

City of Escondido

Recycled Water Master Plan

**Prepared for:
City of Escondido**

June 2011

CITY OF ESCONDIDO RECYCLED WATER MASTER PLAN

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Prepared For:



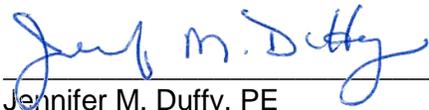
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Contents

Section 1	Introduction	1-1
	1.1 Background and Purpose	1-1
	1.2 Regulatory Compliance	1-1
Section 2	Recycled Water System Description	2-1
	2.1 Recycled Water Supply Sources	2-1
	2.2 Recycled Water Supply Distribution System	2-1
Section 3	Recycled Water Demands	3-1
	3.1 Existing Customers	3-1
	3.2 Potential Markets.....	3-2
	3.2.1 Previously Identified Potential Markets.....	3-3
	3.2.2 Land Use Based Potential Customers	3-10
	3.3 Summary of Existing and Potential Demands.....	3-16
	3.3.1 Demand Patterns.....	3-16
	3.3.2 Seasonal Analysis	3-20
Section 4	Rules and Regulations for Recycled Water Use.....	4-1
	4.1 Regulatory Requirements.....	4-1
	4.2 Standard Specifications/Rules and Regulations for Recycled Water Use.....	4-1
	4.3 Customer Inspections and Monitoring	4-3
	4.4 Allowable Recycled Water Service Area.....	4-4
	4.5 Water Quality Objectives	4-4
Section 5	System Planning Criteria.....	5-1
	5.1 Demand Criteria	5-1
	5.1.1 Proposed Markets and Assumptions.....	5-2
	5.2 Infrastructure Criteria.....	5-3
	5.2.1 Pressures	5-4
	5.2.2 Velocities	5-4
	5.2.3 Physical Pipe Characteristics.....	5-4
Section 6	System Analysis.....	6-1
	6.1 System Capacity	6-1
	6.2 Hydraulic Model Development.....	6-2
	6.3 Existing System Analysis.....	6-2
	6.3.1 Deficiencies	6-2
	6.3.2 Existing System Optimization.....	6-3
	6.4 Phase I Expansion to 9.0 MGD Max Month Demand.....	6-4
	6.5 Phase II Expansion to 13.50 MGD Max Month Demands	6-8
	6.6 Phase III Expansion to 18.80 MGD Max Month	6-11
	6.7 Maximizing Flow to Lake Dixon – Phase IV	6-12

Section 7	Recommended System Improvements	7-1
7.1	Development of Unit Costs.....	7-1
7.1.1	Pipelines.....	7-1
7.1.2	Booster Pump Stations	7-2
7.1.3	Storage Tanks	7-2
7.2	Project Descriptions and Phasing.....	7-2
7.2.1	Phase I – 9.0 MGD system	7-2
7.2.2	Phase II – 13.5 MGD system	7-6
7.2.3	Phase III – 18.0 MGD System.....	7-7
7.2.4	Phase IV – Maximizing Flow to Lake Dixon (18.0 MGD)	7-7

Appendices

A	Order Number R9-2010-0032
B	Existing Recycled Water Use Data (2010)
C	Long Term Recycled Water Agreement between City and District
D	City’s Potable Water Users as Potential Recycled Water Users
E	District Potable Water Users as Potential Recycled Water Users
F	Title 22, Division 4, Chapter 3, Water Recycling Criteria of the California Code of Regulations ;Title 17, Division 1, Chapter 5, Group 4, Article 1 and 2 of the California Code of Regulations; The California Department of Public Health (CDPH) <i>Preparation of an Engineering Report for the Production, Distribution and Use of Recycled Water</i>
G	Escondido Recycled Water Rules and Regulations
H	Model Information

Figures

Figure 2-1	Vicinity Map	2-2
Figure 2-2	Schematic HARRF Treatment Process	2-3
Figure 2-3	Existing Recycled Water System	2-5
Figure 3-1	Potential Identified Customers	3-5
Figure 3-2	Potential Water Meter Conversion	3-11
Figure 3-3	Potential Customers by Land Use.....	3-17
Figure 3-4	HARRF Historical Recycled Water Demands (Average Day)	3-19
Figure 3-5	Power Plant and Total Recycled Water Demand	3-19
Figure 4-1	Permitted Recycled Water Use Areas	4-5
Figure 5-1	Existing Customer Seasonal Usage.....	5-1
Figure 6-1	Potential Recycled Water System Potential Phase I Expansion.....	6-5
Figure 6-2	Potential Recycled Water System Potential Phase II Expansion.....	6-9
Figure 6-3	Potential Recycled Water System Potential Phase II Expansion.....	6-13
Figure 7-1	Escondido Recycled Water Master Plan Improvements.....	7-3

Tables

Table 3-1 Existing Recycled Water Customers3-2

Table 3-2 Recycled Water Customer Waiting List3-4

Table 3-3 Potential Park, Recreational Area and Caltrans Markets.....3-4

Table 3-4 Existing School Facilities Irrigation Use.....3-7

Table 3-5 Potential School Property Markets3-8

Table 3-6 Potential Golf Course Markets3-8

Table 3-7 Summary of Existing and Previously Identified Recycled Water Markets.....3-10

Table 3-8 Calculated Irrigated Area by Land Use Type.....3-13

Table 3-9 Calculation of Average irrigation Application Rates3-14

Table 3-10 Potential Recycled Water Use by Land Use Type (City).....3-14

Table 3-11 Potential Recycled Water Use by Land Use Type (District).....3-15

Table 3-12 Summary of Existing and Maximum Potential Recycled Water Markets.....3-16

Table 3-13 Month-by-Month Peaking Factors by Recycled Water Use Type.....3-20

Table 4-1 Groundwater Quality Objectives (in mg/l)4-4

Table 5-1 Month-by-Month Peaking Factors by Recycled Water Use Type.....5-2

Table 5-2 System Planning Criteria.....5-3

Table 6-1 HARRF Capacity Compared to Recycled Water Demand (MGD)6-1

Table 6-2 Modeling Alternatives/Scenarios6-2

Table 6-3 Storage Requirements6-3

Table 6-4 Future System Analysis – Phase I6-7

Table 6-5 Future System Analysis – Phase II6-11

Table 6-6 Future System Analysis – Phase III.....6-12

Table 6-7 Future System Analysis – Phase IV6-15

Table 7-1 Pipeline Unit Costs.....7-1

Table 7-2 Phase I Improvement Costs – 9.0 MGD Demand.....7-5

Table 7-3 Phase II Improvement Costs – 13.5 MGD Demand.....7-6

Table 7-4 Phase III Improvements Costs – 18.0 MGD Demand.....7-7

Table 7-5 Phase IV Improvement Costs – Maximizing Flow to Lake Dixon (18.0 MGD Demand).....7-8

Acronyms

AADD	average annual daily demand
AFY	acre feet per year
AG	agricultural
APNs	Assessor parcel numbers
ASR	Assessor code in the parcel data
AWWA	American Water Works Association
CCR	California Code of Regulations
CDPH	California Department of Public Health
CIMIS	California Irrigation Management Information System
County DEH	County of San Diego Department of Environmental Health
ETo	evapotranspiration
fps	feet per second
GPD	gallons per day
HARRF	Hale Avenue Resource Recovery Facility
HOA	home owner associations
IRRIG	irrigation
MDD	Maximum Day Demand
MG	million gallon
MGD	million gallons per day
psi	pounds per square inch
RES_AG	residential agricultural
SDWAS	San Diego Water Agencies Standards
SWD	side water depth
USEPA	United States Environmental Protection Agency
UV	ultraviolet

Section 1

Introduction

1.1 Background and Purpose

The City of Escondido (City) owns and operates the Hale Avenue Resource Recovery Facility (HARRF) to serve the City, as well as a portion of the community of Rancho Bernardo within the City of San Diego. The facility is capable of treating all wastewater flows received to a secondary level of treatment, and a portion of the wastewater flow to a tertiary level for use as recycled water.

The City's recycled water distribution system serves approximately 81 meters with 12 in the limits of the City of Escondido water service area and 69 meters within the Rincon del Diablo Municipal Water District (District). These customers, coupled with recycled water use within the reclamation facility, account for approximately 4 million gallons per day (MGD) of beneficial reuse. The facility is currently under Order with the California Regional Water Quality Control Board (Regional Board) to update its recycled water master plan.

1.2 Regulatory Compliance

The City is subject to Order Number R9-2010-0032 (the Order) from the Regional Board, dated July 14, 2010. A copy of the Order is included as Appendix A. In addition to the standard provisions associated with these types of orders, the following facility design and operation special provisions were enumerated within R9-2010-0032:

- Properly operate and maintain all facilities and systems of treatment and control to achieve compliance with the Order;
- Notify the Regional Board prior to any changes in the treatment facilities; including increasing the flow from the ultraviolet (UV) disinfection system to greater than 4.0 MGD.
- Disinfect recycled water in compliance with California Code of Regulations (CCR) Title 22, Division 4;
- Submit to the Regional Board a certification that the operations manual includes the following information:
 - alarm set points for secondary turbidity, tertiary turbidity and UV transmittance;
 - levels at which flow will be diverted for secondary turbidity, tertiary turbidity and chlorine residual/UV transmittance
 - when to divert flow for high daily and weekly median total coliform
 - when the authority will be notified of a diversion
 - names and numbers of those having authority for notification in case of diversion
 - frequency of calibration for turbidimeters and chlorine residual analyzers

- Supervise and operate the system by persons possessing certificates of appropriate grade pursuant to CCR Title 23, Chapter 3, Subchapter 14;
- Protect all waste treatment, storage and conveyance facilities against the 100-year peak stream flows, defined by the San Diego County flood control agency;
- Protect all wastewater and recycled water storage facilities against erosion, overland runoff and other impacts resulting from a 100-year, 24-hour frequency storm.

The Order also identified special provisions for the beneficial use of recycled water in the Escondido receiving water basin (904.62), the Del Dios receiving water basin (905.21), Felicita receiving water basin (905.23) and the eastern 2,100 acres of the Richland receiving water basin (904.52), as summarized below:

- Submit a certification to the Regional Board and the County of San Diego Department of Environmental Health (County DEH) that the system's Rules and Regulations for Recycled Water Users are compliant with the Order, including those identified in Attachment E of the Order and a description of the inspection program maintained by the City for its recycled water users.
- Submit to the California Department of Public Health (CDPH) and the County DEH a master plan (the Report) covering multiple reuse sites and/or individual plans and specification reports that are compliant with the Order. The Report shall include a detailed description of each reuse site, identifying all of the following information:
 - A copy of long-term agreements between the City and recycled water users
 - The number, location, and type of facilities within the area proposing the use of domestic and recycled water (including dual plumbed systems)
 - The estimated average number of persons served at each use area on a daily basis
 - The specific boundaries of the proposed use site (including a map that shows the facility, drinking fountains, and impoundments to be served.)
 - The person(s) responsible for operation of the recycled water system
 - The specific use of the recycled water at each area
 - The methods to be used by the City to insure installation and operation of the recycled water system will not result in cross connections between the recycled water system and the potable water system.
- Specific requirements for plans and specifications
- Submit plans and specification for review and approval of any new recycled water site in accordance with the Order;
- Enforce recycled water rules and regulations, including conducting site inspections;
- Make available all relevant data needed for the purpose of completing salt and nutrient plans for hydrologic basins, as described in Finding J of the Order.

Section 2

Recycled Water System Description

2.1 Recycled Water Supply Sources

The HARRF is the sole source of recycled water for the City and District. The location of the HARRF in relation to the City and the District is provided in Figure 2-1. The existing facility is capable of treating 18 MGD of wastewater to secondary levels of treatment, and 9 MGD of the 18 MGD to tertiary levels of treatment, with its existing process units.

The facility uses mechanically cleaned bar screens, cyclonic grit chambers and preliminary clarifiers for primary treatment. The wastewater then flows to aeration basins equipped with fixed fine-bubble diffusers followed by secondary clarifiers. Tertiary treatment occurs through chemical coagulation and flocculation, monomedia continuous backwash upflow filters (DynaSand), and UV and/or chlorination for disinfection.

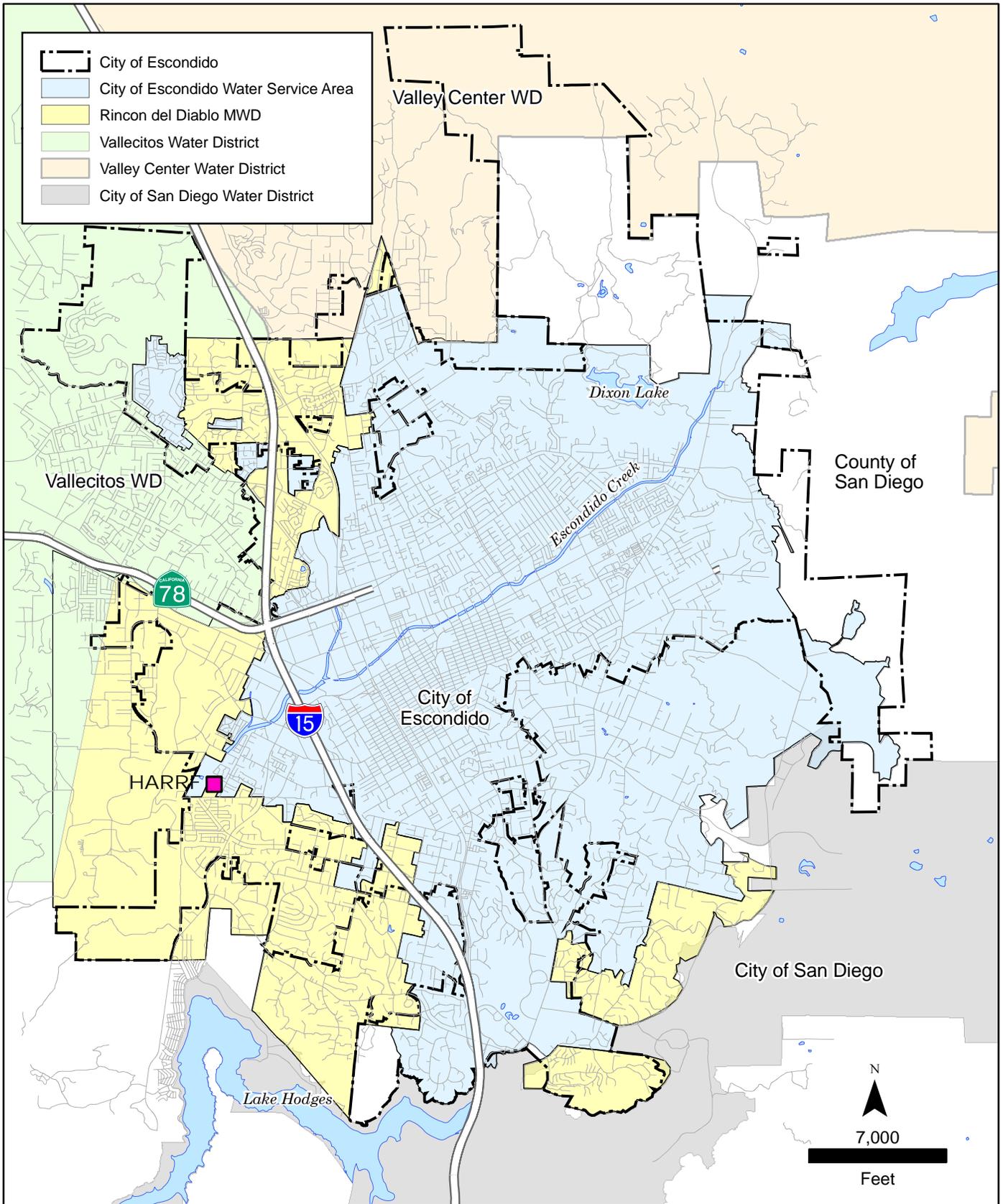
After filtration and disinfection, the treated effluent flows to an on-site ground storage tank that is connected directly to the recycled water pump station. The pump station includes five pumps: two 200 horsepower (hp) pumps and three 300 hp pumps. All use variable frequency drives (VFDs) which tailor pump output to demand. The pump station conveys treated effluent into the recycled water system to the various users and to a 2 million gallon (MG) tank located in the north end of the system at Leslie Lane. The Leslie Lane Reservoir has a side water depth (SWD) of 30 feet, a diameter of 107 feet and a high water elevation of 975 feet.

Solids from the process are passed through dissolved air flotation thickeners, primary and secondary anaerobic digesters, and centrifuge dewatering units with an odor control system. Screened solids are trucked for disposal to a landfill and dewatered sludge is trucked off site for land application. Recycled water that is not reused can be dechlorinated as needed and discharged to the Escondido Land Outfall and the San Elijo Ocean Outfall. The Outfalls are regulated under separate orders. A schematic of this system is provided as Figure 2-2.

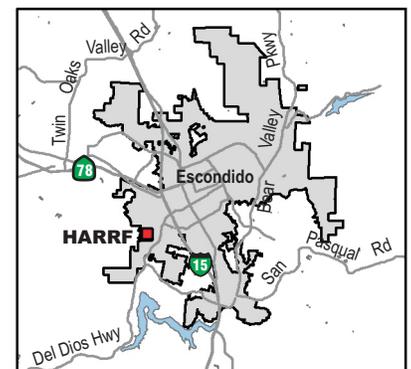
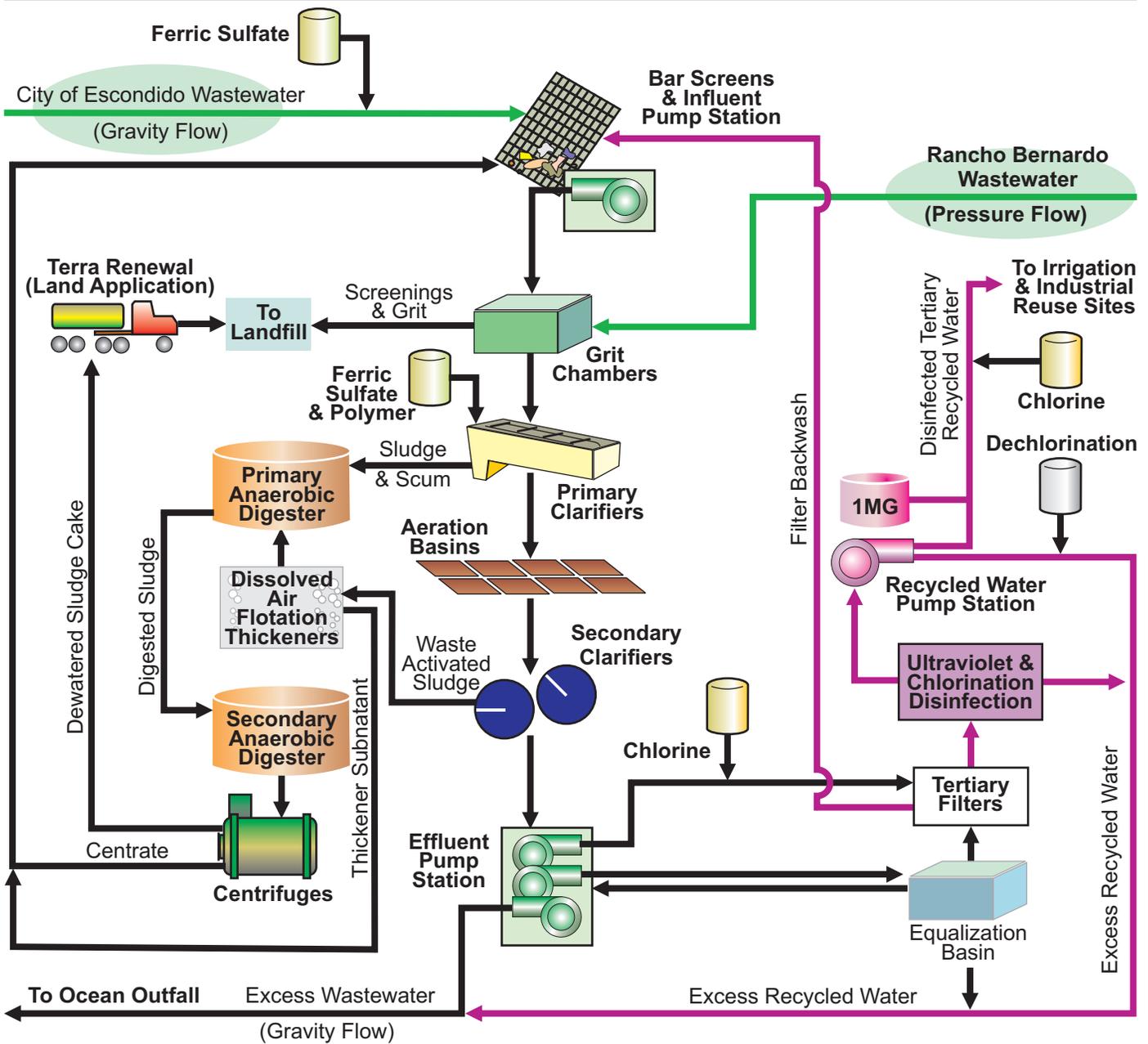
In July 2010, the City completed a study of the tertiary portion of the HARRF treatment processes to determine means and methods of increasing efficiencies in the system. The preliminary results include replacing the DynaSand upflow filters with cloth filters. According to the preliminary report, this modification would result in limited chemical and energy savings. To date, the City has not implemented this change.

2.2 Recycled Water Supply Distribution System

The recycled water distribution system was first placed into service in 2004, after the tertiary upgrades were installed at HARRF. The system provides recycled water to over 80 metered connections, including those served in the Rincon Del Diablo Municipal Water District. Each connection is individually metered. Most connections provide recycled water for irrigation



Vicinity Map
FIGURE 2-1



**Schematic
HARRF Treatment Process**

Figure 2-2

purposes. However, the system also provides cooling tower water to the Sempra Energy Power Plant located in the District. The cooling tower demand is required year-round and is the largest demand on the system accounting for 60 to 90 percent of the average day demand.

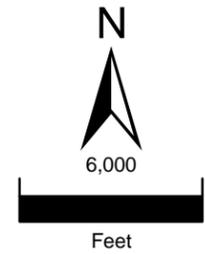
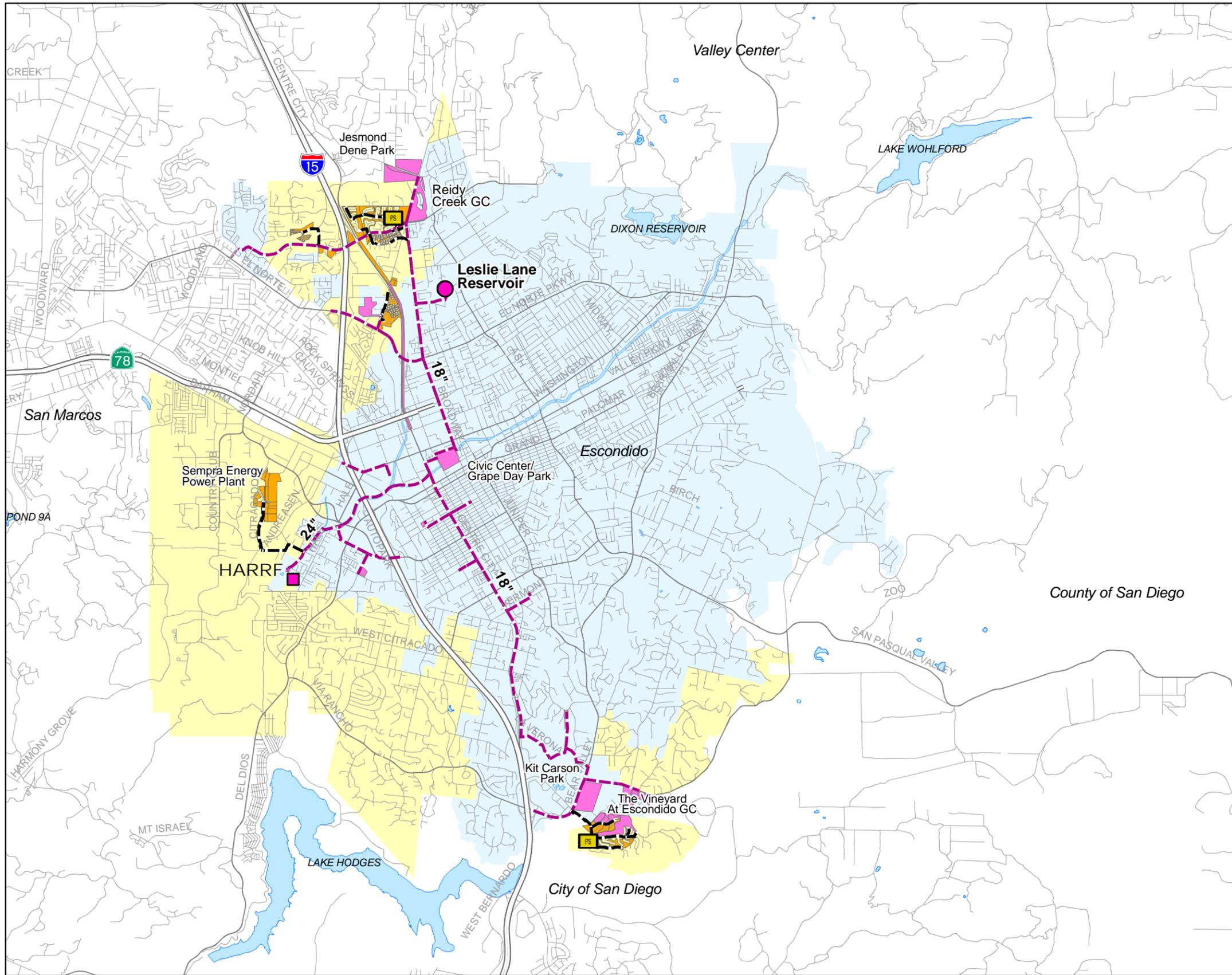
There are 18 miles of distribution pipelines throughout the City. The distribution system delivers recycled water in a 24-inch pipeline from the HARRF effluent pump station east along the Escondido Creek channel to Center City Parkway. The system branches north along Broadway and south along Center City Parkway.

