39 programs 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 2012a).

5.13.3.2 *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 2012 Modified Project, included as Appendix A to this DSSEIR, the City determined that that the following impact would not be significant: U-7. The discussion in Section 8.0 *Impacts Found Not To Be Significant*, of this DSSEIR, supports the City's determination that the impact was sufficiently analyzed in the 2011 Certified EIR and that implementation of the modifications proposed by the 2012 Modified Project would not change the conclusions of the 2011 Certified EIR with respect to that impact. Therefore, Impact U-7 will not be addressed further in this Section.

5.13.3.3 *The 2011 Approved Project*

The 2011 Certified EIR concluded that the 2011 Approved Project would generate approximately 136,520 ppd or 68.26 tons per day ("tpd") of solid waste. The 2011 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 2011 Approved Project incorporated the already-adopted Mitigation Measures SW-1 through SW-5 in the MMRP for the 2011 Approved Project. While the 2011 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.

5.13.3.4 *Environmental Impacts of the 2012 Modified Project*

Existing Plans, Programs, and Policies

The following City plans, programs and policies would apply to the 2012 Modified Project, and would help reduce the 2012 Modified Project's solid waste impacts:

- PPP 13-4 The City 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.

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- PPP 13-5 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 13-6 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 13-7 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 13-8 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 2012 Modified Project to help to reduce and avoid potential impacts related to solid waste disposal.

The following impact analysis addresses the impacts for which the 2012 Modified Project's Initial Study disclosed a potentially significant impact. The applicable impact is identified in brackets after the impact statement.

IMPACT 5.13-3: *THERE IS SUFFICIENT LANDFILL CAPACITY IN THE REGION FOR 2012 MODIFIED PROJECT-GENERATED SOLID WASTE AS COMPARED TO THE 2011 APPROVED PROJECT [IMPACTS U-6]*

Impact Analysis: The 2012 Modified Project incorporates the mitigation measures adopted in the MMRP for the 2011 Approved Project by the associated MMRP, including, without limitation SW1 through SW5.

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Like the 2011 Approved Project, the 2012 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 2012 Modified Project would be provided by Waste Management of Orange County, a private contract hauler that serves all residential developments in Irvine.

Development of the 2012 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 compared to the 2011 Approved Project. Pursuant to 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 5.13-11.

*Table 5.13-11
Estimated Solid Waste Generation Rates by Land Use Type*

<i>Land Use</i>	<i>Generation Factor</i>
Residential	12.23 lbs/household/day
Offices	0.084 lb/sf/day
Commercial/Retail	3.12 lbs/100 sf/day
Restaurants	0.005 lb/sf/day
Industrial/Warehouse	1.42 lb/100 sf/day
Schools	1 lb/student/day
Hotel/Motel	4 lbs/room/day
Public/Institutional	0.007 lb/sf/day

Source: CalRecycle 2011 and Arnau 2012

As shown in Table 5.13-12a, the 2012 Modified Project's 9,500 dwelling units would generate approximately 116,185 ppd (or 58.09 tpd) of solid waste, and the 4,902,200 square feet of non-residential uses would generate approximately 165,345 ppd (or 82.67 tpd) of solid waste. As shown in Table 5.13-12b, with use of the optional conversion included, the 2012 Modified Project's 10,700 dwelling units would generate approximately 130,861 ppd (or 65.43 tpd) of solid waste, and the 4,367,200 square feet of non-residential uses would generate approximately 120,422 ppd (or 60.21 tpd) of solid waste. Therefore, the 2012 Modified Project without the optional conversion would generate a total of 281,530 ppd (or 140.76 tpd) of solid waste, which is an increase of 145,010 ppd (or 72.50 tpd) from the 2011 Approved Project. With the optional conversion, the 2012 Modified Project would generate a total of 251,283 ppd (or 125.64 tpd) of solid waste, which is an increase of 114,763 ppd (or 57.38 tpd) from the 2011 Approved Project.

Solid waste from the 2012 Modified Project would be disposed of at the Frank R. Bowerman Landfill. As described above in Table 5.13-10, 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 2012 Modified Project, as well as that generated by cumulative development (Arnau 2012).