- The northern branch includes a 16-inch pipeline¹ that serves Reidy Creek Golf Course and a number of home owner associations (HOAs). A small booster pump station is located at the north end of this system.
- The southern branch includes an 18-inch pipeline that serves Kit Carson Park, the Vineyard at Escondido Golf Course and neighboring HOAs. A small booster pump station is located at the south end of this system to serve the Sonata development HOAs.
- Near the HARRF, another pipe branches west to serve the Sempra Energy Power Plant.
- Roadway medians and rights of way along the distribution route are irrigated with recycled water.

Water can be stored at the HARRF in a 1.0 MG tank at the west end of the HARRF site, and at the 2.0 MG Leslie Lane Reservoir, previously described. These tanks provide daily storage of recycled water to accommodate a fairly uniform production of recycled water at the HARRF. Generally speaking, the water is stored during the day and used for irrigation purposes at night. The Sempra Energy Power Plant has its own (0.7 MG) storage facilities on site to equalize the on-site delivery and demand for recycled water.

Figure 2-3 provides a location map of the recycled water system, including the 2 MG Leslie Lane storage tank site. The current recycled water customers are shown in Figure 2-3 and are described in more detail in the following section of this report.

¹ There are small portions in this northern line that reduce to 12-inches in diameter and then return to 16-inches.



- City of Escondido Water Service Area
- Rincon del Diablo MWD
- Escondido Existing Pipe
- Rincon Existing Pipe
- Existing Reservoir
- Existing Booster Pump Station
- HARRF
- Existing City Customer
- Existing District Customer



Existing Recycled Water System

Figure 2-3

Section 3

Recycled Water Demands

3.1 Existing Customers

Billing data was received for the time period from January 2005 through December 2009 for the 69 meters within the District's portion of the system. Similarly, data was received for the City's 12 meters as they came on-line, with various start times beginning in July 2006 through June 2010. An annual report for the calendar year 2010 indicates approximately 3,600 AFY of recycled water was distributed (see Appendix B). In 2010, the City of Escondido customers, many with multiple meters, used 422 AFY of recycled water, for an average of 0.38 MGD. The District customers used 222 AFY (0.20 MGD) of recycled water for irrigation purposes. The Sempra Energy Power Plant used approximately 2,881 AFY (2.57 MGD). HARRF uses 0.20 MGD for process water.

In general, meter sizes within the recycled water distribution system vary from 5/8 to 16-inches. The City provided addresses and locations for these meters while the District provided limited addresses and some County assessor parcel numbers (APNs). There were some meters for which additional location data was requested and provided by the District or the City. The general locations of the identified customers are illustrated on Figure 2-3 while a list of existing customers is provided in Table 3-1.

For each of these customers, a Title 22 Engineering Report was prepared and submitted to the County DEH and the Regional Water Quality Control Board for approval by either the City of Escondido or the Rincon del Diablo Municipal Water District. These reports included the following information and are on file with those respective agencies.

- A copy of long-term agreements between the City and recycled water users
- The number, location, and type of facilities within the area proposing the use of domestic and recycled water (including dual plumbed systems)
- The estimated average number of persons served at each use area on a daily basis
- The specific boundaries of the proposed use site (including a map that shows the facility, drinking fountains, and impoundments to be served)
- The person(s) responsible for operation of the recycled water system
- The specific use of the recycled water at each area
- The methods to be used by the City to insure installation and operation of the recycled water system will not result in cross connections between the recycled water system and the potable water system
- Specific requirements for plans and specifications

The City has a long term agreement for supplying recycled water to the District. The original agreement, dated February 1999, and subsequent amendments are included in Appendix C.

Table 3-1 Existing Recycled Water Customers

District (D) or City (C) Customer	Recycled Water Customer	Metered Use (AFY)	Type of Use	Basin Location
D	7-11	1.49	Irrigation	904.52
D	AM PM	0.94	Irrigation	904.62
C	City of Escondido Streetscape	32.15	Irrigation	904.52, 904.62
C	City of Escondido Parks and Schools			904.52, 904.62
	Grape Day Park/Civic Center	31.48	Irrigation	
	Jesmond Dene Park	15.80	Irrigation	
	Kit Carson Park	130.33	Irrigation	
	North Broadway School	10.40	Irrigation	
	Rod Mc Leod Park	9.56	Irrigation	
	Westside Park	5.33	Irrigation	
D	Country Club Gardens Apartments	3.17	Irrigation	904.62
D	Escondido Country Club Terrace HOA	0.35	Irrigation	904.52
D	Escondido Hills HOA	9.26	Irrigation	904.52, 904.62
D	Escondido Views HOA	59.17	Irrigation	904.62
D	Forest Glen Apartments	14.65	Irrigation	904.62
D	Gloria Dei Lutheran Church	1.33	Irrigation	904.52
D	JRMC Real Estate	84.05	Irrigation	905.21
D	Morningside Woods HOA	0.50	Irrigation	904.62
D	Neighborhood Church	0.85	Irrigation	904.52
C	Reidy Creek Golf Course	111.45	Irrigation	904.62
D	Rincon Water District Office	0.34	Irrigation	904.62
D	Sempre (16" Industrial)	2,881.00	Cooling Towers	
D	Sempre (3" Landscape)	14.64	Irrigation	904.62
D	Sonata Maintenance HOA	12.10	Irrigation	905.21
D	Sonata Patio HOA	1.16	Irrigation	905.21
D	Sonata Single Family HOA	25.32	Irrigation	905.21
C	Vineyard Golf Course	102.55	Irrigation	904.62
C	HARRF	224.00	Process	
	Total (AF)	3,783.37		
	Average (MGD)	3.38		

3.2 Potential Markets

Expansion of the City's recycled water system is critical to reducing demands on imported water and reducing flow to the land outfall. Areas with the greatest potential for expansion include the agricultural areas to the east and the San Diego Zoo Safari Park (formerly the Wild Animal Park). The City also anticipates maximizing the use of recycled water by converting large potable water irrigation users to recycled water and requiring new developments to use recycled water, where feasible.

The approach used to identify potential recycled water markets in the HARRF service area included:

- a review of previously identified potential markets;
- an analysis of the City's dedicated irrigation meters on the potable system that have the potential to convert to recycled water;
- an analysis of the City's land use categories, to capture other potential markets that were not identified in the previous two categories;
- a review of areas that will be affected by the General Plan Update; and
- a review of additional potential recycled water customers identified by the Rincon del Diablo Municipal Water District.

A number of entities have been identified as potential recycled water users that may be added as future customers; the largest of these potential customers will drive the locations of any recycled water system extensions. The potential markets are divided between the City and the District, with the intention that potential markets within the City would be maximized before seeking markets outside of the service area.

3.2.1 Previously Identified Potential Markets

Previously identified potential markets are aggregated into the following categories: Waiting List (those that have requested service when available), parks/recreation/right-of-way irrigation areas, schools and golf courses. A number of these customers have already been approved by the County Department of Health Services for conversion to recycled water. These markets are further described below, and illustrated on Figure 3-1.

Waiting List

The City of Escondido has been accumulating a list of potential recycled water users since the inception of the recycled water program and there are still a number of sites that have yet to be converted to recycled water use. This "Waiting List" includes 10 potential irrigation and industrial customers that have expressed interest in becoming recycled water customers, including the Ice-o-plex skating rink and fitness center, which would use recycled water for cooling towers.

The demands for each of these potential customers were provided by the City and are summarized in Table 3-2 in both AFY and MGD. As shown, the irrigation customers use a smaller quantity of recycled water when compared to customers using recycled water for cooling tower purposes, such as the Ice-o-plex.

Parks, Recreational Areas and Rights-of-Way

The City has connected a number of parks, recreational areas, and roadway medians for recycled water use; however, there are a number of additional sites that may be appropriate for irrigation with recycled water. The estimated demands were provided by the City. Potential sites are listed in Table 3-3. Caltrans is also making improvements to Interstate 15 and State Route 78 that involve irrigated right of way. According to Caltrans, potential recycled water demands for these irrigated areas are estimated to be 115 AFY.

Table 3-2 Recycled Water Customer Waiting List

Site	Irrigated Acres	Potential Use (AFY)	Potential Use (MGD)
Barcelona HOA	4.9	10	0.0100
Grace Lutheran Church	5.8	4	0.0040
Bernardo Santa Fe ⁽²⁾	11.0	14	0.0130
River Village ⁽¹⁾	4.2	2	0.0002
New Tradition HOA	2.2	11	0.0100
Vermont Villas	5.7	10	0.0100
Weir Construction (rock crushing)	3.9	13	0.0120
Via Verde Estates ⁽²⁾	0.3	4.6	0.0040
Escondido Elks Lodge 1687	0.9	1.5	0.0010
Goal Line, LP (Ice-o-plex)	process user	365	0.3260
Total		435.1	0.3902

⁽¹⁾ River Village is physically located within the District boundary.

⁽²⁾ City potable water meter data used to determine potential use.

Table 3-3 Potential Park, Recreational Area and Caltrans Markets

Site	Irrigated Acres	Potential Use (AFY)	Potential Use (MGD)
Lake Dixon Picnic Areas ⁽¹⁾	693	12.5	0.011
Elmwood Park	41	3.0	0.003
El Norte Park ⁽²⁾	2	4.5	0.004
Washington Park	9	30.0	0.027
Mountain View Park	26	17.5	0.016
S. Centre City Parkway (south of Mission Ave) ⁽³⁾	5	20.0	0.018
Youth Activity Park	1.5	5.0	0.004
Frances Ryan Park	36	36.3	0.032
Caltrans ⁽⁴⁾	37	115.0	0.103
Total	850.5	243.8	0.218

⁽¹⁾ Entire area not irrigated; this is a natural habitat preserve

⁽²⁾ Demand based on City meter for El Norte Park.

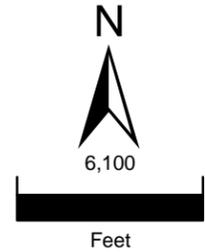
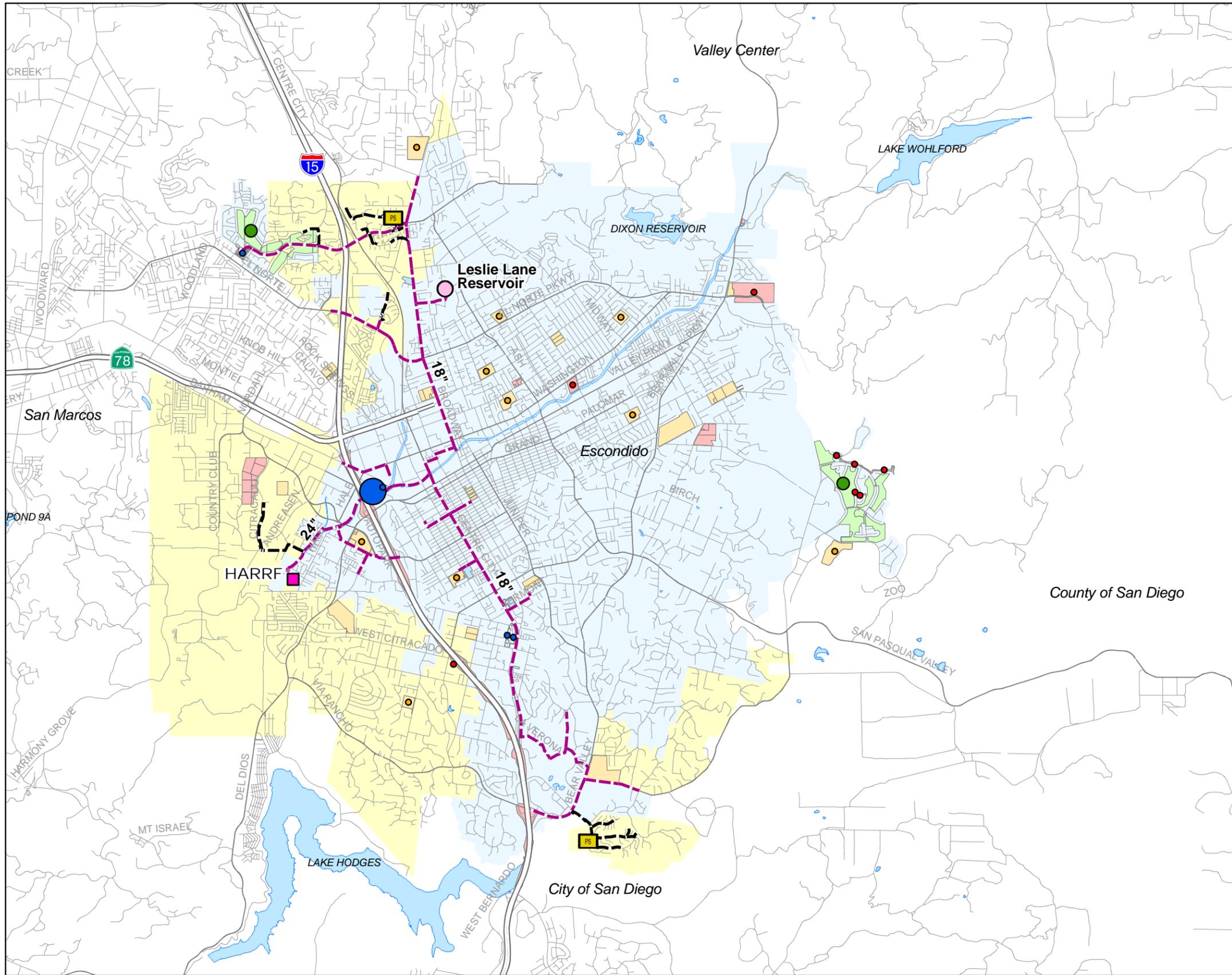
⁽³⁾ Assumes 47.2 acres of total area, 1% irrigated

⁽⁴⁾ Based on Caltrans estimate

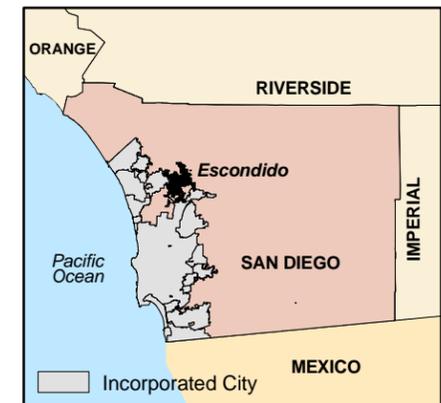
Schools

There are 503 acres of school district property, representing 30 schools and offices owned and operated by the Escondido Union School District and Escondido Union High School District within the study area. Eight of these properties are either using recycled water (North Broadway Elementary School) or use potable water for irrigation and have a dedicated irrigation meter². Table 3-4 lists these eight properties and their current water usage, as well as acreage.

² Demands for schools which currently have a City or District potable water meter for irrigation are included in the City (or District) potable water meter conversion totals.



- City of Escondido Water Service Area
 - Rincon del Diablo MWD
 - Escondido Existing Pipe
 - Rincon Existing Pipe
 - Existing Reservoir
 - Existing Booster Pump Station
 - HARRF
- Potential Identified Customer**
Size by Quantity in AFY, Color by Land Use Type
- 5 to 50 AFY
 - 50 to 150 AFY
 - 150 to 250 AFY
 - Greater Than 250 AFY
- Golf Course
 - School
 - Park, Rec, ROW, Irrig
 - Waiting List



Potential Identified Customers
Figure 3-1

Table 3-4 Existing School Facilities Irrigation Use

Site	Area (Acres)	Irrigation Use (AFY)	AFY/Acre
Elementary			
LR Green Elementary School	18.6	8.0	0.43
Pioneer Elementary School	8.2	11.1	1.34
Rincon Elementary School	13.4	1.5	0.11
North Broadway School	10.9	10.7	0.98
Community Day School	13.7	3.9	<u>0.28</u>
		<i>Average</i>	0.63
Middle			
Bear Valley Middle School	20.3	8.0	0.39
High School			
Escondido Union High School	52.2	3.8	0.07
Other			
Escondido School offices	4.3	0.2	0.05
Escondido School offices	11.2	0.6	0.00
Total	152.9	47.7	

From this data an average demand per acre was developed for each type of facility. Elementary schools used an average of 0.63 AFY per acre of total school property. The one middle school used 0.39 AFY per acre of school property and the one high school used 0.07 AFY per acre of total school property. These factors were applied to the remaining school properties throughout the study area and the potential demands at each site are summarized in Table 3-5 below.

Golf Courses

There are two golf courses in the vicinity of the City's system that use potable water or groundwater for irrigation: Eagle Crest and Escondido Country Club. The Eagle Crest Golf Course used an average of 0.061 MGD in 2010. The Escondido Country Club used an average of 0.111 MGD. A portion of the Escondido Golf Course is physically located in the District although is considered a City user for the purposes of this report. In the future it may be served by both the District and the City due to its proposed service connection locations. For this analysis it was assumed that the existing potable water demand of 193.7 AFY could be replaced with recycled water, as shown in Table 3-6 below. However, if the golf courses were to replace groundwater use with recycled water, there is potentially a much larger demand of over 500 AFY.

Table 3-5 Potential School Property Markets

Property Type	Acres	AFY/acre	Potential Use (AFY)	Potential Use (MGD)
Bernardo Elementary School	9.5	0.63	6.0	0.005
Center City Elementary School	5.1	0.63	3.2	0.003
Conway Elementary School	9.9	0.63	6.2	0.006
Farr Elementary School	12.2	0.63	7.7	0.007
Felicita Elementary School	10.8	0.63	6.8	0.006
Glenview Elementary School	9.3	0.63	5.9	0.005
Juniper Elementary School	10.3	0.63	6.5	0.006
Lincoln Elementary School	12.5	0.63	7.9	0.007
Miller Elementary School	9.5	0.63	6.0	0.005
Oak Hill Elementary School	11.9	0.63	7.5	0.007
Reidy Creek School	31.5	0.63	19.8	0.018
Rock Springs Elementary School	11.9	0.63	7.5	0.007
Rose Elementary School	9.0	0.63	5.7	0.005
Del Dios Middle School	24.5	0.39	9.5	0.009
Hidden Valley Middle School	24.7	0.39	9.6	0.009
Mission Middle School	14.0	0.39	5.5	0.005
Center City High School	0.3	0.07	0.0	0.000
Citracado High School	35.2	0.07	2.5	0.002
Orange Glen High School	47.1	0.07	3.3	0.003
San Pasqual High School	45.5	0.07	3.2	0.003
Valley High School	4.9	0.07	0.3	0.000
Total			130.6	0.117

Table 3-6 Potential Golf Course Markets

Site	Irrigated Acres	Potential Use (AFY)	Potential Use (MGD)
Eagle Crest Golf Course	173.7	68.9	0.061
Escondido Country Club	103.8	124.8	0.111
Total	277.5	193.7	0.172

Existing City Customers- Potable Water Meter Conversion

City customers that currently receive potable water for irrigation use through dedicated irrigation or agriculture meters are ideal candidates for retrofitting for recycled water use because limited on-site improvements would be required. The City's billing database lists its potable water users by "premise type." Premise types identified as potential recycled water users include AG (agricultural), IRRIG (irrigation), WAP (Wild Animal Park) and RES_AG (residential agricultural). This customer list is included in Appendix D. Figure 3-2 illustrates the location of these potable water meters that could be converted to recycled water meters.

The Wild Animal Park supports water conservation through a variety of programs including water smart landscaping techniques, using a variety of native and water-tolerant plants on their expansive grounds and operating an on-site wastewater treatment plant. Last year, the plant produced more than 22 million gallons of recycled water used for landscape irrigation. Nevertheless, the Wild Animal Park is the largest of the City's potable water irrigation users, using approximately 0.4 MGD (447 AFY) of potable water delivered through an 8-inch irrigation meter.

The next highest user is Hidden Valley North LP (an avocado grove) which uses both potable and unfiltered water totaling approximately 0.3 MGD (325 AFY) for grove irrigation, and another 0.15 MGD (162 AFY) on adjacent, residentially zoned properties. The North County Cemetery District used 0.2 MGD (227 AFY) of potable water for irrigation in 2010. Carlin Enterprises uses potable water for agricultural purposes, as the next highest user, of approximately 0.2 MGD (190 AFY). The locations of these users, as well as other large City-irrigation meters, are illustrated in Figure 3-2.

The 2010 total potable water usage for City customers using potable water for irrigation was 3,449 AFY or 3.079 MGD in 2010. Converting these customers from potable water to recycled water users will reduce the amount of potable water needed by the City for irrigation while increasing the amount of recycled water needed by the City from the HARRF.

District Meter Conversion

The District has identified a number of customers that currently receive potable water for irrigation use that may be retrofitted to provide for recycled water use. This customer list is included in Appendix E. The 2009 total potable water usage for these customers was 0.52 MGD (584 AFY). The locations of these potential markets are illustrated on Figure 3-2.

District Potential Recycled Water Customers

The Palomar Pomerado Health Systems owns property to the northwest of the Sempra Energy Power Plant and is constructing a 450 bed, state of the art hospital at that site. They have identified their irrigation needs at 20,447 gallons per day (GPD).³ They have also identified 28,000 GPD of cooling tower need. It will be assumed that the total recycled water usage for this site will be 48,447 GPD, or 54 AFY. The District is requiring the hospital to use recycled water to fulfill those non-potable demands.

In addition, a mixed use development project is being planned in the County of San Diego, to the west of the HARRF. The Harmony Grove project is proposing approximately 700 residential

³ Memorandum of December 14, 2010 to Randy Whitman from Raymond Yang (CO Architects)

units, recreational spaces, equestrian facilities, and a water reclamation facility on 468 gross acres. Proposed development also includes 7 acres of commercial and institutional area, 9 acres of public parks, and 92 acres of open space. In the North San Diego County Regional Recycled Water Project Draft Report (dated April 2011); a recycled water demand of 500 AFY (0.45 MGD) was estimated for the Harmony Grove development.

The total for all potential markets described above is summarized in Table 3-7.

Table 3-7 Summary of Existing and Previously Identified Recycled Water Markets

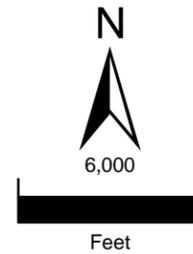
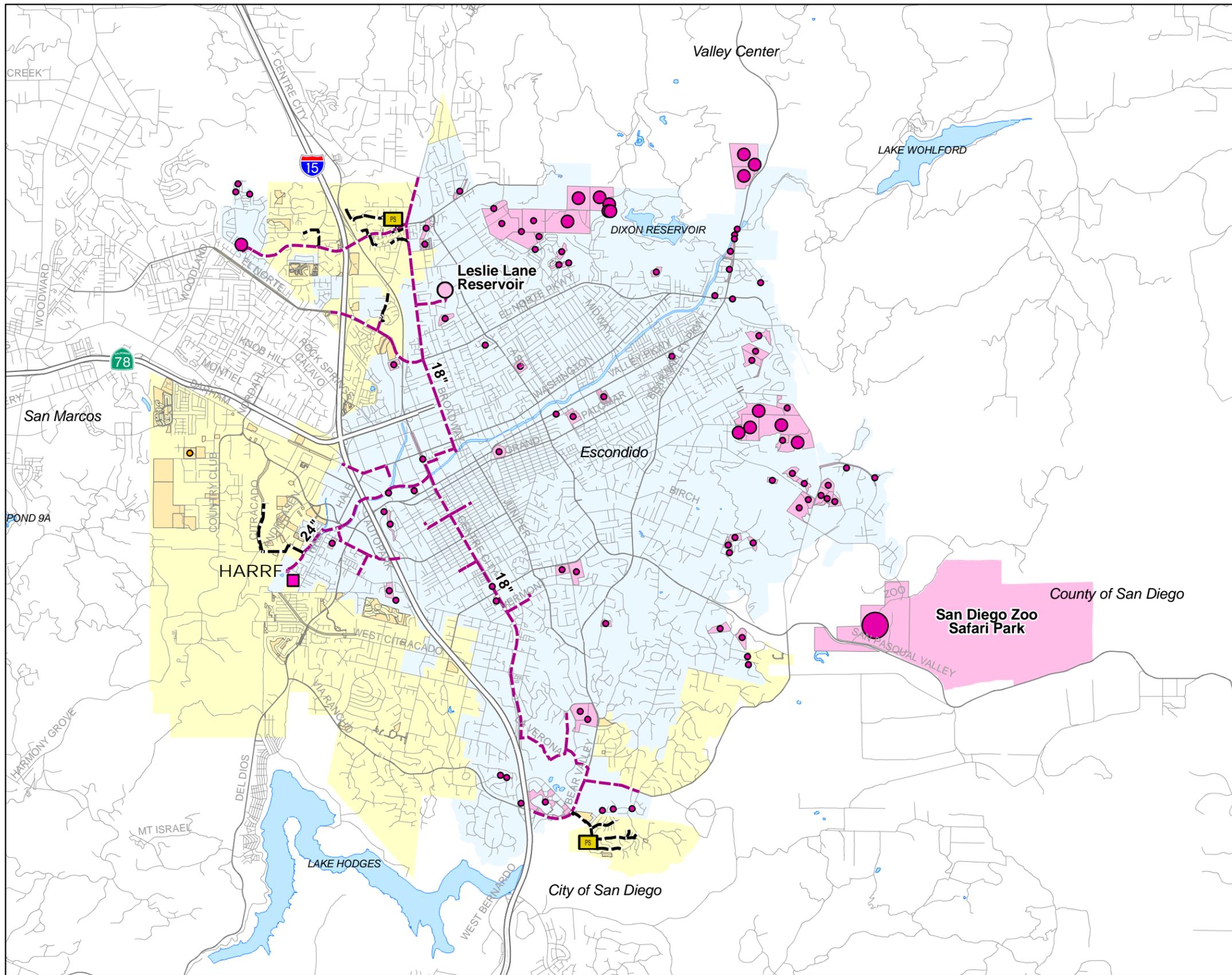
Demand Type	City		District		Total	
	Potential Use (AFY)	Potential Use (MGD)	Potential Use (AFY)	Potential Use (MGD)	Potential Use (AFY)	Potential Use (MGD)
Existing Customers- Irrigation	449	0.401	229	0.205	3783	3.378
Sempra Energy Power Plant			2,881	2.572	2,881	2.572
HARRF	224	0.200			224	0.200
Wait List	435	0.390			435	0.390
Parks and Rights-of-Way	244	0.218			244	0.218
Schools	131	0.117			131	0.117
Golf Courses	194	0.173			194	0.173
Hospital			54	0.048	54	0.048
Harmony Grove			500	0.446	500	0.446
Potential Conversion of Potable Water/ Irrigation Users	3,449	3.079	584	0.521	4,033	3.60
Total	5,125	4.577	4,248	3.793	9,374	8.370

3.2.2 Land Use Based Potential Customers

In addition to those potential markets with existing irrigation meters, there are land uses within the service area that may be suitable for recycled water use. The City’s ArcGIS parcel data was reviewed to determine the ASR⁴ Land Use Codes that could potentially be served, based on similar land use categories of the City’s existing and potential customers identified above. Single family residential parcels were not considered for potential recycled water use because oversight of appropriate use is generally more difficult and regulatory approvals are often difficult to achieve. However, large lots with agricultural uses may be suitable for recycled water irrigation and have been allowed in other parts of the state. Although these uses were not considered in this master plan, if such a site is located in the vicinity of a recycled water service, it should not be discounted as a viable potential customer.

Existing recycled water customers with similar land uses were compared to determine applicable irrigation rates. A large portion of the existing users are green space/open spaces/landscaping; as opposed to the billing address listed on each account. For those land use types where a calculated coverage could be determined from existing usage data, the following irrigated areas were determined (Table 3-8).

⁴ Assessor code in the parcel data



- City of Escondido Water Service Area
 - Rincon del Diablo MWD
 - Escondido Existing Pipe
 - Rincon Existing Pipe
 - Existing Reservoir
 - Existing Booster Pump Station
 - HARRF
- Potential Identified Customer**
Size by Quantity in AFY, Color by Service
- 5 to 50 AFY
 - 50 to 150 AFY
 - 150 to 250 AFY
 - Greater Than 250 AFY
 - Existing City Customer
 - Existing District Customer



Potential Water Meter Conversion
Figure 3-2

Table 3-8 Calculated Irrigated Area by Land Use Type

Code	Description	Assumed Irrigated Area (%)
13	multiple 2 to 4 units	10
16	Multiple 61 Units and Up	20 ⁽¹⁾
17	condominiums ⁽²⁾	1% ⁽¹⁾
19	Miscellaneous Residential	30 ⁽¹⁾
20	"vacant" commercial	10
21	1 to 3 Story Miscellaneous Store Buildings	1
25	Neighborhood Shopping Centers	2
27	service station	10
29	Rest Homes	40
32	trailer parks	20
35	Restaurants	10
38	auto sales/service agency	10
40	"vacant" industrial	20
41	Factory/Light Manufacturing	10
43	Warehouse-Processing-Storage	5
46	automotive garages	10
49	miscellaneous industrial	20
52	avocados	50
56	poultry	20
71	Churches	1

⁽¹⁾ Actual calculated value is larger; but value will be reduced due to limited data.

⁽²⁾ The condominium land use picks up the structures located in that particular land use code, Actual irrigation would be outside the structures.

Local monthly irrigation rates were determined based on the evapotranspiration (ET_o) rate less the average precipitation rate (assuming no ground storage of water). These values are provided in Table 3-9.

Using these assumptions, the total acreage for sites, identified with the City's ASR codes above and shown in Figure 3-3, multiplied by the assumed irrigable percentage and 0.77" per week, results in additional potential recycled water uses (Table 3-10).

Although in this analysis an effort was made to avoid duplication of markets with those previously identified, there may be some overlap. However this analysis provides an idea of the maximum potential recycled water demand for suitable categories of land use within the City. The sum total potential demand for these land use based markets is approximately 2,680 AFY, or 2.392 MGD. Approximately 1.3 MGD of this demand is attributable to the irrigation of avocado trees (ASR 52).

Table 3-9 Calculation of Average irrigation Application Rates

Month	Zone 6 ETo ⁽¹⁾ (Inches/month)	Rain (inches per month) ⁽²⁾	Eto LESS Rain	Days In The Month	Irrigation Rate (Inches/week)
January	1.86	1.83	0.03	31	0.01
February	2.24	1.81	0.43	28	0.11
March	3.41	0.30	3.11	31	0.70
April	4.80	0.60	4.21	30	0.98
May	5.58	0.07	5.51	31	1.24
June	6.30	0.02	6.28	30	1.47
July	6.51	0.01	6.51	31	1.47
August	6.20	-	6.20	31	1.40
September	4.80	0.02	4.78	30	1.12
October	3.72	0.68	3.04	31	0.69
November	2.40	1.12	1.29	30	0.30
December	1.86	2.87	(1.01)	31	(0.23)
				Average	0.77

⁽¹⁾ Evapotranspiration rate according to the California Irrigation Management Information System (CIMIS)

⁽²⁾ National Weather Service data for years 2007 through 2010

Table 3-10 Potential Recycled Water Use by Land Use Type (City)

ASR Code	Total Acreage	Irrigated Percentage	Irrigated Acres	Potential Use (AFY)	Potential Use (MGD)
13	292	10	29	97	0.087
16	321	20	64	214	0.191
17	12,423	1	124	415	0.370
19	99	30	30	99	0.089
20	101	10	10	34	0.030
21	250	1	3	8	0.007
25	63	2	1	4	0.004
27	18	10	2	6	0.006
29	46	40	19	62	0.055
32	277	20	55	185	0.165
35	44	10	4	15	0.013
38	48	10	5	16	0.014
40	22	20	4	15	0.013
41	79	10	8	26	0.023
43	114	5	6	19	0.017
46	25	10	3	8	0.008
49	24	20	5	16	0.014
52	858	50	429	1,431	1.278
56	9	20	2	6	0.005
71	119	1	1	4	0.004
Total				2,680	2.392

As shown on Figure 3-3, it is unlikely that all of these potential land use markets can be served cost effectively. However, those land uses that are located along the existing or expanded recycled water system, may be feasible candidates for retrofits at some time in the future.

This analysis included a review of the City's proposed General Plan amendments and land use densifications in some areas of the City. The redevelopment areas with potential for recycled water demands include the proposed minor league Baseball Park⁵, as well as EL-1 and EL-7, as shown on Figure 3-3. EL-7 is the only redevelopment area that would require an extension of the recycled water system to serve it; others could be served off of the existing system. In comparing the existing land use category with the proposed general plan amendment land use categories, it does not appear that redevelopment would increase the demand for recycled water in those identified areas.

A similar analysis was conducted for land uses within the District. Using the same assumptions for identifying potential future users based on land use type, the total acreage for sites identified with the ASR codes above, multiplied by the assumed irrigable percentage and an irrigation demand of 0.77" per week, results in the additional potential recycled water use of approximately 448 AFY, or 0.400 MGD (Table 3-11).

Table 3-11 Potential Recycled Water Use by Land Use Type (District)

ASR Code	Total Acreage	Irrigated Percentage	Irrigated Acres	Potential Use (AFY)	Potential Use (MGD)
13	53	10	5	18	0.016
16	29	20	6	19	0.017
17	57	1	1	2	0.002
19	70	30	21	70	0.063
20	7	10	1	3	0.002
21	11	1	0	0	0.000
25	3	2	0	0	0.000
27	5	10	0	2	0.001
29	20	40	8	27	0.024
32	59	20	12	39	0.035
35	2	10	0	1	0.000
38	19	10	2	6	0.006
40	112	20	22	75	0.067
41	186	10	19	62	0.055
43	126	5	6	21	0.019
46	12	10	1	4	0.004
49	9	20	2	6	0.005
52	55	50	27	92	0.082
56	-	20	-	-	-
71	45	1	0	2	0.001
Total				448	0.400

⁵ The proposed Ball Park is located in a study area that in total had 109 AFY of demand identified (SG-1, draft General Plan). A similar ball park, serving the minor league team The Storm, uses 35.4 AFY. Therefore, it is assumed that the current demand projections for this area is adequate to include the proposed minor league ball park.

3.3 Summary of Existing and Potential Demands

Based on the above, the existing and maximum potential demands for recycled water within the study area are summarized in Table 3-12.

Table 3-12 Summary of Existing and Maximum Potential Recycled Water Markets

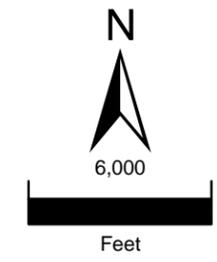
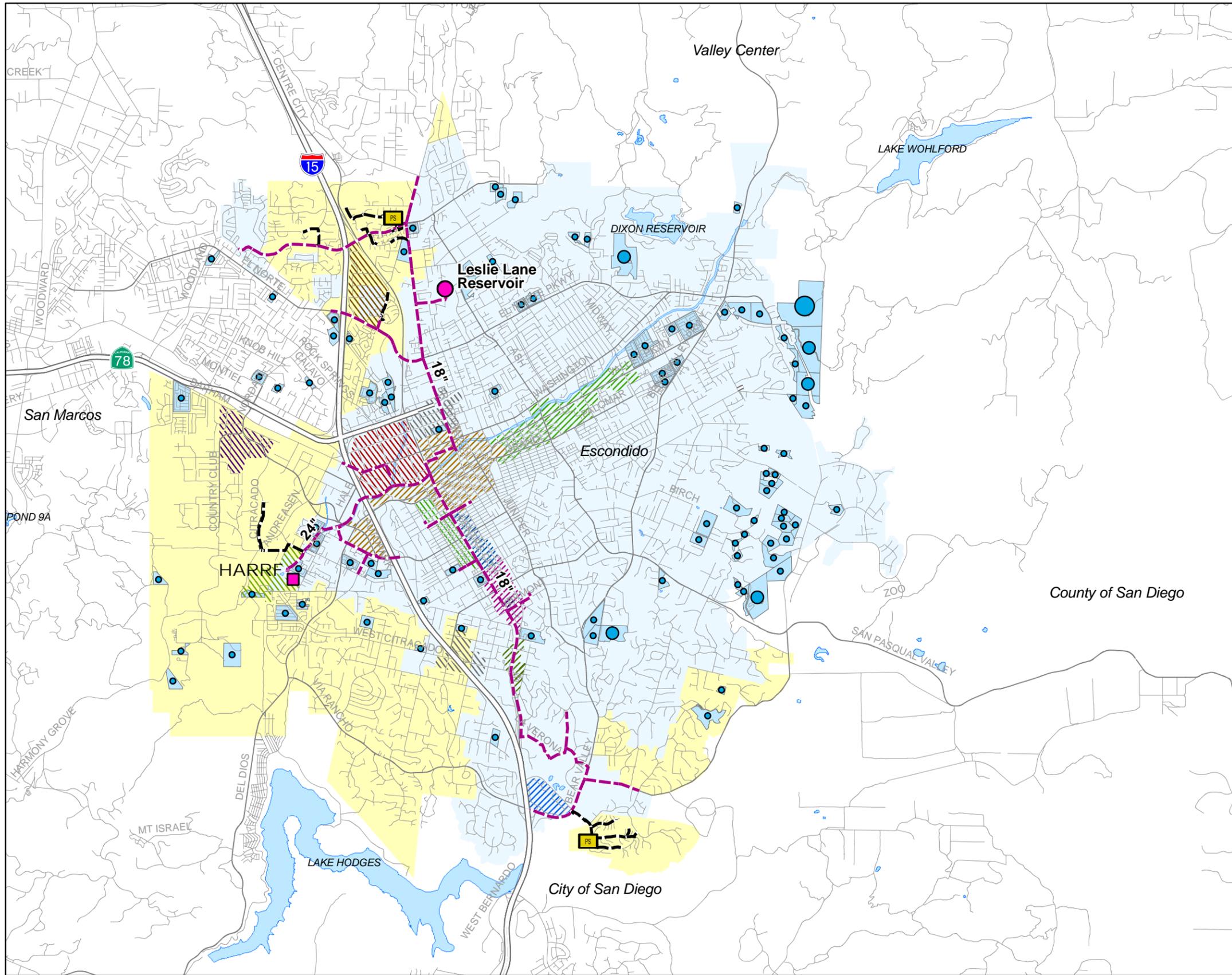
Demand Type	City		District		Total	
	Potential Use (AFY)	Potential Use (MGD)	Potential Use (AFY)	Potential Use (MGD)	Potential Use (AFY)	Potential Use (MGD)
Existing Customers- Irrigation	449	0.401	229	0.205	678	0.606
Sempra Energy Power Plant			2,881	2.572	2,881	2.572
HARRF	224	0.200			224	0.200
Wait List	435	0.390			435	0.390
Parks and Rights-of-Way	244	0.218			244	0.218
Schools	131	0.117			131	0.117
Golf Courses	194	0.173			194	0.173
Hospital			54	0.048	54	0.048
Harmony Grove			500	0.446	500	0.446
Potential Conversion of Potable Water/ Irrigation Users	3,449	3.079	584	0.521	4,033	3.600
Potential Other Areas Identified by Land Use	2,680	2.392	448	0.400	3,128	2.792
Total	7,805	6.969	4,696	4.193	12,502	11.162

3.3.1 Demand Patterns

Existing customer demand patterns from the time period of July 2006 through November 2010⁶ were analyzed. Demands were converted to gallons per month, and then to gallons per day (gpd) based on the number of days in each month. There were approximately 81 meters on the system although not all meters used recycled water each month. Generally, about 66 percent of the meters had usage throughout the time period reviewed. The average day demand per month on the recycled water system, for the time period reviewed, is shown in Figure 3-4.

The largest recycled water user is the Sempra Energy Power Plant which came on-line in July 2006. In any given month, the power plant recycled water demand represents between 58 to 90 percent of the total recycled water demand. The power plant goes off-line for maintenance for a two week period annually. Figure 3-5 illustrates this relationship.

⁶ December 2010 was not included. The demand data for the power plant was noted by the District to be incorrect.



- City of Escondido Water Service Area
 - Rincon del Diablo MWD
 - Escondido Existing Pipe
 - Rincon Existing Pipe
 - Existing Reservoir
 - Existing Booster Pump Station
 - HARRF
- Potential Customer By Land Use
Quantity in AFY**
- 5-50 AFY
 - 50 TO 150 AFY
 - 150 TO 250
 - GREATER THAN 250 AFY
- Land Use Study Area (Typ)



Potential Customers By Land Use
Figure 3-3

Figure 3-4 HARRF Historical Recycled Water Demands (Average Day)

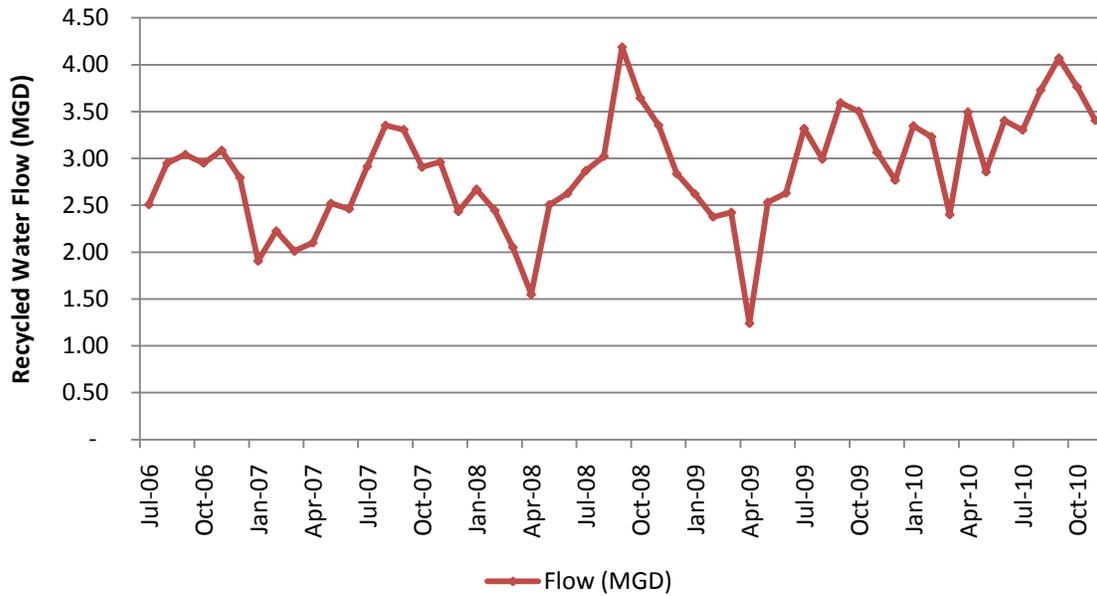
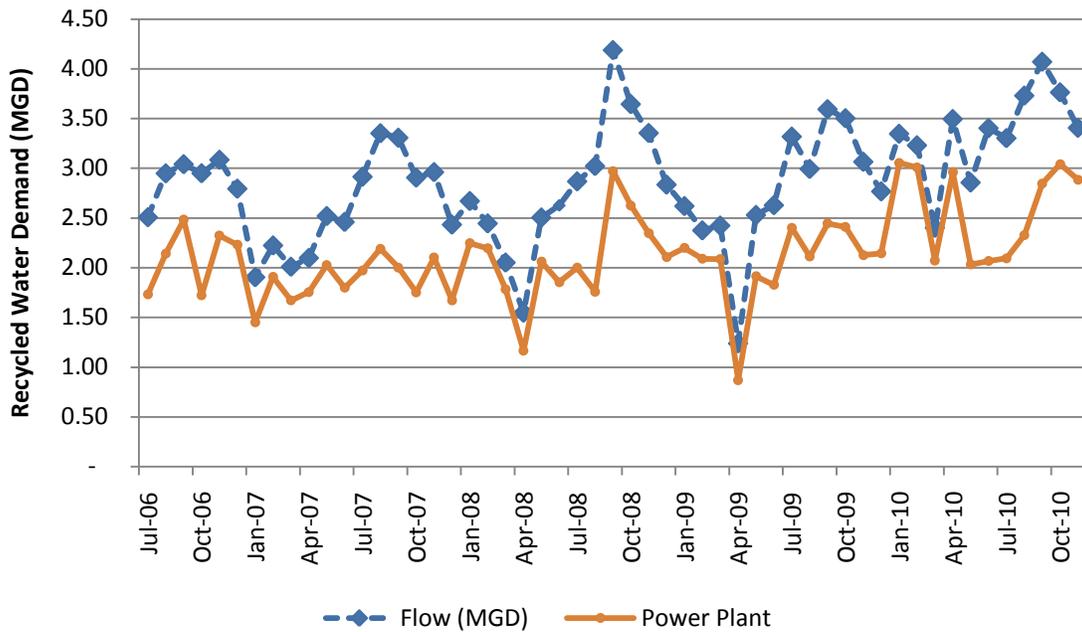


Figure 3-5 Power Plant and Total Recycled Water Demand



3.3.2 Seasonal Analysis

To evaluate seasonal peaking factors, the 2010 demands were aggregated by demand type into three categories: Irrigation, Sempra Energy Power Plant and the Ice-o-plex. The Ice-o-plex, while not a current reclaimed water customer, does receive potable water for its cooling towers on a dedicated meter. It is assumed that the water demands for the Ice-o-plex cooling towers will be representative of cooling towers proposed elsewhere in the system. Based on existing data (provided in Appendix B) a month-to-month peaking factor was determined for each type of use and is provided in Table 3-13.

Table 3-13 Month-by-Month Peaking Factors by Recycled Water Use Type

	Jan.	Feb.	March	April	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Irrigation	0.37	0.13	0.22	0.39	0.73	1.28	1.45	1.81	1.90	1.48	1.17	1.08
Sempra Energy	1.06	1.09	0.90	0.80	0.95	0.89	0.96	0.99	1.20	1.09	1.11	0.96
Ice-o-plex	0.98	0.97	1.04	1.24	1.09	0.88	0.73	0.83	1.20	0.92	0.63	1.37

HARRF uses a constant 0.2 MGD of recycled water supply for its processes. This demand is assumed to remain consistent for future projections, but might increase if treatment capacity at HARRF is expanded.

Section 4

Rules and Regulations for Recycled Water Use

As detailed in Order R9-2010-0032 contained in Appendix A, the rules and regulations under which the HARRF must operate are contained in the California Code of Regulations and other industry standards. These include:

- Title 22, Division 4, Chapter 3, Water Recycling Criteria of the CCR (Appendix F)
- Title 17, Division 1, Chapter 5, Group 4, Article 1 and 2 of the CCR (Appendix F)
- The CDPH *Preparation of an Engineering Report for the Production, Distribution and Use of Recycled Water* (Appendix F)
- Any measures that are deemed necessary for protection of public health, such as the American Water Works Association (AWWA) California/Nevada section, *Guidelines for the Distribution of Non-Potable Water and Guidelines for Retrofitting to Recycled Water* or alternate measures that are acceptable to the CDPH.

In addition to the above, the City of Escondido has recycled water design standards, “City of Escondido Recycled Water Service Rules and Regulations and Project Design Guidelines.” (Appendix G)

4.1 Regulatory Requirements

The Regional Board and the CDPH regulate the use of recycled water. The two principal regulatory documents are the “Comprehensive Water Quality Control Plan Report, San Diego Region (9)” (Basin Plan), and the “Wastewater Reclamation Criteria, an excerpt from the California Administrative Code, Title 22, Division 4, Environmental Health” (Title 22). The Basin Plan requirements vary by hydrographic subunits. Title 22 requirements are uniformly applied wastewater treatment requirements based on the intended use of the produced recycled water.

HARRF produces tertiary treated recycled water that meets Title 22 oxidized, coagulated, filtered, and disinfected effluent requirements for non-restricted impoundments, spray irrigation of food crops, and the broadest category of landscape irrigation.

The allowable uses for recycled water from HARRF include landscape irrigation, agricultural irrigation, industrial processes, construction, restricted recreational impoundments, or landscape impoundments.