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Table 5.13-12a

*Estimated Solid Waste Generation at Buildout
(2012 Modified Project without Optional Conversion)*

<i>Land Use</i>	<i>Units/Square Feet</i>	<i>Generation Factor</i>	<i>Amount of Solid Waste (lbs/day)</i>
Single Family Residential	3,660 (2,466 + 1,194) du	12.23 lbs/household/day	44,762
Multi-family Residential	5,840 (2,428 + 3,412) du	12.23 lbs/household/day	71,423
Medical and Science	3,364,000 sf	1.42 lb/100 sf/day	47,769
Multi-Use	1,318,000 sf	0.084 lb/sf/day	110,712
Community Commercial	220,000 sf	3.12 lbs/100 sf/day	6,864
Total	9,500 units/ 4,902,200 sf	N/A	281,530

Table 5.13-12b

*Estimated Solid Waste Generation at Buildout
(2012 Modified Project with Optional Conversion)*

<i>Land Use</i>	<i>Units/Square Feet</i>	<i>Generation Factor</i>	<i>Amount of Solid Waste (lbs/day)</i>
Single Family Residential	3,971 (2,466 + 1,505) du	12.23 lbs/household/day	48,565
Multi-family Residential	6,729 (2,428 + 4,301) du	12.23 lbs/household/day	82,296
Medical and Science	3,364,000 sf	1.42 lb/100 sf/day	47,769
Multi-Use	783,200 sf	0.084 lb/sf/day	65,789
Community Commercial	220,000 sf	3.12 lbs/100 sf/day	6,864
Total	10,700 units/ 4,367,200 sf	N/A	251,283

There is adequate capacity at the Frank R. Bowerman Landfill for the solid waste generated by the 2012 Modified Project as compared to the 2011 Approved Project, and implementation of the 2012 Modified Project would not require increased permitted landfill capacity either there or in any other landfill. Therefore, like the 2011 Approved Project, the 2012 Modified Project's impacts with respect to solid waste would be less than significant.

5.13.3.5 Cumulative Impacts

The 2012 Modified Project, in combination with other projects in the county, would increase demand for landfills and solid waste services in Orange County. However, 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 2012 Modified Project as well as that generated by cumulative development (OCWR 2012). Therefore, like the 2011 Approved Project, the 2012 Modified Project's impacts with respect to solid waste would not be cumulatively considerable.

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5.13.3.6 Applicable Mitigation Measures from the 2011 Certified EIR

Five mitigation measures for solid waste impacts were recommended in the 2011 Certified EIR and associated MMRP, were adopted in the MMRP by the City for the 2011 Approved Project, and are incorporated into the 2012 Modified Project. They include the following:

- SW-1 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.
- SW-2 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.
- SW-3 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).
- SW-4 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.

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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.

5.13.3.7 Level of Significance Before Additional Mitigation

No significant impacts relating to solid waste have been identified. All 2012 Modified Project impacts related to solid waste will be less than significant without additional mitigation beyond Mitigation Measures SW-1 through SW-5 already adopted in the MMRP for the 2011 Approved Project, and which are incorporated into the 2012 Modified Project. In addition, PPPs 13-4 through 13-8 would lessen the impact of the 2012 Modified Project on solid waste.

5.13.3.8 Additional Mitigation Measures for the 2012 Modified Project

No additional mitigation measures are recommended, since the 2012 Modified Project will have a less than significant impact on solid waste as compared to the 2011 Approved Project.

5.13.3.9 Level of Significance After Additional Mitigation

No significant impacts relating to solid waste have been identified for the 2012 Modified Project.

5.13.4 Electricity, Natural Gas, and Telecommunications

5.13.4.1 Environmental Setting

Electricity

The Proposed Project Site is located within the electricity service territory of Southern California Edison (“SCE”). SCE provides electrical service to 180 cities covering over 50,000 square miles of service area and encompassing 11 counties in central and coastal Southern California. The Proposed Project Site has electricity service. 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 projected total consumption of natural gas in its service area

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would be 7,422 million therms² 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 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.

5.13.4.2 Thresholds of Significance

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.
- U-10 Require substantial new or expanded telecommunications infrastructure.