4.2 Standard Specifications/Rules and Regulations for Recycled Water Use

The City’s Recycled Water Service Rules and Regulations and Project Guidelines, published in 2005, establishes the criteria that must be met for all recycled water use within the City. These criteria were established in accordance with the requirements of the City’s Master Reclamation Permit, Order R9-2010-0032. The minimum requirements are summarized below:

- The use of recycled water shall not cause pollution, contamination, or nuisance, as defined by section 13050 of the Water Code.
- All recycled water storage facilities owned and/or operated by recycled water users shall be protected against 100-year frequency peak stream flows as defined by the San Diego County flood control agency unless the Regional Board approves relaxed storm protection measures for the facility.
- A copy of the rules and regulations, irrigation map layout, and a recycled water operations manual must be maintained at the use area.
- Irrigation with disinfected tertiary recycled water shall not take place within 50 feet of any domestic supply well unless the criteria set forth in the permit are implemented. In addition, impoundment of recycled water shall not occur within 100 feet of any domestic supply well. Irrigation with, or impoundment of disinfected secondary-2.2 or disinfected secondary 23 recycled water shall not take place within 100 feet of any domestic supply well. Irrigation with or impoundment of undisinfected secondary recycled water shall not take place within 150 feet of any domestic water supply well.
- Drinking fountains shall be protected from the spray of recycled water.
- Conditions causing overspray and runoff shall be limited or prevented.
- On-site reclamation systems shall be designed to prevent discharge onto areas not under control of the use area owner. The design shall avoid spray patterns with discharge onto obstructions that tend to concentrate water resulting in ponding or runoff.
- On-site reclamation systems shall be designed to operate during periods of minimal public use of the area. The total time required to irrigate the design area shall not exceed nine (9) hours in any 24-hour period. The system shall be designed to operate between the hours of 9 p.m. to 6 a.m. An exemption from the San Diego County DEH was obtained by the District for service between 4 p.m. and 9 a.m. in specific use areas that have a very low probability of public contact.
- Facilities that may be used by the public, such as playground equipment and eating surfaces, shall be protected to the maximum extent possible by siting and/or structure from contact by irrigation with recycled water spray, mist or runoff.
- On-site reclamation system designs shall not allow ponding, erosion and/or runoff or other impacts resulting from a 100-year, 24-hour frequency storm.
- Spray irrigation with recycled water, other than tertiary recycled water, shall not take place within 100 feet of the property line of a residence or a place where public exposure could be similar to that of a park, playground or school yard. (The City uses tertiary recycled water throughout its system.)
- The areas where recycled water is in use shall be posted with signage stating same. Reclamation systems shall be separate and independent of potable water systems. Cross connections are prohibited.

- Hose bibs and fire hydrants on recycled water facilities are prohibited.
- If the public water supply is used as a backup or supplemental source of water for a recycled water system, there must be an air gap separation between the two systems that complies with the requirements of sections 7602(a) and 7603(a) of Title 17 and the approval of the public water system has been obtained.
- No person other than the City shall deliver recycled water to a facility. Connection to an irrigation system by an individual residence is prohibited.
- All recycled water piping and appurtenances shall be purple, or wrapped with purple tape.
- Customer complaints concerning recycled water that may involve illness shall be reported to the County DEH and the CDPH, and the City shall maintain a log of same.
- Annual cross connection inspections are conducted by the District or County of San Diego Department of Environmental Health.
- On-site reclamation systems shall be designed to meet the peak moisture demand of the plant material to be irrigated. On-site irrigation systems shall be designed to apply irrigation water in a manner compatible with the infiltration rates of the soil types within the approved use area.
- The seasonal nutritive loading of the use area including the nutritive value of the organic and chemical fertilizers and of the recycled water, shall not exceed the nutritive demand of the landscape. The City shall communicate to its users the nutrient levels in the recycled water.
- The recycled water users shall report the volume of the recycled water, total number of use areas in each basin, the total area of application, nitrogen applications rate and salinity application rate.

Prior to initiation of recycled water service, the recycled water user shall submit plans and specifications for the recycled water distribution facilities to the City. In addition, the recycled water user is required to designate a supervisor who is responsible for the system. The supervisor should ensure that the system is properly installed, operated and maintained. The supervisor should ensure that the District's rules and regulations are being followed and ensure that potential hazards are prevented. The supervisor must obtain instruction in the use of recycled water (site supervisor training) from an institution approved by CDPH and the County DEH. The City can terminate service to any user who uses, transports or stores recycled water in violation of the City's rules and regulations.

4.3 Customer Inspections and Monitoring

The City, the Regional Board, the CDPH, and the County DEH or authorized representatives of these parties, upon presentation of proper credentials, shall have the right to enter upon the recycled water use site during reasonable hours, to verify that the user is complying with the Discharger's rules and regulations.

The recycled water user shall provide written notification, in a timely manner, to the City of any material change or proposed change in the character of the use of recycled water.

The information listed above is required to be reported annually to the Regional Board.

4.4 Allowable Recycled Water Service Area

The City's Master Reclamation Permit allows for the use of recycled water for irrigation within the Escondido receiving water basin (904.62), the Del Dios receiving water basin (905.21), Felicita receiving water basin (905.23) and the eastern 2,100 acres of the Richland receiving water basin (904.52), as shown on Figure 4-1.

Note that if the City were to expand the recycled water system to the east of Bear Valley Parkway to serve the Eagle Crest Golf Course, the cemetery and many of the avocado groves, the permit would have to be amended to add the Las Lomas Muertas receiving water basin (905.32) and potentially the Bear basin (905.24) as permitted recycled water beneficial use areas. The Wild Animal Park lies within the Las Lomas Muertas basin and has its own permit (Regional Board Order 99-04) that allows for recycled water use on site. However, if the City were to supplement the Wild Animal Park's recycled water supply, an amendment to both permits would be required.

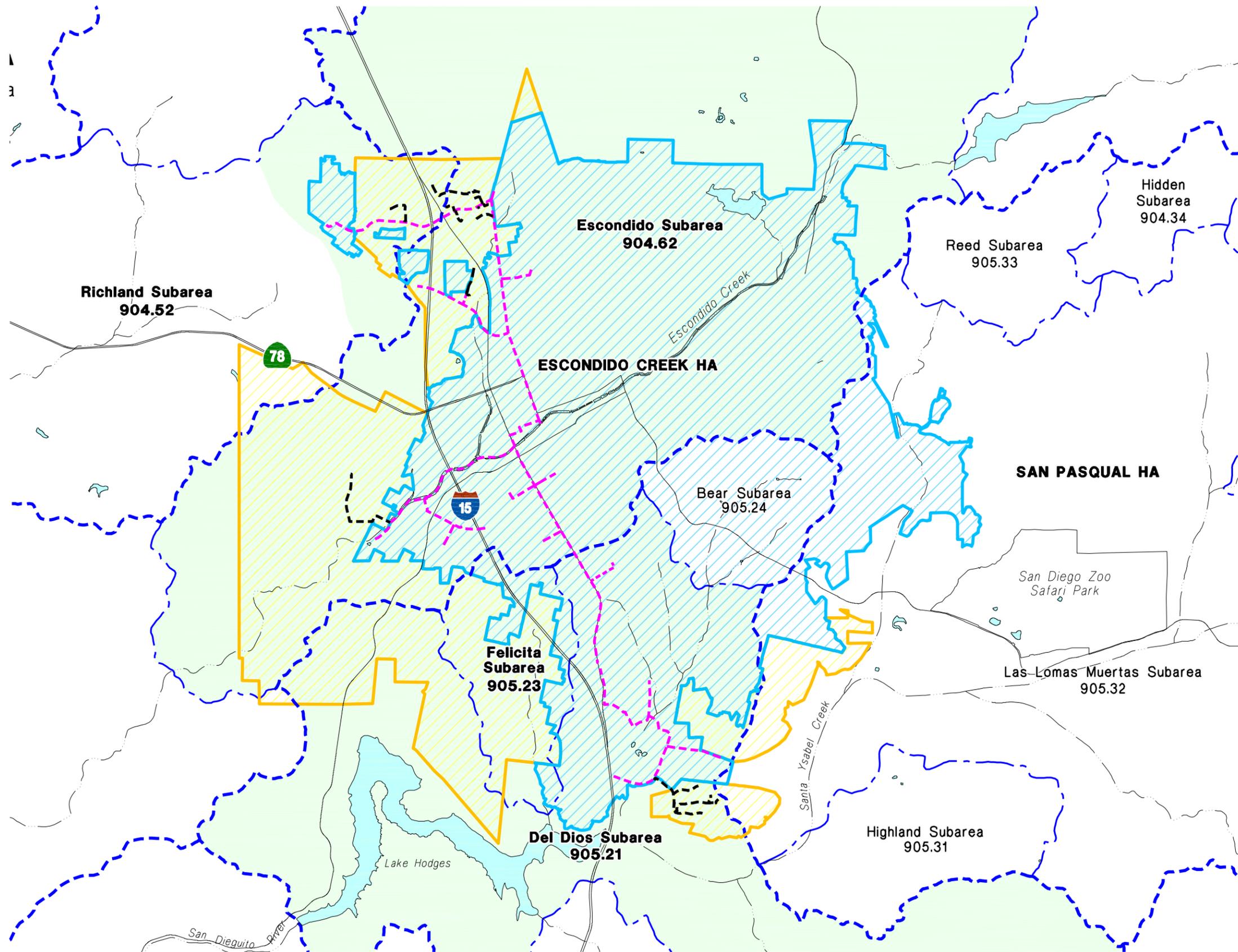
4.5 Water Quality Objectives

The Regional Water Quality Control Board issues water quality objectives for each watershed basin to protect groundwater quality. These objectives are used to set recycled water quality requirements, as the recycled water is used for irrigation and it is anticipated that some of that water will eventually reach the groundwater basin. The groundwater quality objectives for the basins in the Escondido service area are noted in Table 4-1.

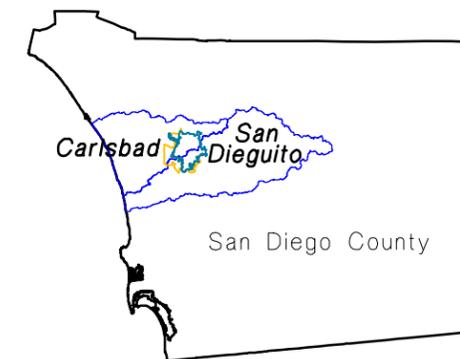
Table 4-1 Groundwater Quality Objectives (in mg/l)

HSA	Basin No	TDS	Cl	SO4	%Na	Fe	Mn	NO3	Boron	FL
Richland	904.52	1000	400	500	60	0.30	0.05	10	0.75	1.0
Escondido	904.62	1000	300	400	60	0.30	0.05	10	0.75	1.0
Del Dios	905.21	1000	400	500	60	0.30	0.05	10	0.75	1.0
Felicita	905.23	1000	400	500	60	0.30	0.05	10	0.75	1.0
Las Lomas Muertas	905.32	1000	400	500	60	0.30	0.05	10	0.75	1.0
Bear	905.24	1000	400	500	60	0.30	0.05	10	0.75	1.0

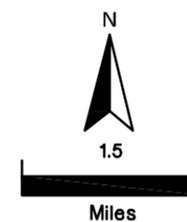
The groundwater quality objective for Total Dissolved Solids (TDS) is the primary concern for irrigation water use as it can impact the plants and crops being irrigated. Conventional wastewater treatment typically does not affect TDS, which is largely governed by the quality of the potable water being used in the service area. For most irrigation uses concentrations below 1,000 mg/l are desirable. In 2010, the TDS level for recycled water produced at HARRF averaged 933 mg/l.



- - - - - Hydrologic Area Boundary (HA)
 - - - - - Hydrologic Subunit Boundary (HSA)
 - Escondido Water Service Area Boundary
 - Rincon MWD Water Service Area Boundary
 - / / / / / Escondido Water Service Area
 - / / / / / Rincon MWD Water Service Area
 - Area Permitted for Recycled Water Use
 - - - - - Existing Escondido RW Pipeline
 - - - - - Existing Rincon RW Pipeline
- Source floodplain data: SANGIS



Hydrologic Unit Boundaries



Permitted Recycled Water Use Areas

Figure 4-1

Section 5

System Planning Criteria

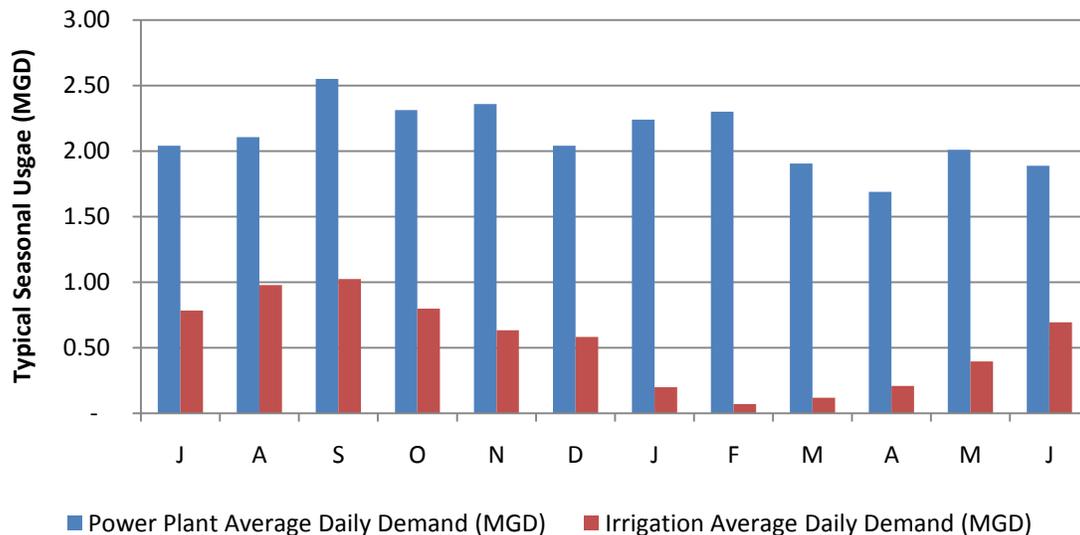
In order to plan for future expansion of the recycled water system, planning and design criteria need to be established. This section provides an analysis of the seasonal demand for recycled water and the impact of that varying demand on the appropriate sizing of distribution system infrastructure.

5.1 Demand Criteria

The existing demands were outlined in Section 3.1 of this report. The system currently delivers about 3.2 MGD of demand to 81 customers. The HARRF uses an additional 0.2 MGD of demand on a daily basis for process water. The existing system generally provides service for three types of customers: Irrigation, Sempra Energy use and cooling tower use. In addition, HARRF uses 0.2 MGD on a constant basis, without peaking factors based for any seasonal variations.

As shown below in Figure 5-1, the low irrigation period precedes the seasonal low of the power plant by two to three months. The peak power plant usage and irrigation usage appear to occur in generally the same month (September).

Figure 5-1 Existing Customer Seasonal Usage



As previously stated, HARRF uses a constant 0.2 MGD of recycled water for its processes. This demand is assumed going forward as well.

5.1.1 Proposed Markets and Assumptions

The proposed demands were outlined in Section 3 of this report. This data is summarized in Table 5-1.

Table 5-1 Projected Monthly Recycled Water Demands (MGD)

	January	February	March	April	May	June	July	August	September	October	November	December
Existing Customers-Irrigation	0.22	0.08	0.13	0.23	0.44	0.77	0.87	1.09	1.14	0.89	0.70	0.65
SEMPRA Energy Power Plant	2.72	2.79	2.31	2.05	2.44	2.29	2.48	2.56	3.09	2.80	2.86	2.47
HARRF	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Wait List: Ice-o-plex cooling towers	0.32	0.31	0.34	0.40	0.35	0.29	0.24	0.27	0.39	0.30	0.21	0.45
Wait List: Irrigation	0.02	0.01	0.01	0.02	0.05	0.08	0.09	0.11	0.12	0.09	0.07	0.07
Parks and Rights-of-Way	0.08	0.03	0.05	0.09	0.16	0.29	0.32	0.40	0.42	0.33	0.26	0.24
Schools	0.06	0.02	0.03	0.06	0.12	0.20	0.23	0.29	0.30	0.23	0.18	0.17
Golf Courses	0.06	0.02	0.04	0.07	0.13	0.22	0.25	0.31	0.33	0.26	0.20	0.19
Wild Animal Park	0.15	0.05	0.09	0.15	0.29	0.51	0.58	0.72	0.76	0.59	0.47	0.43
Hospital- irrigation	0.01	0.00	0.00	0.01	0.01	0.03	0.03	0.04	0.04	0.03	0.02	0.02
Hospital- cooling tower	0.03	0.03	0.03	0.04	0.03	0.03	0.02	0.03	0.04	0.03	0.02	0.04
Harmony Grove	0.09	0.03	0.05	0.09	0.18	0.31	0.35	0.44	0.46	0.36	0.28	0.26
Potential Conversion of Potable Water/ Irrigation Users	1.31	0.45	0.78	1.37	2.60	4.57	5.17	6.44	6.75	5.26	4.17	3.84
Land Use	1.02	0.36	0.61	1.08	2.04	3.58	4.06	5.06	5.30	4.12	3.27	3.01
Total	6.28	4.39	4.68	5.86	9.03	13.37	14.89	17.96	19.33	15.49	12.92	12.03

HARRF uses a constant 0.2 MGD of recycled water supply for its processes. This demand is assumed to remain consistent for future projections, but would likely increase if treatment capacity at HARRF is expanded.

The system demands shown above represent 24-hour, average annual day demands (AADDs) although customers typically irrigate during the night. For irrigation customers, including the golf courses, the recycled water demand is assumed to occur from 9:00 p.m. through 6:00 a.m. This time period restriction requires an additional peaking factor for those demands on the system of 2.67. The Sempra Energy Power Plant is assumed to require its demands evenly throughout the day.

It is also assumed that the Harmony Grove development will be able to receive its demand over the course of 24 hours, with on-site storage provided by the development, rather than through the City. A summary of the system planning criteria is provided in Table 5-2.

Table 5-2 System Planning Criteria

Land Use Category	Annual Demand (AFY/ac)
Landscape Irrigation (Parks, schools, greenbelts, freeways, etc.)	3.34 AFY/ac (0.77" per week)
Landscape Irrigation (Golf Courses)	As defined by City records

Criterion	Value
Peaking Factors⁽²⁾	
Minimum Day/Average Day Ratio	N/A
Maximum Day/Average Day Ratio (irrigation areas)- September	1.9
Maximum Day/Average Day Ratio (power plant)- September	1.2
Storage	
Operating Storage	2/3 of Maximum Day Demand (MDD)
Pressure Criteria	
Minimum Desirable	80 psi
Maximum Static (no demand)	150 psi
Minimum Static (no demand)	65 psi
Min. Residual Pressure (Peak Hour)	40 psi
Pumping Station Criteria	
Pumping Period ⁽¹⁾	24 hours
Pumping Capacity	MDD
Redundancy	N/A
Standby Power	N/A
Pipe Criteria	
Maximum Velocity – Max. Day, extended period (3 hours or greater)	6 fps
Maximum Velocity - Distribution (Peak Hour)	8 fps
Maximum Velocity - Transmission (Peak Hour)	6 fps
Maximum Headloss per thousand feet	10 ft
Minimum Diameter	6 inch
Hazen-Williams "c" factor (12-inch diameter or less)	120
Hazen-Williams "c" factor (>12-inch diameter)	130

⁽¹⁾ Pumping to occur during non-peak energy hours whenever possible.

5.2 Infrastructure Criteria

As identified in Section 4, the City's standards are outlined as "Recycled Water Service Rules and Regulations and Project Design Guidelines," dated February 2005. The United States Environmental Protection Agency (USEPA) also published "Guidelines for Water Reuse" in September 2004. System pressure and velocity guidelines, crafted by the San Diego Water

Agencies Standards (SDWAS), are included herein for evaluation of the City's existing and future recycled water distribution system in the hydraulic model.

5.2.1 Pressures

The system shall be reviewed with a minimum desirable pressure of 80 psi. Under a no demand condition, a maximum static pressure of 150 psi and minimum pressure of 65 psi will be considered acceptable. A minimum residual pressure of 40 psi during peak hour conditions will be considered adequate to operate irrigation systems.

5.2.2 Velocities

Transmission pipelines are defined as larger diameter pipelines that do not have connections to them for services. Under peak hour conditions, the velocity in a transmission line shall not exceed 6 fps. In the distribution portion of the system, a peak hour maximum velocity of 8 fps will be considered acceptable.

5.2.3 Physical Pipe Characteristics

The system will maintain a minimum pipe diameter of 6-inches. The Hazen-Williams factors for pipes 12-inches in diameter and less will be set in the hydraulic model at 120; for pipes larger than 12-inches in diameter, the factor will be 130.

Section 6

System Analysis

6.1 System Capacity

The system includes the wastewater treatment plant, including the tertiary filter system, the recycled water pump station and the distribution system. The distribution system analysis is included as part of the hydraulic model development. The treatment system and its constraints are described herein.

Using the seasonal peaking analysis in Section 3, the system was evaluated on a month-to-month basis to determine if HARRF could provide adequate quantities of recycled water. These quantities are provided in Table 6-1.

Table 6-1 HARRF Capacity Compared to Recycled Water Demand (MGD)

Potential Demand Scenarios	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Existing Demands	3.14	3.07	2.64	2.48	3.08	3.26	3.55	3.85	4.44	3.89	3.76	3.32
Existing Demands+ Waiting List + Potentials + City Meters	5.08	3.97	3.96	4.60	6.64	9.15	10.12	12.01	13.10	10.64	9.08	8.49
Existing Demands+ Waiting List + Potentials + City Meters + District Meters	5.26	4.03	4.07	4.78	7.00	9.78	10.84	12.90	14.03	11.36	9.65	9.02
All Demands	6.28	4.39	4.68	5.86	9.03	13.37	14.89	17.96	19.33	15.49	12.92	12.03

Note: Months shown in **BOLD** are in excess of the 9.0 MGD capacity of the tertiary filters at HARRF

As shown in Table 6-1, if the City were to convert all its potable water irrigation meters, and add those customers on the waiting list and the potential users identified in Table 3-7, the recycled water demands would exceed the available 9 MGD of tertiary filter capacity at HARRF from June through November. However, total recycled water demands would be less than total wastewater treatment capacity at HARRF.

Adding the District's converted meters would result in the tertiary filter capacity requiring approximately 50 percent more capacity. The City could choose to expand the tertiary filter system, since the overall recycled water demand at this level is still below the total wastewater treatment plant capacity of 18.0 MGD. Off season storage would be significant and not considered realistic to implement.

If all demand is included, such as the waiting list, potential users, converted meters and land uses that have been identified as potential recycled water sites, the system's tertiary filter

existing capacity is exceeded by over 100 percent. In addition to adding filtration, the City would need to consider some augmentation of the recycled water system.

Although there are areas for which demands have been identified (converted potable water meter, land use, etc.), these areas do not have the demand densities to make it cost effective to extend service. The areas north of San Pasqual Road (such as along Mary Lane) are not considered further in this master plan for service within this planning horizon.

6.2 Hydraulic Model Development

The electronic hydraulic model (the Model) was built using information provided by the City and the District. Innovyze (formerly MWHSoft) software was used, specifically H2OMap Water. Previous models were reviewed and ambiguous pipe sizing resolved. The Model incorporated the existing high service pumps located at HARRF, and the data available for the Leslie Lane reservoir. Appendix H includes the node/junctions, pipes, reservoirs, pumps and pressure valve information used for the model.

The model was run to evaluate maximum month and peak hour conditions. Table 6-2 summarizes the model scenarios evaluated and their potential demand conditions. Each scenario is described in further detail below:

Table 6-2 Modeling Alternatives/Scenarios

Model Scenario	Max Month Demand	Average Annual Demand	
		MGD	AFY
Existing System	4.39 MGD	3.35 MGD	3,750 AFY
Existing Optimization	4.39 MGD	3.35 MGD	3,750 AFY
Phase I Expansion	9.00 MGD	5.90 MGD	6,610 AFY
Phase II Expansion	13.50 MGD	8.27 MGD	9,270 AFY
Phase III Expansion	18.00 MGD	10.64 MGD	11,920 AFY

Each alternative is run for the seasonal peak.

6.3 Existing System Analysis

Based on the alternatives/scenarios listed in Table 6-1, and the criteria identified in Table 5-3, the existing system was evaluated. The existing system did not consistently meet the criteria outlined in Table 5-3. These deficiencies are further described below and system model output included in Appendix H.

6.3.1 Deficiencies

The deficiencies identified for the existing system occurred only during the seasonal peak month during certain periods of the day (peak hours) period. A few pipeline segments exceed the maximum velocity of 5 fps and maximum headloss of 10 feet per 1,000 feet of pipe. These pipes are generally in the vicinity of the Leslie Lane Reservoir and the high velocities and head losses occur when the reservoir is feeding the system. Because future scenarios include

additional storage or pump configurations, no improvements to this line are recommended at this time.

There are also a few nodes which exceed the 150 psi in maximum static pressure, with the highest pressure approximated at 183 psi. Generally, the high pressures are minor except immediately upstream of the pressure reducing valve, which validates the need for the valve. There are also a few demand nodes that exceed 150 psi in maximum operational pressure in the existing system, with the highest pressure estimated at approximately 187 psi. These high pressures are generally located in the main transmission line that may require upgrades to feed potential recycled water customers in the City and will be discussed further in the expansion scenarios.

The design criteria outlined in Section 5 identify the need of two thirds maximum day demands for storage. For the purposes of this study, it will be assumed that the Sempra Energy power plant and the cooling towers do not require daily operational storage, as on-site storage is already available. System storage will be provided solely to balance the irrigation demands. To that end, the summary of month-to-month demands for the existing system is provided in Table 6-3.

Table 6-3 Storage Requirements

	Jan.	Feb.	Mar.	Apr	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Irrigation (MGD)	0.21	0.07	0.13	0.22	0.42	0.74	0.84	1.05	1.10	0.86	0.68	0.63
Required Storage (MG)	0.14	0.05	0.08	0.15	0.28	0.50	0.56	0.70	0.73	0.57	0.45	0.42

The current system has 2.0 MG of storage at the Leslie Lane Reservoir and 1.0 MG at HARRF. As shown in Table 6-3, that is more than sufficient for current needs. The maximum storage needed occurs in September at 0.73 MG.

6.3.2 Existing System Optimization

The existing system hydraulic model did not indicate the need for immediate improvements, however some of the marginal conditions can be improved as the system is expanded in the future.

City staff has indicated that they would like the ability to completely drain the Leslie Lane Reservoir in anticipation of rain events. In this way, staff could then fill the tank when most of the system is not demanding recycled water, and control the amount of water being discharged to the outfall. The model was run under minimal irrigation demands, with regular Sempra Energy demands, and the tank controls were adjusted to have the pumps at HARRF operate when the tank level reaches zero, rather than the 1-foot of depth in the tank used in the previous analysis of the existing system. Assuming the tank is full at 9:00 p.m., the tank drains completely by 4:00 p.m., a period of 19 hours. Under these minimal demand conditions, there are three junctions that have residual pressures below 65 psi: two are located in the north District area that have pressures between 55 and 59 psi, and one node located down in the extreme southern portion of the District's system that has an operating pressure of 61 psi. Although these pressures are below the criteria set forth in Section 5, they are not considered to be detrimental to the system on an occasional basis. At this time, there is no other way to drain

the Leslie Lane Reservoir, except through distribution to the customer. For the City to reverse flow back to HARRF, without adversely affecting Sempra demands, the City would need to install a dedicated pipeline to serve the Sempra demands and then install a bypass around the effluent lift station that connect to the outfall.

6.4 Phase I Expansion to 9.0 MGD Max Month Demand

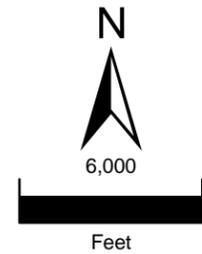
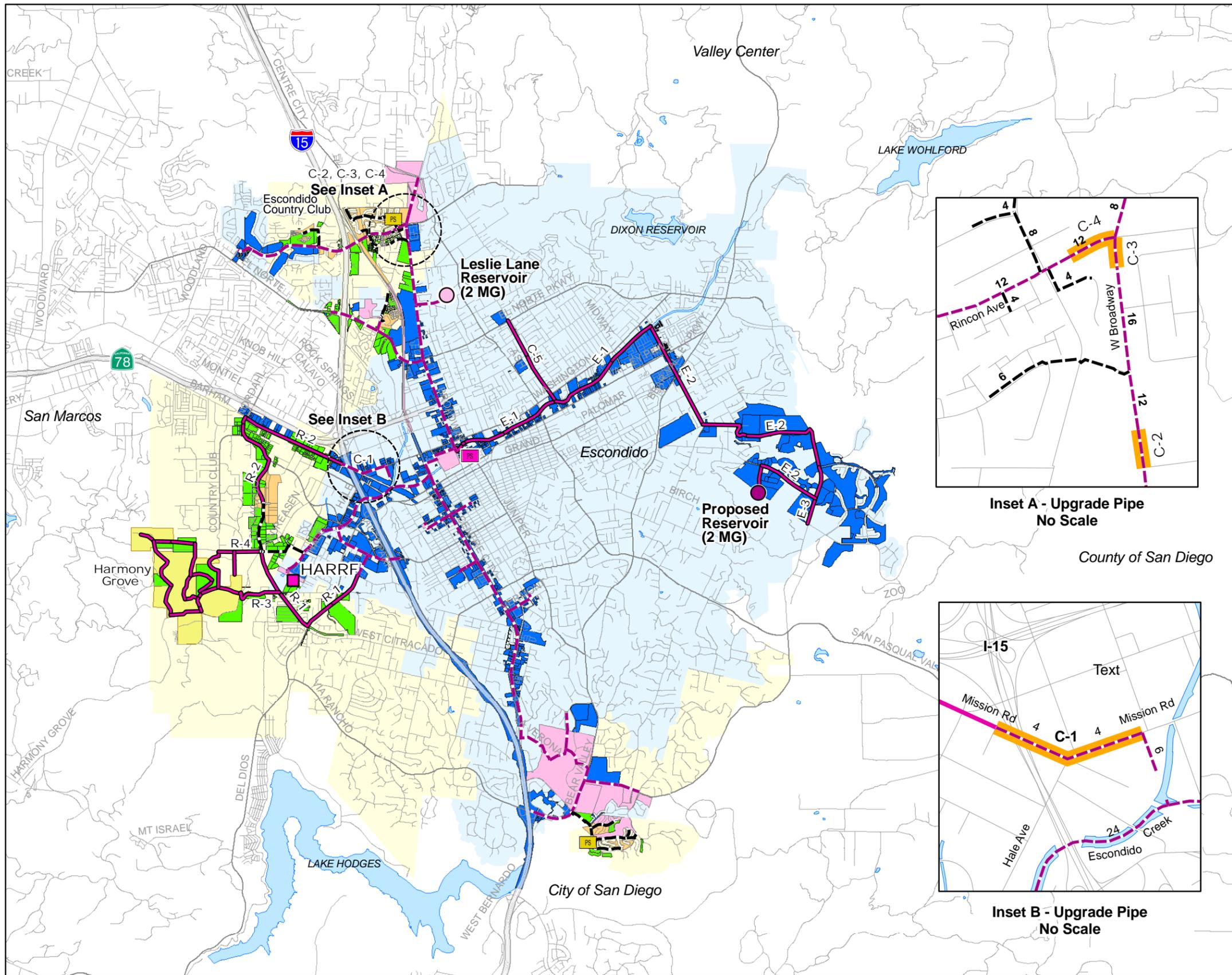
In this phase, it is assumed that the City does not add tertiary filter capacity. Therefore, the maximum demand that HARRF would be capable of providing is 9.0 MGD. Demands associated with a capacity of 9.0 MGD include:

- Existing demands
- Demands associated with the new hospital and the Harmony Grove development.
- Demands associated with potential users (parks, recreation, schools, golf courses, and rights-of-way), within 400 feet of the proposed pipe system
- Demands associated with existing potable meters currently used for irrigation, within 400 feet of the proposed pipe system
- Demands associated with users identified by land use assumptions within 400 feet of the proposed system.

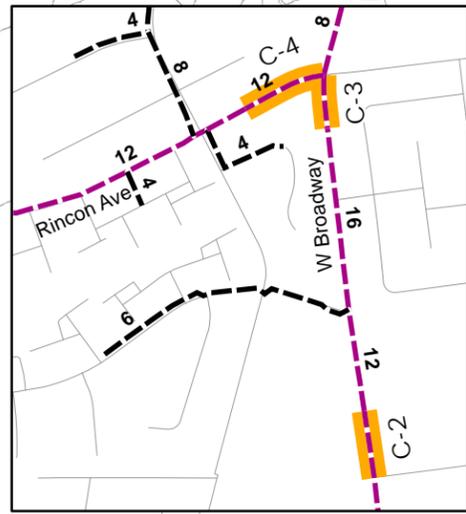
These users are illustrated in Figure 6-1, as well as proposed improvements. The distance from the proposed pipe system (400 feet) was determined through a process of trial and error in order to arrive at the maximum peak month capacity of 9.0 MGD. The inclusion of the large avocado customers located near Lake Dixon and the Wild Animal Park would result in a significantly greater peak month demand of 9.0 MGD. Their inclusion is delayed until Phase II.

To meet the Phase I demands, under the design criteria stated previously, the system will require additional storage. Because of the future proposed demands in the east, locating a large storage facility in that area will facilitate the provision of service to those users. Two areas were considered as part of this master plan: the cemetery area and the grove area located south of the cemetery. The elevations available were considered at both sites. Use of the avocado area allows for a ground storage tank at a higher elevation, minimizing the need for a repump facility at the storage site. For the purposes of this master plan, the storage facility will be assumed at the eastern avocado site.

The 24-inch pipe leaving the HARRF facility is also an area of concern. The current pipe is rated for 250 psi, and conveys recycled water through a developed area. Its replacement is considered cost prohibitive. To convey water to the extreme portions of the system, at pressure, would result in pressures in this pipe exceeding its rated capacity. Therefore, the proposed system assumes the inclusion of a booster station. Because the existing north-south backbone of the system operates within the acceptable design criteria, the booster station is placed downstream of the existing system, providing the necessary pressures to fill the remote eastern storage tank. This location effectively divided the proposed system into distinct zones: the eastern zone, the existing City zone and the Rincon zone located to the west.



- City of Escondido Water Service Area
- Rincon del Diablo MWD
- PS Existing Booster Pump Station
- HARRF
- Existing Reservoir
- Escondido Existing Pipe
- Rincon Existing Pipe
- Phase I Expansion**
- Existing City Customer
- Existing District Customer
- New City Customer
- New District Customer
- PS Proposed Booster Pump Station
- Proposed Reservoir
- Phase I Pipeline
- Phase I Pipeline Upgrade



**Inset A - Upgrade Pipe
No Scale**



**Inset B - Upgrade Pipe
No Scale**

See Table 6-4 for Phase I Improvement Project details.



**Proposed Recycled Water System
Phase I Expansion - 9 MGD**

Figure 6-1

Portions of the existing system, which function adequately under existing demands, would require upgrades to provide the demands associated with Phase I. These upgrades include the following projects:

- Project C-1⁷: Upgrade 2,700 feet adjacent to the north pressure sustaining valve from a 4-inch to 8-inch line.
- Project C-2: Upgrade 300 feet along the Centre City Parkway north of the Leslie Reservoir from a 12" to a 16" (This is a bottleneck in the existing system.)
- Project C-3: Upgrade 200 feet along the Centre City Parkway north of the Leslie Reservoir from a 12" to a 16" (This is a bottleneck in the existing system.)
- Project C-4: Upgrade 300 feet along Country Club north of the Leslie Reservoir from a 10" to a 12" (This is a bottleneck in the existing system.)

Table 6-4 provides the proposed improvements for this scenario.

Table 6-4 Future System Analysis – Phase I

Improvements	Total	Unit
Wastewater System		
Treatment/Augmentation	None	
Filters	None	
Effluent Pump Station	None	
Distribution System		
Additional Storage	2.5	MG
Booster Station downstream of north-south branch	1,720	gpm
Upgraded/Replaced Pipe		
Project C-1: 4" to 8"	2,700	LF
Project C-2: 12" to 16"	300	LF
Project C-3: 12" to 16"	200	LF
Project C-4: 10" to 16"	300	LF
New Pipe		
Project E-1: 24" main along Canal to Citrus Avenue	14,000	LF
Project E-2: 24" main south to eastern storage site	22,700	LF
Project E-3: 16" main south to Rockwood Road	1,500	LF
Project C-5: 8" main along Harding Street	5,400	LF
Rincon District Pipe		
Project R-1: 12" southern loop in Del Dios Highway	9,300	LF
Project R-2: 8" main along SR 78, south on Citracado	17,500	LF
Project R-3: 8" main along Avenida del Diablo	2,700	LF
Project R-4: 12" main along Kauana Loa to storage	1,800	LF

⁷ Projects are identified with an alpha-numeric code. The letter represents the zone (E= east, C= existing City area, R= Rincon)

In summary, this scenario does not require any major upgrades (although bottlenecks are removed as part of this phase) to the existing piping and pumping systems and will simply require extension of recycled water main and storage for the identified potential customers.

6.5 Phase II Expansion to 13.5 MGD Max Month Demands

In this Phase, 4.5 MGD of demands are added into the model, requiring pipe extensions. These demands include:

- All of the demands from Phase I
- The Wild Animal Park demands
- The demands associated with the avocado groves near Lake Dixon
- The demands associated with the avocado groves in the northeast portion of the study area
- Demands associated with potential users (parks, recreation, schools, golf courses, and rights-of-way), within 750 feet of the proposed pipe system
- Demands associated with existing potable meters currently used for irrigation, within 750 feet of the proposed pipe system
- Demands associated with users identified by land use assumptions within 750 feet of the proposed system.

To serve more than 9 MGD of recycled water during maximum day demand periods, HARRF will need additional tertiary filter capacity. In addition, the effluent pump station at HARRF will require upgraded pump capacity. It was assumed that the new pumps would meet similar head conditions as the existing pumps preventing system pressure to increase too dramatically over the existing pressures, which are at capacity. The two smaller pumps will be converted to dedicated service for the Semptra Power Plant.

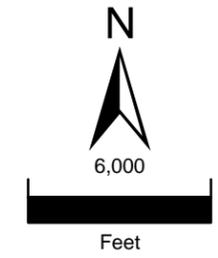
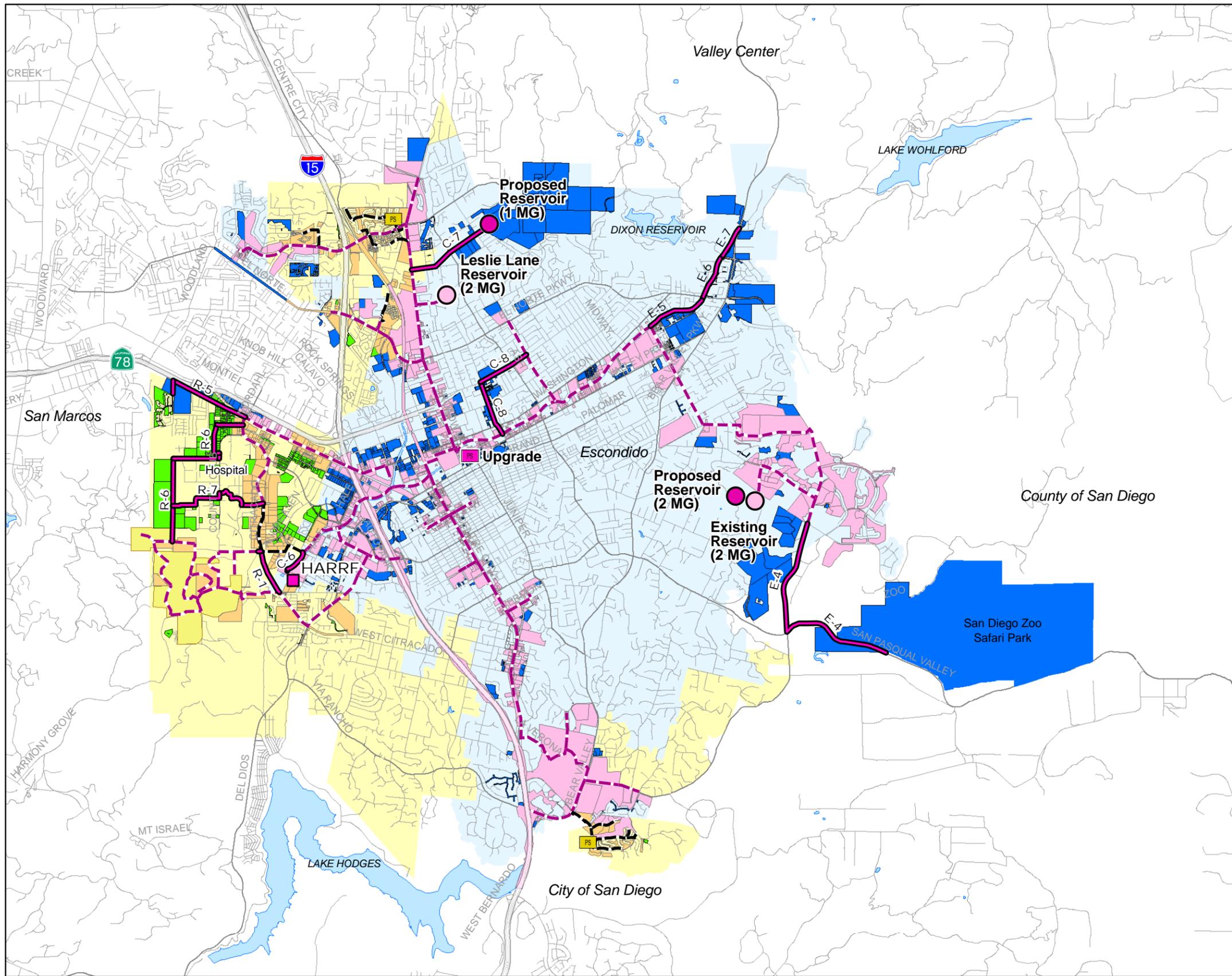
Similarly, the booster station installed as part of Phase I will need to be upgraded for additional demands.

Another 2.5 MG of storage will be added in the east to accommodate the additional demands associated with the expanded system. Because the Leslie Lane site is limited, 1 MG of additional storage for the main system will be located near the avocado groves located near Lake Dixon.

To avoid upgrading significant portions of the existing transmission main, the City may want to consider the following options:

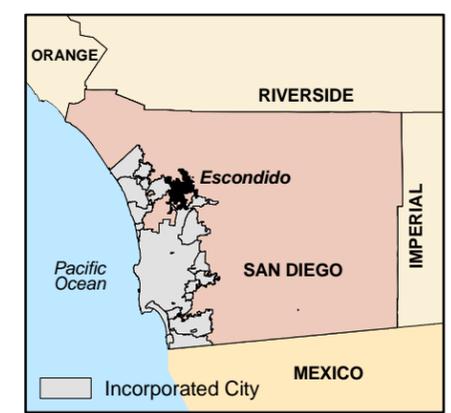
1. Replacing the existing pumps at HARRF with higher flow higher head pumps to reduce the drawdown of the proposed reservoir during peak day operations
2. Provide additional storage in RINCON Water District
3. A combination of the two

These improvements are illustrated in Figure 6-2 and presented in Table 6-5.



- City of Escondido Water Service Area
- Rincon del Diablo MWD
- Existing Reservoir
- Existing Booster Pump Station
- HARRF
- Escondido Existing Pipe
- Rincon Existing Pipe
- Phase II Expansion**
- Existing City Customer
- Existing District Customer
- New City Customer
- New District Customer
- Proposed Reservoir
- Proposed Booster Pump Station
- Phase II Pipeline

See Table 6-5 for Phase II Improvement Project details.



Proposed Recycled Water System Phase II Expansion - 13.5 MGD

Figure 6-2

Table 6-5 Future System Analysis – Phase II

Improvements	Total	Unit
Wastewater System		
Treatment/Augmentation	None	
Filters	4.5	MGD
Effluent Pump Station Upgrade	1	1,800 gpm
Distribution System		
Storage	3.5	MG
Upgraded Booster Station (from 1,720 gpm to 4,800 gpm in capacity)	3,080	gpm
New Pipe		
Project C-6: 16" dedicated Sempra main	1,400	LF
Project C-7: 16" main into north avocado groves and storage	5,500	LF
Project C-8: 8" main north from Canal, west on Fig to Harding	6,300	LF
Project E-4: 12" main to Wild Animal Park	12,900	LF
Project E-5: 24" main along Canal to Hidden Trails	3,700	LF
Project E-6: 12" along Canal to unnamed road to Lake Dixon Reservoir	7,600	LF
Project E-7: 12" main north to Lake Wohlford Road	1,800	LF
Rincon District Pipe		
Project R-5: 8" main extending east on SR 78	5,000	LF
Project R-6: 8" main south from SR 78 to Harmony Grove	11,100	LF
Project R-7: 8" main from Harveson, along Eden Valley	6,500	LF

6.6 Phase III Expansion to 18.0 MGD Max Month

This phase includes all demands within 4,000 feet of the existing and proposed pipe system. Demands beyond that distance are not considered viable as part of this phase.

Similarly, the current tertiary filters are limited to 9.0 MGD. An additional 9.0 MGD of filters would be required to meet the seasonal demand of 18.0 MGD.

This expansion requires the addition of two large pumps, similar to those in the effluent pump station now. The booster station will require an upgrade.

Additional distribution storage will be needed. This storage will be located at the eastern avocado site. Storage volume at the north avocado site remains the same. The District may choose to put in additional storage within the District, but it would not be considered operational storage for the City. Existing distribution system piping would need to be upgraded for the ultimate demands.

These improvements are enumerated on Table 6-6 and are illustrated in Figure 6-3. Additional extensions of pipelines to reach these customers who are more distant from the backbone distribution system are not listed in Table 6-6. These service pipelines would be considered as part of the retrofit improvements needed at individual sites or a group of sites.

Table 6-6 Future System Analysis – Phase III

Improvements	Total	Unit
Wastewater System		
Treatment/Augmentation	None	
Filters	4.5	MGD
Effluent Pump Station	2	1,800 gpm
Distribution System		
Storage	2.8	MG
Upgraded Booster Station (from 4,800 gpm to 7,500 gpm in capacity)	2,700	gpm
Upgrade/Replace Pipe		
Project C-9: replace 16" in Centre City Parkway with 24" to Leslie Reservoir	10,600	LF
Project C-10: replace 8" main around south PSV near HARRF	4,100	LF
Project C-11: replace 4" stub-out south on Centre City Parkway with 8"	1,900	LF

6.7 Maximizing Flow to Lake Dixon – Phase IV

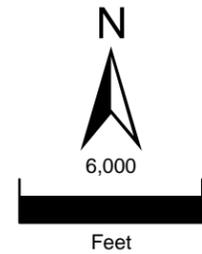
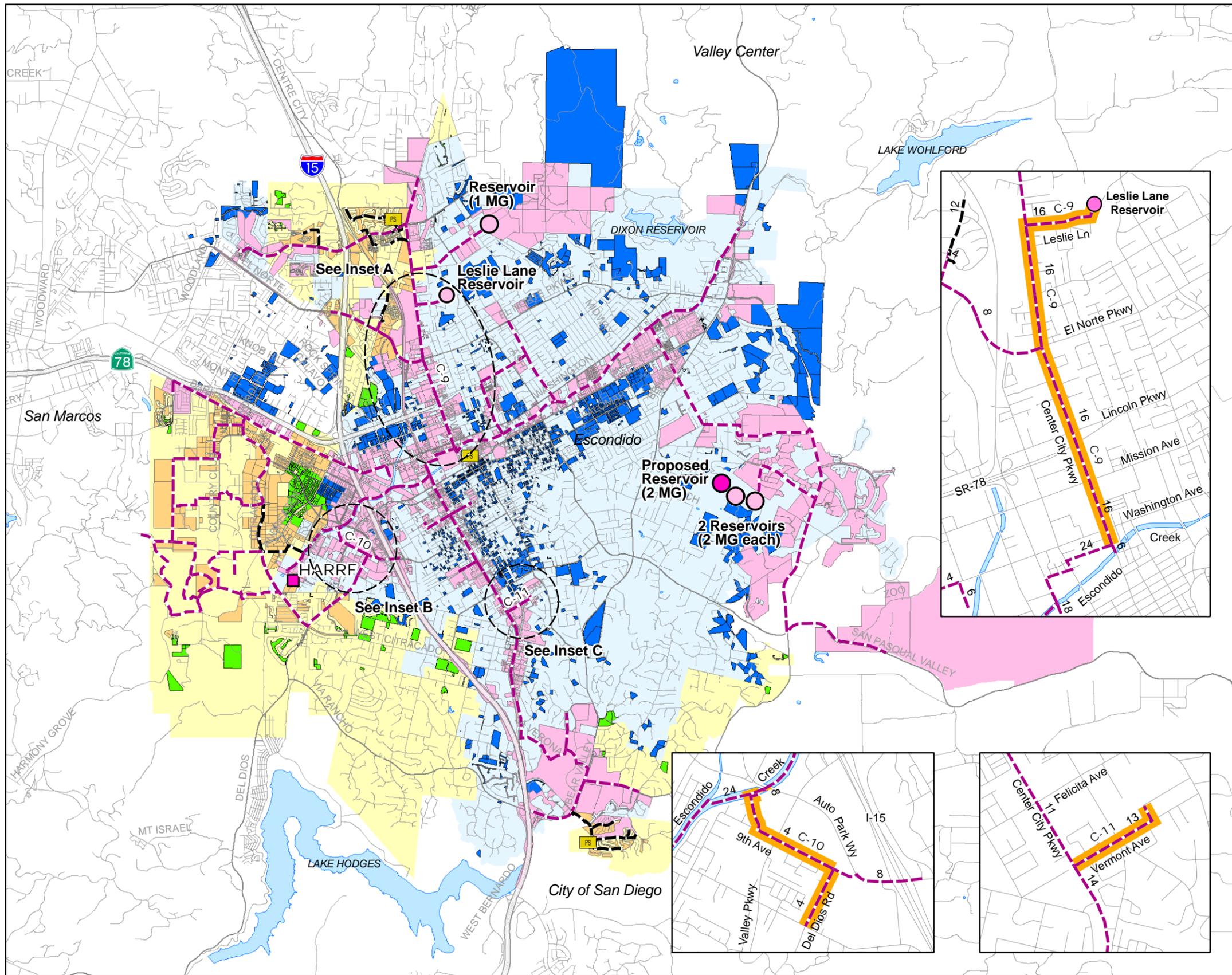
It is possible that highly treated wastewater could be used in the distant future as an indirect augmentation source for potable water; a process called indirect potable reuse (IPR). To maximize reuse of the City's wastewater, the Escondido City Council has endorsed the concept of IPR. City staff are investigating the regulatory requirements associated with this total reuse project. Such a project would require advanced treatment beyond Title 22 tertiary requirements currently available at HARRF.