5.13.4.3 The 2011 Approved Project

The 2011 Certified EIR concluded that the 2011 Approved Project would generate demand for 69.5 million kilowatt-hours (kWh) of electricity per year. The 2011 Certified EIR concluded that demand for electricity service would be accommodated by SCE. It further concluded that with implementation of energy efficiency standards and the construction of new facilities by SCE as necessitated by demand for new service, SCE would be able to supply electricity to meet the demand for electricity generated by the 2011 Approved Project. The 2011 Certified EIR determined that no significant impact concerning electricity services would occur.

The 2011 Certified EIR concluded that the 2011 Approved Project would consume roughly 324 billion British thermal units (BTUs) of natural gas per year. The 2011 Certified EIR concluded that sufficient natural gas infrastructure existed to serve the 2011 Approved Project and that no significant impact concerning natural gas services would occur.

The 2011 Certified EIR concluded that impacts related to the installation of new utility infrastructure were sufficiently addressed in the environmental analysis in sections of the 2011 Certified EIR other than Section 5.12, *Utilities and Service Systems*. The 2011 Certified EIR concluded that after implementation of all mitigation measures then-proposed for the 2011 Approved Project impacts from installation of utility infrastructure for the 2011 Approved Project would be less than significant.

² One therm is the energy in approximately 97.1 cubic feet of natural gas; or 100,000 BTU.

5.13.4.4 Environmental Impacts of the 2012 Modified Project

Existing Plans, Programs, and Policies

The following City plans, programs and policies (“PPP”) would apply to the 2012 Modified Project, and would help reduce the 2012 Modified Project's impacts related to electricity, natural gas and telecommunications facilities and services:

- PPP 4-3 **California’s 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 Building and Energy Efficiency Standards in place at the time of building permit issuance. 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. The 2013 Building Energy Efficiency Standards are 25 percent more efficient than previous standards for residential construction and 30 percent more efficient for nonresidential construction. The 2013 Standards, which take effect on January 1, 2014, offer builders more efficient windows, insulation, lighting, ventilation systems and other features that reduce energy consumption in homes and businesses. Plans submitted for building permits shall include written notes demonstrating compliance with the 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 4-4 **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).
- PPP 4-5 **California Renewable Portfolio Standard:** CARB’s Renewable Portfolio Standard (RPS) is a foundational element of the State’s emissions reduction plan. In 2002, Senate Bill 1078 established the California RPS program, requiring 20 percent renewable energy by 2017. In 2006, Senate Bill 107 advanced the 20 percent deadline to 2010, a goal which was expanded to 33 percent by 2020 in the 2005 Energy Action Plan II. On September 15, 2009, Governor Arnold Schwarzenegger signed Executive Order S-21-09 directing CARB to adopt regulations increasing RPS to 33 percent by 2020. These mandates apply directly to investor-owned utilities, which in the case of the 2012 Modified Project is Southern California Edison.

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Project Design Features

The following project design feature (“PDF”) has been incorporated into the 2012 Modified Project and is applicable here.

PDF 4-7 **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.

The following impact analysis addresses impacts for which the 2012 Modified Project’s Initial Study disclosed as potentially significant impacts.

IMPACT 5.13-4: EXISTING AND/OR PROPOSED FACILITIES WOULD BE ABLE TO ACCOMMODATE 2012 MODIFIED PROJECT-GENERATED UTILITY DEMANDS AS COMPARED TO THE 2011 APPROVED PROJECT [IMPACTS U-8, U-9 AND U-10].

Impact Analysis:

Project Electricity Demand

Electricity demand at buildout for the 2012 Modified Project (with and without the optional conversion) is shown below in Table 5.13-13. 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 2012 Modified Project would generate a demand for 85.12 Gwh/year of electricity without the optional conversion. With the optional conversion, the 2012 Modified Project would generate a demand for 83.04 Gwh/year of electricity at buildout. This represents an increase of 15.61 Gwh/year without the optional conversion (or 13.53 Gwh/year with the optional conversion) above the estimated demand of the 2011 Approved Project. Demand for electricity service would be accommodated by SCE (Nelson 2012). New facilities to support the demand for electric service in the 2012 Modified Project would be constructed by SCE as necessitated by the demand for new service (Nelson 2012). 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 PDF listed above in Section 5.13.4.4. 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 2012 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 2012 Modified Project (Nelson 2012). Therefore, like the 2011 Approved Project, the 2012 Modified Project would not create a significant impact with respect to electricity facilities and services.