For the purposes of this report, it is assumed that the recycled water provided to the Sempra power plant must continue (by regulation), which uses 2.57 MGD on an annual average, and that HARRF will continue to require its 0.20 MGD of process water for the operation of the plant. It is also assumed that the maximum wastewater treatment plant capacity is 18.0 MGD. Therefore, the amount remaining for possible augmentation is approximately 15 MGD.

The wastewater treatment plant would require an upgrade of its overall process to provide a level of treatment satisfactory to future permitting requirements. For the purposes of this report, it will be assumed that HARRF would have the ability to produce 18.0 MGD of tertiary treated water and that 15.0 MGD of advanced treatment will be necessary. The level of this treatment has not been determined and is not included in this report. The purpose of this phase is to size the pipelines associated with this potential recycled water use.

The system downstream of the filters (i.e. the effluent pumps station and beyond) can be configured in two ways. These two configurations are described below.

The effluent pump station would require the replacement of the two smaller pumps with two of the larger pumps. Because the power plant can receive flow over a 24-hour period, and it is assumed that Lake Dixon can also receive flow over a 24 hour time frame, the pumps are sized to pump all flow over 24 hours, without daily peaks.



- City of Escondido Water Service Area
- Rincon del Diablo MWD
- HARRF
- Existing Reservoir
- Existing Booster Pump Station
- Escondido Existing Pipe
- Rincon Existing Pipe
- Phase III Expansion**
- Existing City Customer
- Existing District Customer
- New City Customer
- New District Customer
- Proposed Reservoir
- Phase III Upgrade Pipeline

See Table 6-6 for Phase III Improvement Project details.



Proposed Recycled Water System Phase III Expansion - 18 MGD

Figure 6-3

The 24-inch line that discharges from HARRF will convey the advanced treated waters at a velocity of 8 fps, which is on the high end of the velocities per the City's design criteria. Given the cost of upsizing, this main transmission line, it is assumed that this velocity is acceptable.

A second, small booster station is assumed after the branch which conveys a portion of the flow to the Sempra power plant, to convey flow to Lake Dixon. This booster station minimizes the need to replace all the pumps at HARRF with higher head pumps. A booster station would be located near the eastern edge of the area to be redesigned for the proposed ball park (the same general location as that identified in Phase I).

The recycled water line to Lake Dixon is sized at a 24-inch diameter. Projects E-1 and E-5 (Phase II) are already sized for this scenario. Project E-6 would need to be a 24-inch main, rather than the 12-inch main identified as part of Phase II. Because this advanced treated water can be conveyed over the 24-hour period, no storage is required within the recycled water system. These improvements are listed in Table 6-7.

Table 6-7 Future System Analysis – Phase IV

Improvements	Total	Unit
Wastewater System		
Treatment/Augmentation	TBD	
Filters	0	MGD
Effluent Pump Station	2	2,100 gpm
Distribution System		
Storage	0	MG
Upgraded Booster Station (from 4,800 gpm to 7,500 gpm in capacity)	10,200	gpm
New Pipe – Project E-6: 24" along Canal to unnamed road to Lake Dixon Reservoir (Installed as a 12" in Phase II)	7,600	LF

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Section 7

Recommended System Improvements

This chapter presents a proposed Capital Improvement Program (CIP) based on the findings of this Master Plan. The Master Plan presents a multi-phase approach to the recycled water system, commencing with maximizing the provision of recycled water based on the existing tertiary treatment limitation at HARRF (9.0 MGD) through conveying all treated wastewater from HARRF to the Sempra power plant and Lake Dixon Reservoir for potential indirect potable water augmentation.

7.1 Development of Unit Costs

The unit cost estimates reflect full capitalization inclusive of planning, engineering design, environmental, legal, construction, construction management and contract administration. The values are presented in May 2011 dollars based on an anticipated ENR Construction Cost Index (ENR-CCI) of 10046 for the Los Angeles/Orange County area. These estimates are based on representative available data at the time of this report; however, since prices of materials and labor fluctuate over time, new estimates should be obtained at or near the time of construction of proposed facilities.

Many of the City's projects, especially pipelines, require public involvement, traffic control, utility re-locations, and paving replacement through populated areas, and accordingly have fairly high unit costs. Since some of the pipeline projects are relatively short in distance, a scaling factor has been included to address the economy of scale of constructing smaller scale projects. These are identified within each table.

7.1.1 Pipelines

Base unit costs for pipeline material and installation including repaving and system appurtenances that, collectively, constitute principal elements of the recycled water distribution and wastewater collection system facilities, are presented in Table 7-1. A base unit cost has been provided for recycled water mains.

Table 7-1 Pipeline Unit Costs

Diameter (inches)	Recycled Water (\$/LF)
8	200
12	300
16	400
24	600
36	900

The unit costs provided above reflect an average cost for full capitalization inclusive of planning, engineering design, environmental, legal, construction, construction management and contract administration.

7.1.2 Booster Pump Stations

The costs for a new pump station typically include the pump station building and landscaping, pumps and motors, miscellaneous piping and valving, instrumentation, controls, engineering design, environmental, legal, construction, construction management and contract administration.

Unit costs for a new booster pump station were estimated to be approximately \$1,000 per gpm. Unit costs for upgraded pump stations that required pump replacement and electrical/control upgrades (such as at HARRF) were estimated to be \$500 per gpm. This assumes no retrofit of the building itself is required to accommodate the new pumps.

7.1.3 Storage Tanks

The cost for storage tanks is based on total capacity and includes planning, engineering design, environmental, legal, construction, limited site work, yard piping, valving, fencing and landscaping, construction management and contract administration. The unit cost for a new reservoir is assumed to be \$1.26 per gallon.

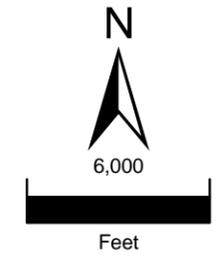
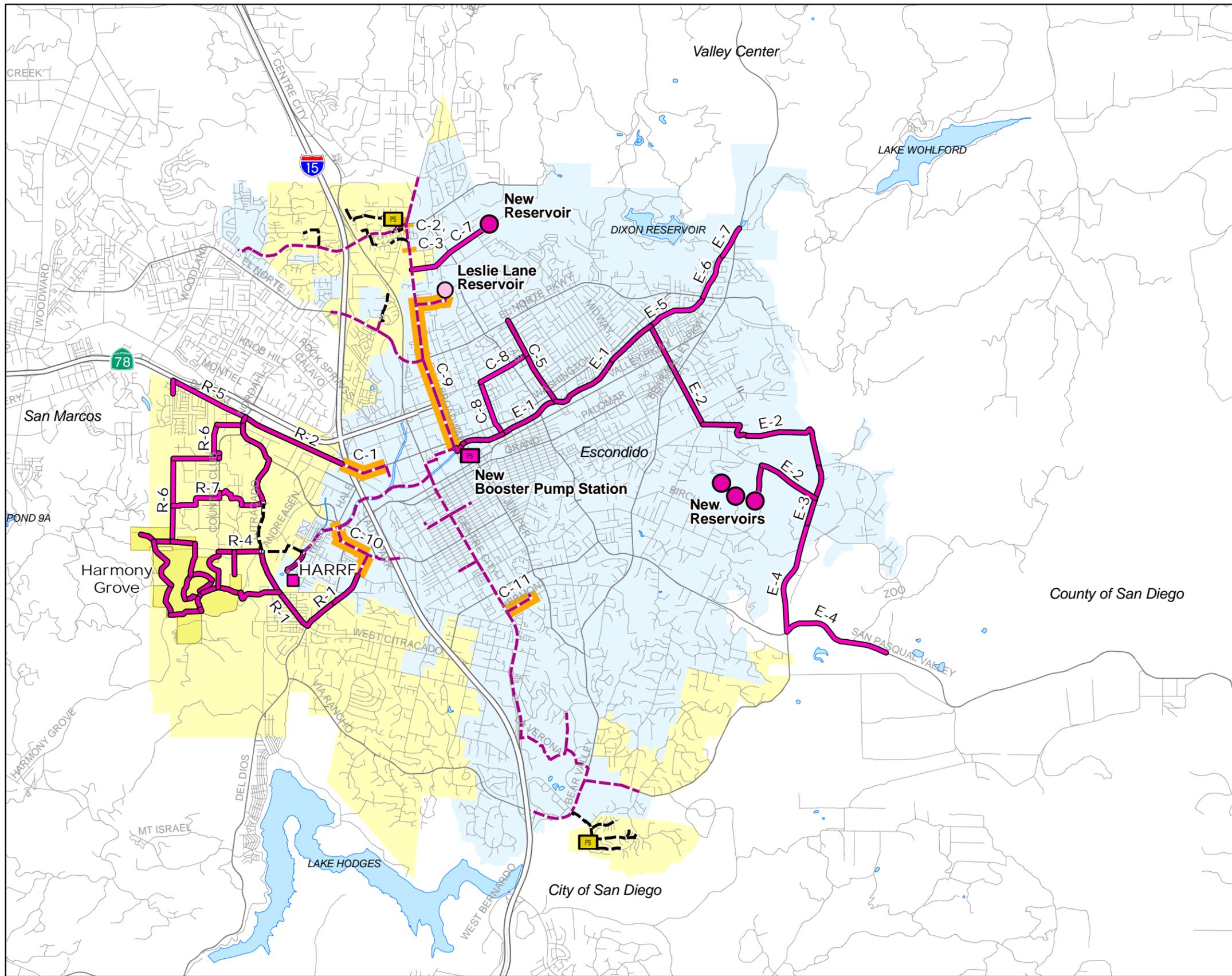
7.2 Project Descriptions and Phasing

The recycled water master plan proposes a set of projects that build on previously completed portions of the system, minimizing the need to replace undersized pipes as much as possible by placing ultimately sized pipes in the earliest phases, where practical. Improvements associated with Phases I through III are shown on Figure 7-1.

7.2.1 Phase I – 9.0 MGD system

In this phase, it is assumed that the City does not add tertiary filter capacity. Therefore, the maximum demand that HARRF would be capable of providing is 9.0 MGD. Demands associated with a capacity of 9.0 MGD include:

- Existing demands
- Demands associated with the new hospital and the Harmony Grove development.
- Demands associated with potential users (parks, recreation, schools, golf courses, and rights-of-way), within 400 feet of the proposed pipe system
- Demands associated with existing potable meters currently used for irrigation, within 400 feet of the proposed pipe system
- Demands associated with users identified by land use assumptions within 400 feet of the proposed system



- City of Escondido Water Service Area
- Rincon del Diablo MWD
- Escondido Existing Pipe
- Rincon Existing Pipe
- Existing Reservoir
- Existing Booster Pump Station
- HARRF
- Proposed Reservoir
- Proposed Booster Pump Station
- Proposed Pipeline
- Upgrade Pipeline

See Tables in Chapter 7 for Improvement Project details.



Escondido
Recycled Water Master Plan
Improvements

Figure 7-1

Storage is sized to allow ease of expansion going forward. For example, ultimately, the eastern avocado site will have approximately 6.2 MGD of storage. For the CIP, it is assumed that the required storage is built in three 2.0 million gallon phases.

Table 7-2 Phase I Improvement Costs – 9.0 MGD Demand

Improvements	Total	Unit	Unit Cost	Total
Wastewater System				
Treatment/Augmentation	None			
Filters	None			
Effluent Pump Station	None			
Distribution System				
Additional Storage				
Eastern System	2.0	MG	\$1,260,000	\$2,520,000
Booster Station	1,720	GPM	\$1,000	\$1,720,000
Upgrade to existing pipe				
Project C-1 (4" to 8")	2,700	LF	\$200 ⁽¹⁾	\$594,000
Resolve bottlenecks				
Project C-2 (12" to 16")	300	LF	\$400 ⁽¹⁾	\$132,000
Project C-3 (12" to 16")	200	LF	\$400 ⁽¹⁾	\$88,000
Project C-4 (10" to 12")	300	LF	\$300 ⁽¹⁾	\$99,000
New pipe				
Project E-1: 24" main along Canal to Citrus Avenue	14,000	LF	\$600	\$8,400,000
Project E-2: 24" main south to eastern storage site	22,700	LF	\$600	\$13,620,000
Project E-3: 16" main south to Rockwood Road	1,500	LF	\$400	\$600,000
Project C-5: 8" main along Harding Street	5,400	LF	\$220 ⁽¹⁾	\$1,188,000
Total Phase I				\$29,843,000
Rincon District Pipe				
Project R-1: 12" southern loop in Del Dios Highway	9,300	LF	\$300	\$2,790,000
Project R-2: 8" main along SR 78, south on Citracado	17,500	LF	\$200	\$3,500,000
Project R-3: 8" main along Avenida del Diablo	2,700	LF	\$200	\$540,000
Project R-4: 12" main along Kauana Loa to storage	1,800	LF	\$300	\$540,000
Total Rincon District Pipe				\$7,370,000

⁽¹⁾ Project in a populated, established area. Factor of 1.1 added to unit price.

When considering the Phase I projects, there are projects that should be completed together. For example, Projects E-1 and E-2 include the 24" recycled water main that extends from the existing system to the eastern storage. These two projects, coupled with the storage and booster station, would need to be implemented at the same time.

Project E-3, however, is an extension that facilitates service to the Eagle Crest golf course. It can be constructed after the construction of the E-1 and E-2 lines. Similarly, Project C-5 is an extension in the middle of the City, and can also be delayed until after the construction of the main backbone system.

7.2.2 Phase II – 13.5 MGD system

In this Phase, 4.5 MGD of demands are added into the model, requiring pipe extensions. The demands for Phase II include:

- All of the demands from Phase I
- The Wild Animal Park demands
- Demands associated with the avocado groves near Lake Dixon
- Demands associated with the avocado groves in the northeast portion of the study area
- Demands associated with potential users (parks, recreation, schools, golf courses, and rights-of-way), within 750 feet of the proposed pipe system
- Demands associated with existing potable meters currently used for irrigation, within 750 feet of the proposed pipe system
- Demands associated with users identified by land use assumptions within 750 feet of the proposed system

Table 7-3 Phase II Improvement Costs – 13.5 MGD Demand

Improvements	Total	Unit	Unit Cost	Total
Wastewater System				
Treatment/Augmentation	None			
Filters	4.5	MGD	\$1,950,000	\$8,775,000
Effluent Pump Station (1 additional pump)	1,800	GPM	\$500	\$900,000
Distribution System				
Additional Storage				
Eastern System	2.0	MG	\$1,260,000	\$2,520,000
North Avocado Storage	1.5	MG	\$1,260,000	\$1,890,000
Booster Station	3,080	GPM	\$500	\$1,540,000
New Pipe				
Project C-6: 16" dedicated Sempra main	1,400	LF	\$440 ⁽¹⁾	\$616,000
Project C-7: 16" main into north avocado groves and storage	5,500	LF	\$400	\$2,200,000
Project C-8: 8" main north from Canal, west on Fig to Harding	6,300	LF	\$220 ⁽¹⁾	\$1,386,000
Project E-4: 12" main to Wild Animal Park	12,900	LF	\$300	\$3,870,000
Project E-5: 24" main along Canal to Hidden Trails	3,700	LF	\$600	\$2,220,000
Project E-6: 12" along Canal to unnamed road to Lake Dixon Reservoir	7,600	LF	\$300	\$2,280,000
Project E-7: 12" main north to Lake Wohlford Road	1,800	LF	\$300	\$540,000
Subtotal Phase II				\$28,737,000
Rincon District Pipe				
Project R-5: 8" main extending east on SR 78	5,000	LF	\$200	\$1,000,000
Project R-6: 8" main south from SR 78 to Harmony Grove	11,100	LF	\$200	\$2,220,000
Project R-7: 8" main from Harveson, along Eden Valley	6,500	LF	\$200	\$1,300,000
Total Rincon District Pipe				\$4,520,000

⁽¹⁾ Project in a populated, established area. Factor of 1.1 added to unit price.

Similar to Phase I, there are projects in Phase II that can lag the main projects. For example, Project C-7 and the north avocado storage should be built together as one project, at anytime during the Phase II period. Similarly, Projects E-5, E-6 and E-7 can be built together as one project, to serve the northeast avocado areas.

7.2.3 Phase III – 18.0 MGD System

In this phase, the demands identified in Section 3 are incorporated into the system, except those that were identified as too far from an existing or proposed recycled water main to be cost effectively served.

The current tertiary filters are limited to 9.0 MGD. Phase II added 4.5 MGD of filter capacity. An additional 4.5 MGD of filters would be required as part of this phase.

The effluent pump station would need to have additional capacity added. Total storage at the eastern groves would need 6.1 MG. Portions of the backbone of the system would need to be upsized, as noted below in Table 7-4. Additional extensions of pipelines to reach these more distant customers are not enumerated. These service pipelines would be considered as part of the retrofit cost for those sites or for a group of sites.

Table 7-4 Phase III Improvements Costs – 18.0 MGD Demand

Improvements	Total	Unit	Unit Cost	Total
Wastewater System				
Treatment/Augmentation	None			
Filters	4.5	MGD	\$1,950,000	\$8,775,000
Effluent Pump Station (2 additional pump)	3,307	GPM	\$500	\$1,653,500
Distribution System				
Additional Storage				
Eastern System	2.1	MG	\$ 1,260,000	\$2,646,000
Upgrade to existing pipe				
Project C-9 replace 16" in Centre City Parkway with 24" to Leslie Reservoir	10,600	LF	\$660 ⁽¹⁾	\$6,996,000
Project C-10 replace 8" main around south PSV near HARRF	4,100	LF	\$440 ⁽¹⁾	\$1,804,000
Project C-11 Replace 4" stub-out south on Centre City Parkway with 8"	1,900	LF	\$220 ⁽¹⁾	\$418,000
Total Phase III				\$22,292,500

⁽¹⁾ Project in a populated, established area. Factor of 1.1 added to unit price.

7.2.4 Phase IV – Maximizing Flow to Lake Dixon (18.0 MGD)

This phase uses as much highly treated wastewater as possible as an indirect potable water source to Lake Dixon. The recycled water provided to the Sempra power plant must continue (by regulation) and that HARRF will continue to require its 0.200 MGD of process water for the operation of the plant. The amount available for possible augmentation during the peak condition is 14.7 MGD, or 10,200 gpm.

The wastewater treatment plant would require an upgrade of its overall process to provide a level of treatment satisfactory to future permitting requirements. For the purposes of this report, it will be assumed that a second train of filters is added to provide 18.0 MGD of tertiary treatment, and that 18.0 MGD of additional treatment will be necessary. The level of this treatment has not been determined.

The effluent pump station would require the replacement of the two smaller pumps with three of the larger pumps and the additional of two additional large pumps to convey the total flow. Because the power plant can receive flow over a 24-hour period, and it is assumed that Lake Dixon can also receive flow over a 24 hour time frame, the pumps are sized to pump all flow over 24 hours, without daily peaks. Further, the pump station is sized to provide one additional pump, so that 7 pumps are operating and one is on stand-by; allowing a pump to “rest” for 1/8 of the total time.

The 24-inch line that discharges from HARRF will have a velocity of 8 fps, which is on the high end of the velocities assumed acceptable as part of this report. It will be assumed that this is acceptable.

A second, small booster station is assumed after the branch which conveys a portion of the flow to the Sempra power plant, to convey flow to Lake Dixon. This booster station minimizes the need to replace all the pumps at HARRF with higher head pumps. It is also generally needed to convey the flow up into the reservoir. It has been placed in the area of the ball field, where it is assumed that it can be landscaped into the overall project plan. An alternative location would be at the foot of the hill immediately below Lake Dixon.

Because this advanced treated water can be conveyed over the 24-hour period, no storage is required within the system.

Table 7-5 Phase IV Improvement Costs – Maximizing Flow to Lake Dixon

Improvements	Total	Unit	Unit Cost	Total
Wastewater System				
Treatment/Augmentation	18	MGD	TBD	
Filters	9	MGD	TBD	
Effluent Pump Station (2 new pumps)	4,144	GPM	\$500	\$2,072,000
Distribution System				
Project E-6: 24" along Canal to unnamed road to Lake Dixon Reservoir	7,600	LF	\$600	\$4,560,000
Total Phase IV				\$6,632,000 plus cost of Advanced Treatment

APPENDIX A

Order Number R9-2010-0032



California Regional Water Quality Control Board San Diego Region



Linda S. Adams
Secretary for
Environmental Protection

Over 50 Years Serving San Diego, Orange, and Riverside Counties
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ORDER NO. R9-2010-0032

WASTE DISCHARGE REQUIREMENTS AND MASTER RECLAMATION PERMIT FOR THE CITY OF ESCONDIDO, HALE AVENUE RESOURCE RECOVERY FACILITY

The City of Escondido is subject to waste discharge requirements as set forth in this Order:

Table 1. Discharger Information

Discharger	City of Escondido
Name of Facility	Hale Avenue Resource Recovery Facility (HARRF)
Facility Address	1521 S. Hale Avenue
	Escondido, CA 92029
	San Diego County

The discharge by the City of Escondido from the discharge points identified below is subject to waste discharge requirements as set forth in this Order:

Table 2. Discharge Location

Discharge Point	Effluent Description	Hydrologic Area of Discharge
Recycled Water Service Area	Disinfected Tertiary Recycled Water	Escondido (HSA 904.62), Del Dios (HSA 905.21), Felicita (HSA 905.23), eastern 2,100 acres of Richland (HSA 904.52)

Table 3. Administrative Information

This Order was adopted by the California Regional Water Quality Control Board, San Diego Region and is effective on:	July 14, 2010
--	---------------

I, David W. Gibson, Executive Officer, do hereby certify that this Order with all attachments is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Diego Region, on July 14, 2010.

Executive Officer David W. Gibson

Table of Contents

I.	Facility Information	4
II.	Findings.....	5
III.	Discharge Prohibitions.....	8
IV.	Effluent Limitations and Discharge Specifications	9
	A. Effluent Limitations – Discharge Point Recycled Water Service	9
V.	Provisions	11
	A. Standard Provisions.....	11
	B. Monitoring and Reporting Program (MRP) Requirements	16
	C. Special Provisions.....	16
	1. Facility Design and Operation Specifications.....	16
	2. Reclamation Specifications.....	18
	3. Notifications	20

List of Tables

Table 1.	Discharger Information	1
Table 2.	Discharge Location.....	1
Table 3.	Administrative Information	1
Table 4.	Facility Information	4
Table 5.	Basin Plan Beneficial Uses.....	6
Table 6.	Effluent Limitations	9

List of Attachments

Attachment A – Map A-1
Attachment B – Flow Schematic..... B-1
Attachment C – Monitoring and Reporting Program C-1
Attachment D – Information Sheet..... D-1
Attachment E – Rules and Regulations for Recycled Water Use E-1

I. FACILITY INFORMATION

The following Discharger is subject to waste discharge requirements as set forth in this Order:

Table 4. Facility Information

Discharger	City of Escondido
Name of Facility	Hale Avenue Resource Recovery Facility (HARRF)
Facility Address	1521 S. Hale Avenue
	Escondido, CA 92029
	San Diego County
Facility Contact, Title, and Phone	John Burcham, Deputy Utilities Manager (760) 839-6273
Mailing Address	1521 S. Hale Avenue, Escondido, CA 92029
Type of Facility	Domestic/Municipal Wastewater Recycling
Facility Design Flow	9 million gallons per day (recycled portion)

II. FINDINGS

The California Regional Water Quality Control Board, San Diego Region (hereinafter San Diego Water Board), finds:

A. Background. The City of Escondido (hereinafter Discharger) is currently discharging recycled water pursuant to Order No. 93-70 and Addendum No. 1 thereto. The Discharger submitted a Report of Waste Discharge, dated January 30, 2003, and applied for revised waste discharge requirements to discharge up to 9 million gallons per day (mgd) of disinfected tertiary treated wastewater from the Hale Avenue Resource Recovery Facility (hereinafter Facility). The application was deemed complete on January 29, 2010.

For the purposes of this Order, references to the “discharger” in applicable state laws, regulations, plans, or policy are held to be equivalent to references to the Discharger herein.

B. Waste Description. The Facility treats residential, commercial, and industrial wastewater from the City of Escondido, and a portion of the community of Rancho Bernardo within the City of San Diego. The discharge of wastewater could affect the quality of the waters of the state.

C. Facility Description. The Discharger owns and operates the domestic and municipal wastewater recycling facility. Primary and secondary treatment occurs through mechanically cleaned bar screens, cyclonic grit chambers, primary clarifiers, fixed fine-bubble aeration basins, and secondary clarifiers. Associated solids handling occurs through dissolved air flotation thickeners, primary and secondary anaerobic digesters, centrifuge dewatering units, and an odor control system. Tertiary treatment occurs through chemical coagulation and flocculation, monomedia continuous backwash upflow filtration, and ultraviolet disinfection and/or chlorination. Screened solids are trucked to a landfill and dewatered sludge is trucked offsite for land application. Recycled water that is not reused will be dechlorinated as needed and discharged to the San Elijo Ocean Outfall. The discharge from the Facility to San Elijo Ocean Outfall is separately regulated under Order No. R9-2005-0101 (NPDES CA0107981). Attachment A provides a map of the area around the facility. Attachment B provides a flow schematic of the facility.

D. Legal Authorities. This Order is issued pursuant to sections 13263 and 13523 of the California Water Code. This Order serves as Waste Discharge Requirements (WDRs) and a Master Reclamation Permit pursuant to Article 4, Chapter 4, Division 7 of the Water Code.

E. Background and Rationale for Requirements. The San Diego Water Board developed the requirements in this Order based on information submitted as part of the Report of Waste Discharge, through monitoring and reporting programs, and other available information. The Information Sheet (Attachment D), which contains background information and rationale for Order requirements, is hereby incorporated

into this Order and constitutes part of the Findings for this Order. Attachments A through E are also incorporated into this Order.

F. California Environmental Quality Act. This project involves requirements for existing waste treatment facilities. As such, this project is categorically exempt from the requirements of the California Environmental Quality Act (CEQA) as provided by Section 15301, and in compliance with Section 15300.2, of California Code of Regulations Title 14. In addition the Discharger certified a final Environmental Impact Report for this project in June 1992 in accordance with the CEQA (Public Resources Code section 21000, et seq.). The project identified no significant groundwater impact.

G. Technology-based Effluent Limitations. The discharge from the Facility to San Elijo Ocean Outfall is separately regulated under Order No. R9-2005-0101 (NPDES CA0107981). The National Pollutant Discharge Elimination System (NPDES) permit includes the minimum federal technology-based requirements.

H. Water Quality-Based Effluent Limitations. Section 13263 of the Water Code requires that waste discharge requirements implement the water quality control plans that have been adopted, taking into consideration the beneficial uses to be protected and the water quality objectives reasonably required for that purpose.

I. Health Based Effluent Limitations. California Code of Regulations (CCR) Title 22 Division 4, Chapter 3 establishes water recycling criteria. The recycled water will meet the CCR Title 22 section 60301.230 definition for “disinfected tertiary recycled water,” which is suitable for all uses of recycled water, as described in CCR Title 22 sections 60304-60307.

J. Water Quality Control Plans. The San Diego Water Board adopted a *Water Quality Control Plan for the San Diego Basin* (hereinafter Basin Plan) on September 8, 1994 that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. In addition, the Basin Plan implements State Water Resources Control Board (State Water Board) Resolution No. 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply. Beneficial uses apply to recycled water service areas in the Escondido hydrologic subarea (HSA) 904.62 of Escondido hydrologic area (HA) 904.6, and the eastern approximately 2,100 acres of Richland HSA 904.52 of San Marcos HA 904.5, each of Carlsbad hydrologic unit (HU) 904; and Del Dios HSA 905.21 and Felicita HSA 905.23, each of Hodges HA 905.2 of San Dieguito HU 905. The beneficial uses are municipal and domestic supply, agricultural supply, and industrial service supply.

Table 5. Basin Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
Recycled Water Service Area	Escondido (904.62), Del Dios (905.21), Felicita (905.23), and the eastern 2,100 acres of Richland (904.52)	Municipal and domestic water supply (MUN), agricultural supply (AGR), and industrial service supply (IND).

Requirements of this Order implement the Basin Plan.

- K. Recycled Water Policy.** The State Water Board established the Recycled Water Policy in Resolution No. 2009-0011. The Recycled Water Policy establishes criteria for recycled water projects and waste discharge requirements. The intent of the Policy is to increase recycled water use, streamline regulation for appropriate projects, and manage salt and nutrients on a basin-wide approach. This Order is consistent with the intent and requirements of the Recycled Water Policy.
- L. Antidegradation Policy.** The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 requires that existing quality of waters be maintained unless degradation is justified based on specific findings. The San Diego Water Board's Basin Plan implements, and incorporates by reference, both the state and federal antidegradation policies. As discussed in detail in the Information Sheet, the discharge described in this Order is consistent with State Water Board Resolution No. 68-16.
- M. Monitoring and Reporting.** Water Code sections 13267 authorizes the San Diego Water Board to require technical and monitoring reports. The Monitoring and Reporting Program (Attachment C) establishes monitoring and reporting requirements to implement state requirements. Additional information is provided in the Information Sheet (Attachment D)
- N. Standard and Special Provisions.** Standard Provisions apply to all WDRs. The standard provisions contain language the San Diego Water Board finds necessary to ensure the Order is enforced, the facility is designed and operated for the protection of human health, records are maintained, and changes are reported. The Discharger must comply with all standard provisions.
- O. Biosolids Treatment, Transport, and Disposal.** The biosolids requirements for handling, treatment, use, management, and disposal of sludge and solids derived from wastewater treatment at the Facility are separately regulated under Order No. R9-2005-0101 (NPDES CA0107981).
- P. Notification of Interested Persons.** The San Diego Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe Waste Discharge Requirements as the Master Reclamation Permit in this Order for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Details of the notification are provided in the Information Sheet of this Order.
- Q. Consideration of Public Comment.** The San Diego Water Board, in a public meeting, heard and considered all comments pertaining to the discharge. Details of the Public Hearing are provided in the Information Sheet of this Order.

THEREFORE, IT IS HEREBY ORDERED, that Order No. 93-70 is rescinded upon the effective date of this Order except for enforcement purposes, and, in order to meet the provisions contained in Division 7 of the Water Code (commencing with section 13000) and regulations adopted thereunder, the Discharger shall comply with the requirements in this Order.

III. DISCHARGE PROHIBITIONS

- A. Discharge of waste, other than incidental runoff, to lands which have not been specifically described in the Order, and for which valid waste discharge requirements and *Rules and Regulations for Recycled Water Users* are not in force are prohibited.
- B. Discharges of treated or untreated solid or liquid waste to a navigable water or tributary of a navigable water are prohibited unless as authorized by an NPDES permit issued by the San Diego Water Board.
- C. The treatment, storage, or disposal of waste in a manner that creates a pollution, contamination or nuisance, as defined by Water Code section 13050, is prohibited.
- D. Total recycled water effluent flow from the tertiary treatment process at the Facility in excess of 9.0 mgd is prohibited unless authorized by Order No. R9-2005-0101 (NPDES CA0107981) including revisions thereto.

IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations – Discharge Point Recycled Water Service

The Discharger shall maintain compliance with the following effluent limitations at Discharge Point- Recycled Water Service, with compliance measured at Monitoring Locations RWS-001, RWS-002, RWS-003, and RWS-004 as described in the attached MRP.

1. Effluent Limitations

Table 6. Effluent Limitations

Constituent	12-Month Average ¹ (milligrams per Liter (mg/L) or as noted)
Chlorine Residual	See Specification A.2.a
Chlorine-Contact Time (CT)	See Specification A.2.a
Total Coliform Bacteria ^c	See Specification A.2.b
Turbidity (TURB)	See Specification A.2.c
Total Dissolved Solids (TDS)	1,000
Chloride (Cl)	300
Sulfate (SO ₄)	350
Percent Sodium (% Na)	60%
Iron (Fe)	0.50
Manganese (Mn)	0.20
Methylene Blue- Activated Substances (MBAS)	0.5
Boron (B)	0.75
Odor	N/A
Color	15 units
Fluoride (F)	2.0
Aluminum	1
Arsenic	0.05
Antimony	0.006
Asbestos	7 million fibers per liter
Barium	1
Beryllium	0.004
Cadmium	0.005
Cyanide	0.2
Mercury	0.002
Nickel	0.1
Perchlorate	0.006
Selenium	0.05

Constituent	12-Month Average ¹ (milligrams per Liter (mg/L) or as noted)
Thallium	0.002
¹ The 12-month average effluent limitation shall apply to the arithmetic mean of the results of all samples collected during any 12 consecutive calendar month period.	

2. Title 22 Specifications

Recycled water effluent from the Facility shall meet the definition of “disinfected tertiary recycled water” in CCR Title 22 section 60301.230 and “filtered wastewater” in section 60301.320. These definitions are incorporated by reference, prospective including future changes to the incorporated provisions as the changes take effect.

- a. The chlorine disinfection process must provide a chlorine contact time (CT; the product of total chlorine residual and modal contact time measured at the same point) value of not less than 450 milligram-minutes per liter at all times with a modal contact time of at least 90 minutes, based on peak dry weather design flow.
- b. The median concentration of total coliform bacteria measured in the disinfected recycled water effluent from the Facility shall not exceed a Most Probable Number (MPN) of 2.2 per 100 milliliters, utilizing the bacteriological results of the last seven days for which analyses have been completed; and the number of total coliform bacteria shall not exceed a MPN of 23 per 100 milliliters in more than one sample in any 30-day period. No sample shall exceed a MPN of 240 total coliform bacteria per 100 milliliters.
- c. Turbidity measurement of the recycled water effluent from the Facility shall not exceed a daily average value of 2 NTU, shall not exceed 5 NTU more than 5% of the time during a 24-hour period, and shall not exceed 10 NTU at any time.

V. PROVISIONS

A. Standard Provisions

The Discharger shall comply with all following Standard Provisions:

- 1.** The San Diego Water Board may initiate enforcement action against the Discharger, which may result in the termination of the recycled water discharge, if any person uses, transports, or stores such water in a manner which creates, or threatens to create conditions of pollution, contamination, or nuisance, as defined in Water Code section 13050.
- 2.** The Discharger must comply with all conditions of this Order. Any noncompliance with this Order constitutes a violation of the Water Code and is grounds for (a) enforcement action; (b) termination, revocation and reissuance, or modification of this Order; or (c) denial of a report of waste discharge in application for new or revised master reclamation permit requirements.
- 3.** The Discharger shall allow the San Diego Water Board, or an authorized representative, upon the presentation of credentials and other documents as may be required by law to do the following:
 - a.** Enter upon the Discharger's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this Order,
 - b.** Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order,
 - c.** Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices or operations regulated or required under this Order, and
 - d.** Sample or monitor, at reasonable times for the purposes of assuring compliance with this Order or as otherwise authorized by the Water Code, any substances or parameters at any location.
- 4.** The Water Code provides that any person who intentionally or negligently discharges waste in violation of any Order issued, reissued, or amended by the San Diego Water Board shall be liable civilly in accordance with Water Code section 13350.
- 5.** The Water Code provides that any person failing or refusing to furnish technical or monitoring program reports, as required under this Order, or falsifying any information provided in the monitoring reports is guilty of a misdemeanor and is subject to a civil liability in accordance with Water Code section 13268.

- 6.** The Discharger shall report any noncompliance that may endanger health or the environment. Pursuant to section 5411.5 of the California Health and Safety Code, any sewage overflow or spill shall be immediately reported to the Director of Environmental Health, County of San Diego. In addition, any such information shall be provided orally to the San Diego Water Board within 24 hours from the time the Discharger becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the Discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected; the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. The San Diego Water Board may waive the written report on a case-by-case basis if the oral report has been received within 24 hours. The following occurrence(s) must be reported to the San Diego Water Board within 24 hours:

 - a.** Any bypass from any portion of the treatment facility.
 - b.** Any discharge of treated or untreated wastewater resulting from sewer line breaks, obstruction, surcharge, or any other circumstances.
 - c.** Any treatment plant upset which causes the discharge specifications of this Order to be exceeded;
 - d.** Failure of disinfection system; and
 - e.** Effluent total coliform bacteria greater than 240 MPN/100 mL.
- 7.** The Discharger shall report all overflow events that occur at the Facility. For purposes of this reporting requirement, an overflow event is defined as a discharge of treated or untreated wastewater at a location onsite or other lands owned by the Discharger not authorized by waste discharge requirements and/or NPDES permit which results from a pump station failure, line break, obstruction, surcharge, or any other operational dysfunction. This reporting requirement applies to all overflow events other than those events subject to regulation under the State Board Order No. 2006-0003-DWQ and San Diego Water Board Order No. R9-2007-0005. Overflows of the kind identified under this provision shall be reported to the San Diego Water Board with the monthly monitoring report in which the overflow occurs.
- 8.** Any person who, without regard to intent or negligence, causes or permits an unauthorized discharge of 50,000 gallons or more of recycled water that has been treated to at least disinfected tertiary 2.2 recycled water or 1,000 gallons or more of recycled water that is treated at a level less than disinfected tertiary 2.2 recycled water in or on any waters of the state, or causes or permits such unauthorized discharge to be discharged where it is, or probably will be, discharged in or on any waters of the state, shall, as soon as (1) that person has knowledge of the discharge, (2) notification is possible, and (3) notification can

be provided without substantially impeding cleanup or other emergency measures, immediately notify the San Diego Water Board in accordance with reporting requirements in Standard Provision F.6.

9. The incidental discharge of recycled water to waters of the State is not a violation of these requirements if the incidental discharge does not unreasonably affect the beneficial uses of the water, and does not result in the receiving water exceeding an applicable water quality objective.
10. If a need for a discharge bypass is known in advance, the Discharger shall submit prior notice (stating, at a minimum, the purpose, anticipated dates, duration, level of treatment, and volume of bypass) and, if at all possible, such notice shall be submitted at least 10 days prior to the date of the bypass.
11. The Discharger shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this Order, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the noncompliance.
12. In an enforcement action, it shall not be a defense for the Discharger that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with this Order. Upon reduction, loss, or failure of the treatment facility, the Discharger shall, to the extent necessary to maintain compliance with this Order, control production or all discharges, or both, until the facility is restored or an alternative method of treatment is provided. This provision applies for example, when the primary source of power of the treatment facility is failed, reduced, or lost.
13. Except for a discharge which is in compliance with this Order, any person who, without regard to intent or negligence, causes or permits any hazardous substance or sewage to be discharged in or on any waters of the State, shall as soon as (a) that person has knowledge of the discharge, (b) notification is possible, and (c) notification can be provided without substantially impeding cleanup or other emergency measures, immediately notify the Director of Environmental Health Services, County of San Diego in accordance with California Health and Safety Code section 5411.5 and the California Office of Emergency Services of the discharge in accordance with the spill reporting provision of the State toxic disaster contingency plan adopted pursuant to Government Code Title 2, Division 1, Chapter 7, Article 3.7 (commencing with section 8574.17), and immediately notify the State Board or the appropriate San Diego Water Board of the discharge. This provision does not require reporting of any discharge of less than a reportable quantity as provided for under subdivisions (f) and (g) of section 13271 of the Water Code unless the Discharger is in violation of a Basin Plan prohibition.
14. Except for a discharge which is in compliance with this Order, any person who without regard to intent or negligence, causes or permits any oil or petroleum product to be discharged in or on any waters of the State, or discharged or

deposited where it is, or probably will be, discharged in or on any waters of the State, shall, as soon as (a) such person has knowledge of the discharge, (b) notification is possible, and (c) notification can be provided without substantially impeding cleanup or other emergency measures, immediately notify the California Office of Emergency Services of the discharge in accordance with the spill reporting provision of the State oil spill contingency plan adopted pursuant to Government Code Title 2, Division 1, Chapter 7, Article 3.7 (commencing with section 8574.1). This requirement does not require reporting of any discharge of less than 42 gallons unless the discharge is also required to be reported pursuant to CWA section 311, or the discharge is in violation of a Basin Plan prohibition.

15. A copy of this Order shall be maintained at the Facility and shall be available to operating personnel at all times.
16. The Discharger shall retain records of all monitoring information, including all calibration and maintenance records, copies of all reports required by this Order, and records of all data used to complete the application for this Order. Records shall be maintained for a minimum of five years from the date of the sample, measurement, report, or application. Records may be maintained electronically. This period may be extended during the course of any unresolved litigation regarding this discharge or when requested by the San Diego Water Board.
17. The Discharger shall furnish to the San Diego Water Board, within a reasonable time, any information which the San Diego Water Board may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order. The Discharger shall also furnish to the San Diego Water Board, upon request, copies of records required to be kept by this Order.
18. This Order may be modified, revoked and reissued, or terminated for cause including, but not limited to, the following:
 - a. Violation of any terms or conditions of this Order.
 - b. Obtaining this Order by misrepresentation or failure to disclose fully all relevant facts.
 - c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

The filing of a request by the Discharger for the modification, revocation, reissuance, or termination of this Order, or notification of planned changes or anticipated noncompliance does not stay any condition of this Order.

19. The Discharger shall file a new Report of Waste Discharge at least 120 days prior to the following:
 - a. Addition of a major industrial waste discharge to a discharge of essentially domestic sewage, or the addition of a new process or product by an industrial

individual is a duly authorized representative only if all of the following are true:

- i. The authorization is made in writing by a person described in paragraph (a) of this provision,
 - ii. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, and
 - iii. The written authorization is submitted to the San Diego Water Board.
- c. Any person signing a document under this section shall make the following certification:

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

23. The Discharger shall submit reports required under this Order or other information required by the San Diego Water Board to the following address:

POTW Compliance Unit
California Regional Water Quality Control Board
San Diego Region
9174 Sky Park Court, Suite 100
San Diego, California 92123

B. Monitoring and Reporting Program (MRP) Requirements

The Discharger shall comply with the MRP and future revisions thereto, in Attachment C of this Order.

C. Special Provisions

1. Facility Design and Operation Specifications

- a. The Discharger shall, at all times, properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Discharger to achieve compliance with conditions of this Order. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls including appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this Order.

- b.** Prior to any changes in the treatment facilities, the Discharger shall notify the San Diego Water Board, and, for changes that may affect the discharge including increasing the flow from the UV disinfection system to greater than 4.0 mgd, prepare an engineering report conforming to CCR Title 22 section 60323. The engineering report shall be submitted to the CDPH, County DEH, and San Diego Water Board for review and response.
- c.** Disinfection of recycled water shall comply with all requirements of CCR Title 22, Division 4. Disinfection may be accomplished by either:

 - i.** a. A chlorine disinfection process that provides a CT (chlorine concentration times modal contact time) value of not less than 450 mg-min/liter at all times with a modal chlorine contact time of at least 90 minutes based on peak dry weather design flow where the chlorine residual is sampled at the same point determined to meet the modal chlorine contact time requirement; or
 - ii.** A disinfection process, that, when combined with the filtration process, has been demonstrated to reduce the concentration of plaque-forming units of F-specific bacteriophage MS2, or polio virus, per unit volume of water in the wastewater to one hundred thousandths (1/100,000) of the initial concentration in the filter influent throughout the range of qualities of wastewater that will occur during the recycling process. A virus that is at least as resistant to disinfection as polio virus may be used for purposes of the demonstration.
- d.** Within 180 days of adoption of the Order, the Discharger must submit to the San Diego Water Board a certification that the operations manual includes the following information. A copy of the facility operations manual shall be maintained at the Facility and shall be available to operation personnel and San Diego Water Board staff at all times. The following portions of the operations manual shall be posted at the treatment plant as a quick reference for treatment plant operators:

 - i.** Alarm set points for secondary turbidity, tertiary turbidity, and UV transmittance.
 - ii.** Levels at which flow will be diverted for secondary turbidity, tertiary turbidity, and chlorine residual/UV transmittance.
 - iii.** When to divert flow for high daily and weekly median total coliform.
 - iv.** When the authorities (CDPH, County DEH, San Diego Water Board) will be notified of a diversion.
 - v.** Names and numbers of those authorities to be notified in case of a diversion.
 - vi.** Frequency of calibration for turbidimeters and chlorine residual analyzers.

- e. The Facility shall be supervised and operated by persons possessing certificates of appropriate grade pursuant to CCR Title 23, Chapter 3, Subchapter 14,
- f. All waste treatment, storage and purveyance facilities shall be protected against 100-year peak stream flows as defined by the San Diego County flood control agency.
- g. All wastewater and recycled water storage facilities shall be protected against erosion, overland runoff, and other impacts resulting from a 100-year, 24-hour frequency storm.

2. Recycled Water Use Provisions

- a. Within 180 days of adoption of the Order, the Discharger must submit to the San Diego Water Board, the CDPH, and the County of San Diego Department of Environmental Health (County DEH) a certification that its Rules and Regulations for Recycled Water Users are compliant with this Order. The certification shall include any update to the Rules and Regulations. The updated Rules and Regulations shall, at a minimum, include:
 - i. The requirements that are contained in Attachment E of this Order; and
 - ii. A program to conduct inspections of recycled water reuse sites to determine the status of compliance with the Discharger's approved Rules and Regulations.
- b. Within 1 year of adoption of the Order, the Discharger must submit to the CDPH and the County DEH a certification that a Master Plan covering multiple reuse sites and/or any individual Plans and Specifications reports are compliant with this Order. The certification shall include any update to plans and specifications. The report shall include a detailed description of each reuse site identifying all of the information below:
 - i. A copy of the long-term agreement between the Discharger and the user for the use of recycled water on the site.
 - ii. The number, location, and type of facilities within the use area proposing to use domestic and recycled water. "Facility" means any type of building or structure, or defined area of specific public use that utilizes or proposes to utilize a dual plumbed system.
 - iii. The average number of persons estimated to be served at each use area on a daily basis.
 - iv. The specific boundaries of the proposed use site area including a map showing the location of each facility, drinking water fountain and impoundment to be served.

*Site Supervisor
Training list?*

v. The person or persons responsible for operation of the recycled water system at each use area.

vi. The specific use to be made of the recycled water at each use area.

*Cross
Connect*

vii. The methods to be used by the Discharger to assure that the installation and operation of the recycled system will not result in cross connections between the recycled water piping system and the potable water piping system. This shall include a description of pressure, dye or other test methods to be used to test the system.

viii. Plans and specifications shall include the following and shall be submitted to the CDPH and County DEH for approval:

(a) Proposed piping system to be used,

(b) Pipe locations of both the recycled and potable systems,

(c) Type and location of the outlets and plumbing fixtures that will be accessible to the public,

(d) The methods and devices to be used to prevent backflow of recycled water into the public water system,

(e) Plan notes relating to recycled water specific installation and use requirements.

c. Prior to providing recycled water to a new use site, the Discharger shall do the following:

i. Submit for review and approval a plans and specifications report that either certifies (by the Discharger) that the project conforms with what is described in the master plan or information to supplement what is described in the master plan to the CDPH and the County DEH. A certification report shall document that all criteria described in Reclamation Specification 2.b above has been submitted to and approved by the CDPH.

ii. Prior to the initial operation of the dual-plumbed recycled water system and annually thereafter, the Discharger shall ensure that the dual plumbed system within each facility and use area is inspected for possible cross connections with the potable water system. The recycled water system shall also be tested for possible cross connections at least once every four years. The testing shall be conducted in accordance with the method described in the report submitted pursuant to section 60314. The inspections and the testing shall be performed by a cross connection control specialist certified by the California-Nevada section of the American Water Works Association or an organization with equivalent certification requirements. The County DEH shall be notified 30 days prior to any cross connection test. A written report documenting the

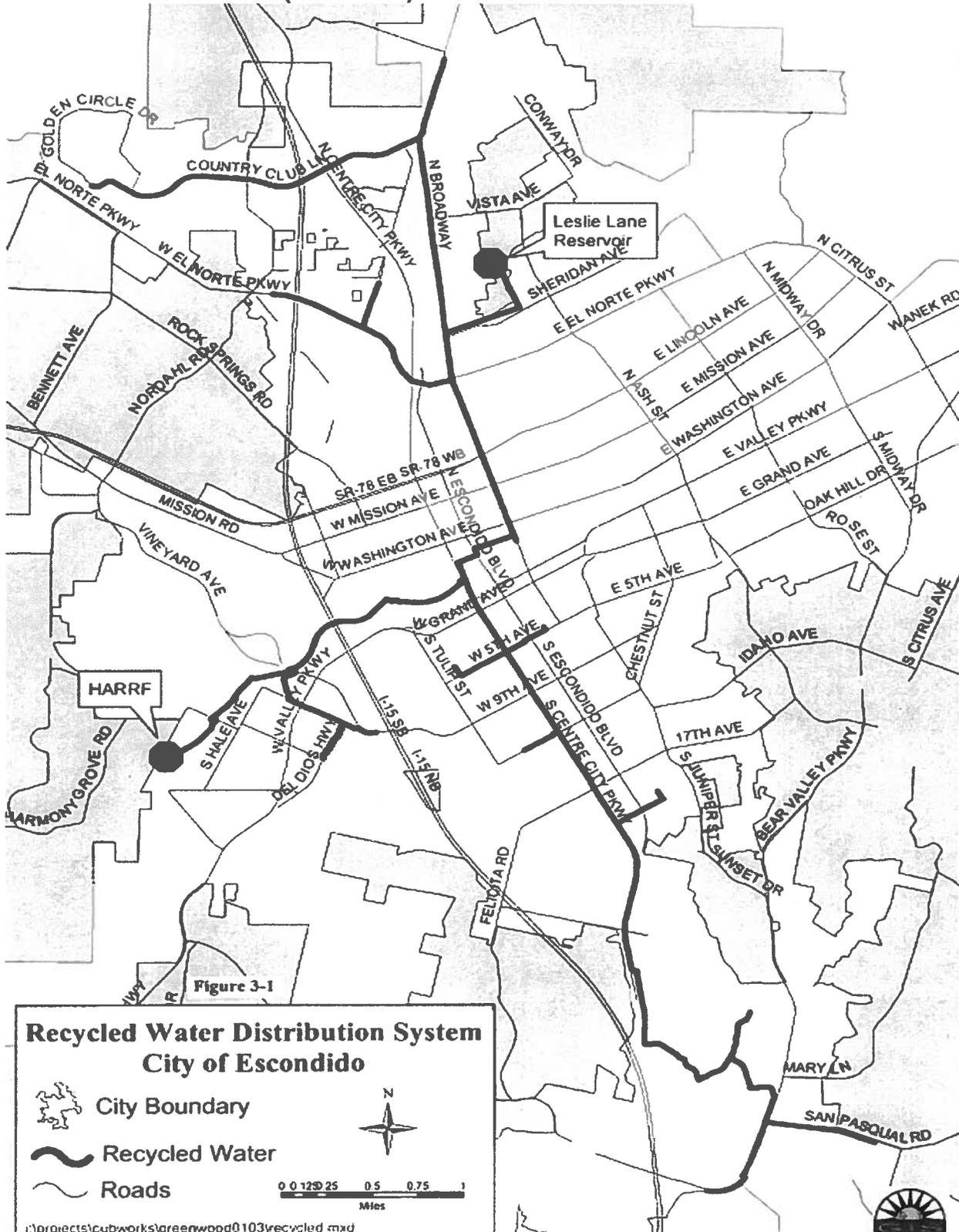
result of the inspection or testing for the prior year shall be submitted to the County DEH within 30 days following completion of the inspection or testing.