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*Table 5.13-13a
Total Projected Electricity Demand at Buildout
(2012 Modified Project Without Optional Conversion)*

<i>Land Use</i>	<i>Quantity</i>	<i>Electricity Generation Factor¹</i>	<i>Total Demand in kilowatt-hours per year (kwh/year)</i>	<i>Total Demand in gigawatt-hours per year (Gwh/year)²</i>
Residential				
Residential	9,500	4,333 kWh/DU	41,163,500	41.16
Non-residential				
Medical and Science	3,364,000	6.995 kWh/SF (consumption rate for R&D)	23,531,180	23.53
Multi-Use	1,318,200	13.604 kWh/SF (consumption rate for Office)	17,932,793	17.93
Community Commercial	220,000	11.329 kWh/SF (consumption rate for Retail/Auto Sales)	2,492,380	2.49
Subtotal, Non-residential	4,902,200	-	43,956,353	43.96
Total Buildout Demand			85,119,853	85.12

du = dwelling unit

¹ Source: DEER, 2008. Specific consumption rates for school uses are not available, but SCE has indicated that it would have enough electricity to serve the entirety of the 2012 Modified Project, including the proposed high school.

² 1 Gwh = 1,000,000 kwh

*Table 5.13-13b
Total Projected Electricity Demand at Buildout
(2012 Modified Project With Optional Conversion)*

<i>Land Use</i>	<i>Quantity</i>	<i>Electricity Generation Factor¹</i>	<i>Total Demand in kilowatt-hours per year (kwh/year)</i>	<i>Total Demand in gigawatt-hours per year (Gwh/year)²</i>
Residential				
Residential	10,700	4,333 kWh/DU	46,363,100	46.36
Non-residential				
Medical and Science	3,364,000	6.995 kWh/SF (consumption rate for R&D)	23,531,180	23.53
Multi-Use	783,200	13.604 kWh/SF (consumption rate for Office)	10,654,652	10.65
Community Commercial	220,000	11.329 kWh/SF (consumption rate for Commercial - Retail/Auto Sales)	2,492,380	2.49
Subtotal, Non-residential	4,367,200	-	36,678,212	36.68
Total Buildout Demand			83,041,312	83.04

du = dwelling unit

¹ Source: DEER, 2008. Specific consumption rates for school uses are not available, but SCE has indicated that it would have enough electricity to serve the entirety of the 2012 Modified Project, including the proposed high school.

² 1 Gwh = 1,000,000 kwh

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Project Natural Gas Demand

The 2012 Modified Project is forecast to consume roughly 429 billion British thermal units (BTUs) of natural gas per year without the optional conversion, or 457 BTUs with the optional conversion, as shown below in Table 5.13-14a and 5.13-14b, respectively. This represents an increase of 105 billion BTUs (or 133 billion BTUs with the optional conversion) as compared to the estimated consumption of the 2011 Approved Project. SCGC expects to have adequate supplies of natural gas for this forecasted natural gas demand, and development of the 2012 Modified Project can be served by existing gas mains located adjacent to the Proposed Project Site (Garcia 2012). Therefore, like the 2011 Approved Project, the 2012 Modified Project would not create a significant impact with respect to natural gas facilities or services.

*Table 5.13-14a
Estimated Natural Gas Demand at Buildout
(2012 Modified Project Without Optional Conversion)*

<i>Land Use</i>	<i>Quantity</i>	<i>Annual Natural Gas Demand, million BTU</i>	
		<i>Per Unit¹</i>	<i>Total</i>
Residential Land Uses	Residents		
9,500 residential units	23,728	13.7 per capita	325,073.60
Non-residential Land Uses	Square Feet		
Medical and Science	3,364,000	0.0219 (consumption rate for R&D)	73,671.60
Multi-Use	1,318,200	0.0219 (consumption rate for Office)	28,868.58
Community Commercial	220,000	0.0046 (consumption rate for Retail and Auto Sales)	1,012.00
Subtotal, Non-residential Land Uses	4,902,200		103,552.18
		Total	428,625.78

¹ Source: DEER, 2008.

Residential rates: USDOE 2008. No rates for different residential unit types were available.

Nonresidential rates: Itron 2006.

Specific consumption rates for school uses are not available, but SCGC has indicated that it would be able to meet the demands of the entirety of the 2012 Modified Project, including the proposed high school.

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*Table 5.13-14b
Estimated Natural Gas Demand at Buildout
(2012 Modified Project With Optional Conversion)*

<i>Land Use</i>	<i>Quantity</i>	<i>Annual Natural Gas Demand, million BTU</i>	
		<i>Per Unit¹</i>	<i>Total</i>
Residential Land Uses			
Residents			
10,700 residential units	26,679	13.7 per capita	365,502.30
Non-residential Land Uses			
Square Feet			
Medical and Science	3,364,000	0.0219 (consumption rate for R&D)	73,671.60
Multi-Use	783,200	0.0219 (consumption rate for Office)	17,152.08
Community Commercial	220,000	0.0046 (consumption rate for Retail and Auto Sales)	1,012.00
Subtotal, Non-residential Land Uses			91,835.68
		Total	457,337.98

¹ Source: DEER, 2008.

Residential rates: USDOE 2008. No rates for different residential unit types were available.

Nonresidential rates: Itron 2006.

Specific consumption rates for school uses are not available, but SCGC has indicated that it would be able to meet the demands of the entirety of the 2012 Modified Project, including the proposed high school.

Telecommunications

The 2012 Modified Project would require a greater level of telecommunications services compared to the 2011 Approved Project, as the 2012 Modified Project contains a larger number of residential units and a smaller amount of non-residential uses. The impacts of both the 2011 Approved Project and the 2012 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 2012 Modified Project (Akin, 2012). As is true for the 2011 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 2012 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 2012 Modified Project; the cost of any required relocations would be the responsibility of the project applicant or its successor.

As is true for the 2011 Approved Project, the installation and construction of telephone infrastructure would be part of the construction of the 2012 Modified Project; those impacts of such construction and installation are analyzed throughout the various sections of this DSSEIR, and such installation would not cause significant impacts beyond those identified in other sections of this DSSEIR.

Cox Communications will be able to provide cable services to the Proposed Project Site (Cox Communications 2012). 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 2012 Modified Project. As is true for the 2011 Approved Project, the installation and

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construction of cable infrastructure would be part of the construction of the 2012 Modified Project; the impacts associated with such installation and construction are analyzed throughout the various sections of this DSSEIR, and such installation and construction would not cause significant impacts beyond those identified in other sections of this DSSEIR.

5.13.4.5 Cumulative Impacts

The 2012 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 2012 Modified Project at buildout are within the parameters of projected load growth in the Orange County area which SCE is planning to meet (Nelson 2012).

Cumulative development in the vicinity of the Proposed Project Site, including the 2012 Modified Project, 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 2012 Modified Project (Garcia 2012). 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 2012 Modified Project and other projects in the area (Cox Communications 2012; Akin 2012). Accordingly, no adverse impacts on such services are anticipated.

5.13.4.6 Applicable Mitigation Measures from the 2011 Certified EIR

No mitigation measures were recommended in the 2011 Certified EIR since the 2011 Approved Project's impacts were less than significant without mitigation.

5.13.4.7 Level of Significance Before Additional Mitigation

No significant impacts relating to electric services, natural gas services or telecommunications services have been identified. In addition, PPPs 4-3 through 4-5 and PDF 4-7 listed above would lessen the impact of the 2012 Modified Project on electricity, natural gas, and telecommunications. All 2012 Modified Project impacts related to those services will be less than significant without mitigation.

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5.13.4.8 Additional Mitigation Measures for the 2012 Modified Project

No additional mitigation measures are recommended by this DSSEIR since the 2012 Modified Project's impacts are less than significant without mitigation.

5.13.4.9 Level of Significance After Additional Mitigation

No significant impacts relating to electric, natural gas or telecommunications services have been identified for the 2012 Modified Project.

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