- d. The Discharger shall do the following for all reuse sites:
 - i. Enforce recycled water rules and regulations;
 - ii. Conduct recycled water reuse site inspections in accordance with the programs submitted in compliance with Reclamation Specifications 2.a and 2.c of this Order;
 - iii. Notify the CDPH and the County DEH of any incidence of recycled water backflow into the potable water system as soon as possible, but in no case later than 24 hours of finding the incident; and
 - iv. Maintain a current list of all on-site recycled water supervisors.
- e. The Discharger shall make available all relevant data needed for the purpose of completing salt and nutrient management plans for hydrologic basins described in Finding J.

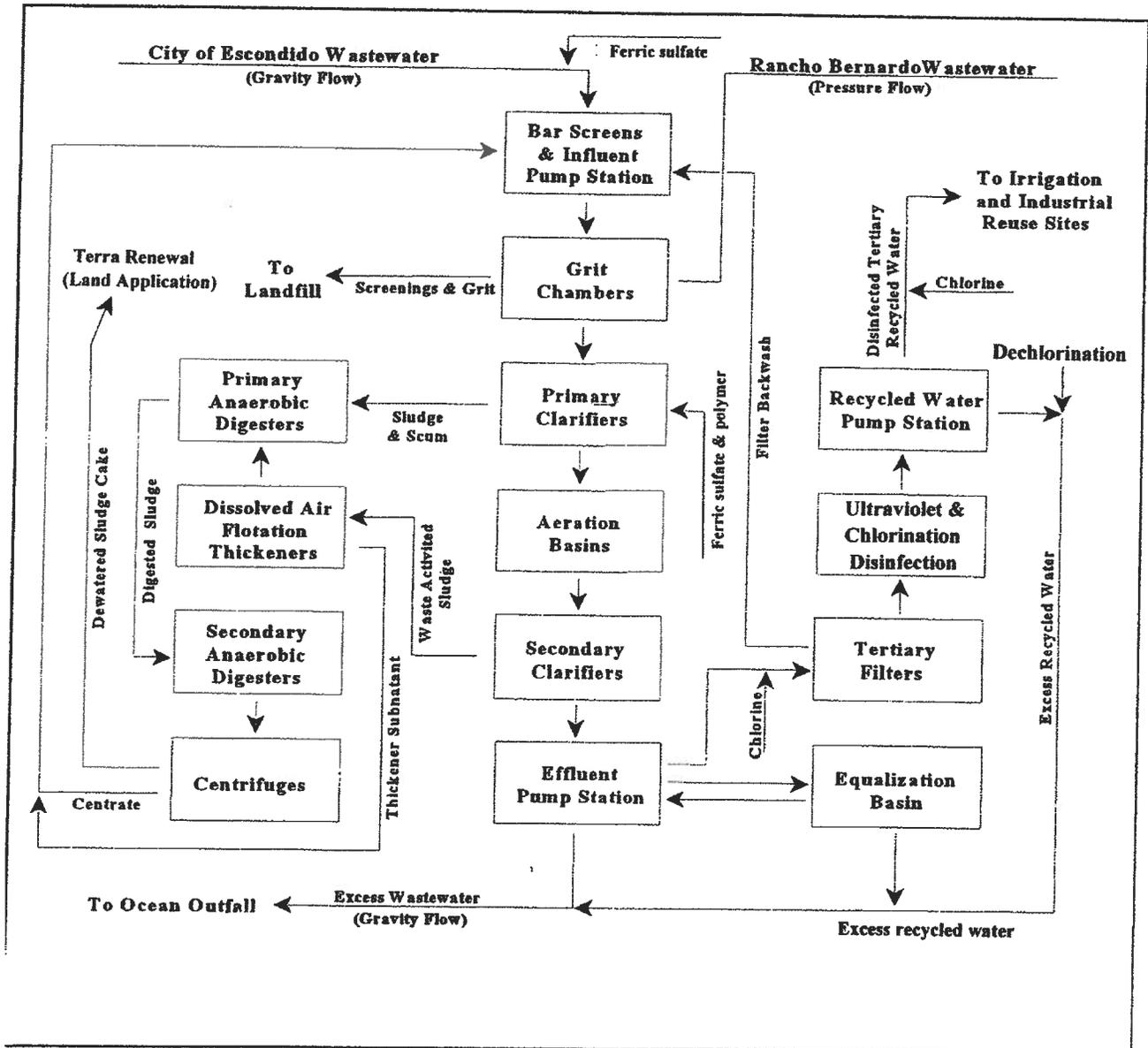
3. Notifications

- a. This Order does not convey any property rights of any sort or any exclusive privileges. The requirements prescribed herein do not authorize the commission of any act causing injury to persons or property, nor protect the Discharger from liability under federal, state or local laws, nor create a vested right for the Discharger to continue the waste discharge.
- b. These requirements have not been officially reviewed by the USEPA and are not issued pursuant to CWA section 402.
- c. The provisions of this Order are severable, and if any provision of this Order, or the application of any provision of this Order to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this Order, shall not be affected thereby.
- d. This Order becomes effective on the date of adoption by the San Diego Water Board.

ATTACHMENT A – MAP (UPDATED)



ATTACHMENT B – FLOW SCHEMATIC (UPDATED)



Schematic of HARRF Treatment Processes

ATTACHMENT C – MONITORING AND REPORTING PROGRAM

Table of Contents

I.	General Monitoring Provisions.....	C-2
II.	Monitoring Locations	C-5
III.	Effluent Monitoring Requirements	C-6
	A. Monitoring Location - Recycled Water Service	C-6
IV.	Receiving Water Monitoring Requirements – Surface Water and Groundwater	C-7
	A. Monitoring Location - RGW-001, RGW-002, RGW-003, and RGW-004	C-7
V.	Reporting Requirements.....	C-8
	A. Self Monitoring Reports (SMRs)	C-8
	B. Quarterly Recycled Water Summary.....	C-10
	C. Annual Recycled Water Summary	C-10

List of Tables

Table C-1.	Monitoring Station Locations	C-5
Table C-2.	Effluent Monitoring	C-6
Table C-3.	Receiving Water Monitoring Requirements.....	C-7
Table C-4.	Monitoring Periods and Reporting Schedule.....	C-8

ATTACHMENT C – MONITORING AND REPORTING PROGRAM (MRP)

Water Code Sections 13267 and 13383 authorize the California Regional Water Quality Control Board, San Diego Region (San Diego Water Board) to require technical and monitoring reports. This MRP establishes monitoring and reporting requirements, which implement the State regulations.

I. GENERAL MONITORING PROVISIONS

- A.** Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring points specified in this Monitoring and Reporting Program (MRP) and, unless otherwise specified, before the effluent joins or is diluted by any other waste stream, body of water or substance. Monitoring points shall not be changed without notifying, and receiving approval from the San Diego Water Board for the proposed monitoring location change.
- B.** Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated, and maintained to ensure that the accuracy of the measurements is consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than 10 percent from true discharge rates throughout the range of expected discharge volumes.
- C.** Monitoring must be conducted according to United States Environmental Protection Agency (USEPA) test procedures approved under 40, Code of Federal Regulations (CFR), Part 136, "Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act" as amended, unless other test procedures have been specified in this MRP.
- D.** Unless otherwise permitted by the San Diego Water Board, all analyses shall be conducted at a laboratory certified to perform such analyses by the California Department of Public Health (CDPH). The Discharger must use a laboratory capable of producing and providing quality assurance/quality control (QA/QC) records for San Diego Water Board review. The director of the laboratory whose name appears on the certification shall supervise all analytical work in his/her laboratory and shall sign all reports submitted to the San Diego Water Board.
- E.** Any report presenting new analytical data is required to include the complete laboratory analytical report(s). The laboratory analytical report must be signed by the laboratory director and contain:
 - 1.** A complete sample analytical report.
 - 2.** A complete laboratory quality assurance/quality control (QA/QC) report.
 - 3.** A discussion of the QA/QC data.

4. A transmittal letter that shall indicate whether or not all the analytical work was supervised by the director of the laboratory, and contain the following statement, "All analyses were conducted at a laboratory certified for such analyses by the CDPH in accordance with current USEPA procedures."
- F. Specific methods of analysis must be identified in the Discharger's monitoring reports. If the Discharger proposes to use methods or test procedures other than those included in the most current version of 40 CFR 136, "*Guidelines Establishing Test Procedures for the Analysis of Pollutants; Procedures for Detection and Quantification*", the exact methodology must be submitted for review and must be approved by the San Diego Water Board prior to use.
- G. Monitoring results must be reported on discharge monitoring report forms approved by the San Diego Water Board.
- H. If the Discharger monitors any pollutants more frequently than required by this MRP, using test procedures approved under 40 CFR, Part 136, or as specified in this MRP, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the Discharger's monitoring report. The increased frequency of monitoring shall also be reported.
- I. The Discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation and copies of all reports required by this MRP, and records of all data used to complete the application for this MRP. Records shall be maintained for a minimum of five years from the date of the sample, measurement, report or application. This period may be extended during the course of any unresolved litigation regarding this discharge or when required by the San Diego Water Board. Records of monitoring information shall include the following:

 1. The date, exact place, and time of sampling or measurements.
 2. The individual(s) who performed the sampling or measurements.
 3. The date(s) analyses were performed.
 4. The individual(s) who performed the analyses.
 5. The analytical techniques or methods used.
 6. The results of such analyses.

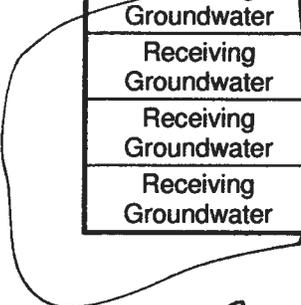
- J.** All monitoring instruments and devices that are used by the Discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary to ensure their continued accuracy.
- K.** The Discharger shall report all instances of noncompliance not reported under Standard Provision V.A.6 of Order No. R9-2010-0032 at the time monitoring reports are submitted. The reports shall contain the information described in Provision V.A.6.
- L.** The monitoring reports shall be signed by an authorized person as required by Standard Provision V.A.22 of Order No. R9-2010-0032.
- M.** A composite sample is defined as a combination of at least eight sample aliquots of at least 100 milliliters, collected at periodic intervals during the operating hours of a facility over a 24-hour period. For volatile pollutants, aliquot must be combined in the laboratory immediately before analysis. The composite must be flow proportional; either the time interval between each aliquot or the volume of each aliquot must be proportional to either the stream flow at the time of sampling or the total stream flow since the collection of the previous aliquot. Aliquot may be collected manually or automatically.
- N.** A grab sample is an individual sample of at least 100 milliliters collected at a randomly selected time over a period not exceeding 15 minutes.
- O.** The Discharger shall identify all missing or non-valid monitoring or sampling results in monitoring reports submitted. All instances of missing or non-valid results must be accompanied by an explanation of their root cause and the steps the Discharger has or will take to prevent future instances. Missing or non-valid results may be considered violations of Order No. R9-2010-0032 that could result in enforcement action depending on the frequency of such instances and efforts by the Discharger to prevent such failures.

II. MONITORING LOCATIONS

The Discharger shall establish the following monitoring locations to demonstrate compliance with the effluent limitations, discharge specifications, and other requirements in this Order:

Table C-1. Monitoring Station Locations

Discharge Point Name	Monitoring Location Name	Monitoring Location Description (include Latitude and Longitude when available)
Recycled Water Service Area	RWS-001	Final effluent prior to discharge to the recycled water distribution system
Recycled Water Service Area	RWS-002	CT test point for minimum chlorine residual and modal contact time based on peak dry weather design flow
Recycled Water Service Area	RWS-003	Ultraviolet dose monitoring point exiting the ultraviolet disinfection basin
Recycled Water Service Area	RWS-004	Turbidity monitoring point exiting the monomedia filtration basin
Receiving Groundwater	RGW-001	Kit Carson Park Well No. 7
Receiving Groundwater	RGW-002	Kit Carson Park Well No. 14
Receiving Groundwater	RGW-003	Kit Carson Park Well No. 15
Receiving Groundwater	RGW-004	1960 W. Mission Rd (33.1302341, -117.1201372)



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How?

III. EFFLUENT MONITORING REQUIREMENTS

A. Monitoring Location - Recycled Water Service

1. The Discharger shall monitor the discharge to the recycled water service as follows:

Table C-2. Effluent Monitoring RWS-001

Parameter	Units	Sample Type	Minimum Sampling Frequency ^{a,b}
Flow Rate	mgd	Continuous	Continuous
Total Dissolved Solids (TDS)	mg/L	Composite	Quarterly
Chloride (Cl)	mg/L	Composite	Quarterly
Sulfate (SO ₄)	mg/L	Composite	Quarterly
Percent Sodium (% Na)	%	Composite	Quarterly
Nitrate (NO ₃)	mg/L	Composite	Quarterly
Total Nitrogen	mg/L	Composite	Quarterly
Iron (Fe)	mg/L	Composite	Quarterly
Manganese (Mn)	mg/L	Composite	Quarterly
Methylene Blue- Activated Substances (MBAS)	mg/L	Composite	Quarterly
Boron (B)	mg/L	Composite	Quarterly
Color	units	Composite	Quarterly
Fluoride (F)	mg/L	Composite	Quarterly
Aluminum	mg/L	Composite	Once every 5 years
Arsenic	mg/L	Composite	Once every 5 years
Antimony	mg/L	Composite	Once every 5 years
Asbestos	Million fibers per liter	Composite	Once every 5 years
Barium	mg/L	Composite	Once every 5 years
Beryllium	mg/L	Composite	Once every 5 years
Cadmium	mg/L	Composite	Once every 5 years
Cyanide	mg/L	Composite	Once every 5 years
Mercury	mg/L	Composite	Once every 5 years
Nickel	mg/L	Composite	Once every 5 years
Perchlorate	mg/L	Composite	Once every 5 years
Selenium	mg/L	Composite	Once every 5 years
Thallium	mg/L	Composite	Once every 5 years

a. The Recycled Water Agency shall increase the sampling frequency from weekly to daily, from quarterly to monthly, and from once every 5 years to annually for any constituent that exceeds the Discharge Specifications of the Order. The increased frequency of monitoring shall continue until the Recycled Water Agency achieves compliance with the Specification for three consecutive periods, at which point the Recycled Water Agency shall resume sampling at the specified frequency.

b. Weekly is defined as a calendar week (Sunday through Saturday). Monthly is defined as a calendar month. Quarterly is defined as a period of three consecutive calendar months beginning on January 1, April 1, July 1, or October 1. Annually is defined as a period of 12 consecutive calendar months beginning on January 1.

Table C-3. Effluent Monitoring RWS-002

Parameter	Units	Sample Type	Minimum Sampling Frequency ^{a,b}
Chlorine Residual	mg/L	Continuous	Continuous
Chlorine-Contact Time (CT)	mg-min/L	Calculated	Continuous
Total Coliform Bacteria ^c	MPN/100 mL	Grab	Daily when chlorination system operates
c. Samples for total coliform bacteria shall be collected at least daily and at a time when wastewater characteristics are most demanding on the treatment facilities and disinfection procedures.			

Table C-4. Effluent Monitoring RWS-003

Parameter	Units	Sample Type	Minimum Sampling Frequency ^{a,b}
UV dose	mWs/c m ²	Continuous	Continuous
Total Coliform Bacteria ^c	MPN/100 mL	Grab	Daily when UV system operates
c. Samples for total coliform bacteria shall be collected at least daily and at a time when wastewater characteristics are most demanding on the treatment facilities and disinfection procedures.			

Table C-5. Effluent Monitoring RWS-004

Parameter	Units	Sample Type	Minimum Sampling Frequency ^{a,b}
Turbidity ^d	NTU	Continuous	Continuous
d. Effluent tertiary turbidity analyses shall be conducted continuously using a continuous monitoring and recording turbidimeter. Compliance with the daily average operating filter effluent turbidity limit of 2 NTU shall be determined using levels of recorded turbidity levels at a minimum of four-hour intervals over a 24-hour period. Compliance with the turbidity standard of not exceeding 5 NTU more than 5 percent of the time over a 24-hour period shall be determined using the levels of recorded turbidity taken at intervals of no more than 1.2 hours over a 24-hour period. Should the continuous turbidimeter and/or recorder fail, grab sampling at a minimum frequency of 1.2 hours may be substituted for a period of up to 24 hours. The Recycled Water Agency shall report quarterly results of four-hour turbidity readings, average effluent turbidity (24-hours), 95 percentile effluent turbidity (24-hours), and daily maximum turbidity readings.			

IV. RECEIVING WATER MONITORING REQUIREMENTS – SURFACE WATER AND GROUNDWATER

A. Monitoring Location - RGW-001, RGW-002, RGW-003, and RGW-004

1. The Discharger shall monitor the receiving groundwater at Kit Carson Park Wells No. 7, No. 14, No. 15, and an additional well located at 1960 W. Mission Rd, Escondido, CA 92029 (33.1302341, -117.1201372) as follows:

Table C-6. Receiving Water Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency
pH	pH units	Grab	Semiannually
Specific Conductance	umhos/cm	Grab	Semiannually
Total Dissolved Solids (TDS)	mg/L	Grab	Semiannually

Parameter	Units	Sample Type	Minimum Sampling Frequency
Chloride (Cl)	mg/L	Grab	Semiannually
Sulfate (SO ₄)	mg/L	Grab	Semiannually
Nitrate (NO ₃)	mg/L	Grab	Semiannually
Total Nitrogen	mg/L	Grab	Semiannually
Iron (Fe)	mg/L	Grab	Semiannually
Manganese (Mn)	mg/L	Grab	Semiannually
Boron (B)	mg/L	Grab	Semiannually
Fluoride (F)	mg/L	Grab	Semiannually
Sodium	mg/L	Grab	Semiannually
Calcium	mg/L	Grab	Semiannually
Potassium	mg/L	Grab	Semiannually
Magnesium	mg/L	Grab	Semiannually

V. REPORTING REQUIREMENTS

A. Self Monitoring Reports (SMRs)

1. At any time during the term of this permit, the State or San Diego Water Board may notify the Discharger to electronically submit Self-Monitoring Reports (SMRs) using the State Water Board's California Integrated Water Quality System (CIWQS) Program Web site (<http://www.waterboards.ca.gov/ciwqs/index.html>). Until such notification is given, the Discharger shall submit hard copy SMRs. The CIWQS Web site will provide additional directions for SMR submittal in the event there will be service interruption for electronic submittal.
2. The Discharger shall report in the SMR the results for all monitoring specified in this MRP under sections III and IV. The Discharger shall submit quarterly SMRs including the results of all required monitoring using USEPA-approved test methods or other test methods specified in this Order. If the Discharger monitors any pollutant more frequently than required by this Order, the results of this monitoring shall be included in the calculations and reporting of the data submitted in the SMR.
3. Monitoring periods and reporting for all required monitoring shall be completed according to the following schedule:

Table C-7. Monitoring Periods and Reporting Schedule

Sampling Frequency	Monitoring Period	SMR Due Date
Continuous	All	Submit with monthly SMR
Daily	8:00 AM through 7:59 AM	Submit with monthly SMR
Monthly	January, February, March, April, May, June, July, August, September, October, November, December	By the first day of the second month following sampling (ie. March 1 for January)

Quarterly	January 1 through March 31 April 1 through June 30 July 1 through September 30 October 1 through December 31	May 1 August 1 November 1 February 1
Semiannually	January 1 through June 30 July 1 through December 31	September 1 March 1
Annually	January 1 through December 31	March 1
5 years	5 year period	March 1

4. Reporting limits shall be lower than or equal to the effluent limitations. Constituents not detected below the method detection limit shall be reported as non-detect with the applicable value (i.e. ND<0.05 mg/L). Constituents detected between the laboratory reporting limit and method detection limit shall be reported as “estimated concentrations” or noted with appropriate laboratory flags.
5. Annual reports shall include a summary assessment of monitoring required by the NPDES permit. The discharger shall summarize detections of priority pollutants and exceedance of MCLs.
6. The Discharger shall submit SMRs in accordance with the following requirements:
 - a. The Discharger shall arrange all reported data in a tabular format. The data shall be summarized to clearly illustrate whether the facility is operating in compliance with interim and/or final effluent limitations. The Discharger is not required to duplicate the submittal of data that is entered in a tabular format within CIWQS. When electronic submittal of data is required and CIWQS does not provide for entry into a tabular format within the system, the Discharger shall electronically submit the data in a tabular format as an attachment.
 - b. The Discharger shall attach a cover letter to the SMR. The information contained in the cover letter shall clearly identify violations of the WDRs; discuss corrective actions taken or planned; and the proposed time schedule for corrective actions. Identified violations must include a description of the requirement that was violated and a description of the violation.
 - c. The Discharger shall include historical data in either tabular or graphical format for parameters in section IV of this MRP. The data shall be summarized to clearly indicate trends in Receiving Groundwater monitoring locations.
 - d. SMRs must be submitted to the San Diego Water Board, signed and certified as required by the Standard Provisions (Attachment D), to the address listed below:

California Regional Water Quality Control Board
 San Diego Region
 9174 Sky Park Court, Suite 100
 San Diego, California 92123

B. Quarterly Recycled Water Summary

The discharger shall submit a quarterly recycled water use summary report containing the following:

1. Total number of reclaimed water use sites;
2. The locations of reclaimed water use sites including the names of the underlying hydrologic subareas;
3. Total volume of reclaimed water supplied to each use site for each month of the reporting period;
4. Total volume of reclaimed water supplied to all recycled water users for each month of the reporting period;
5. Site supervisor name and contact information for each use site;
6. Number of inspections conducted for each use site; and
7. Number of violations for each use site including description of the noncompliance and its cause, including the period of noncompliance, and if the noncompliance has not been corrected; the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

C. Annual Recycled Water Summary

The Regional Board is developing a standardized electronic form to promote consistent review and enforcement of recycled water facilities as well as establish trends on recycled water production, delivery, and beneficial reuse throughout the San Diego Region. The Regional Board will provide the standard form in Microsoft Excel format in which the Recycled Water Agency shall provide information summarizing annual recycled water quantity, quality, and beneficial reuse. This electronic form shall be completed and submitted electronically by March 1 every year.

ATTACHMENT D – INFORMATION SHEET

Table of Contents

I.	Permit Information	D-2
II.	Facility Description	D-3
III.	Applicable Plans, Policies, and Regulations.....	D-5
IV.	Rationale For Effluent Limitations and Discharge Specifications.....	D-6
V.	Rationale for Monitoring and Reporting Requirements.....	D-9
VI.	Rationale for Provisions.....	D-9
VII.	Public Participation	D-10

List of Tables

Table D-1.	Facility Information	D-2
Table D-2.	Historic Effluent Limitations and Monitoring Data.....	D-4
Table D-3.	Basin Plan Groundwater Water Quality Objectives	D-6
Table D-4.	Estimated Long-Term Concentrations of Iron and Manganese	D-6
Table D-5.	Summary of Final Effluent Limitations.....	D-7

ATTACHMENT D – INFORMATION SHEET

As described in section I of this Order, this Information Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of this Order.

This Order has been prepared under a standardized format to accommodate a broad range of discharge requirements for Dischargers in California. Only those sections or subsections of this Order that are specifically identified as “not applicable” have been determined not to apply to this Discharger. Sections or subsections of this Order not specifically identified as “not applicable” are fully applicable to this Discharger.

I. PERMIT INFORMATION

The following table summarizes administrative information related to the facility.

Table D-1. Facility Information

WDID	9 000000592
Discharger	City of Escondido
Name of Facility	Hale Avenue Resource Recovery Facility, City of Escondido
Facility Address	1521 S. Hale Avenue
	Escondido, CA 92029
	San Diego
Facility Contact, Title and Phone	John Burcham, Deputy Utilities Manager (760) 839-6273
Authorized Person to Sign and Submit Reports	John Burcham, Deputy Utilities Manager (760) 839-6273
Mailing Address	SAME
Billing Address	SAME
Type of Facility	POTW
Threat to Water Quality	2
Complexity	B
Reclamation Requirements	Producer
Facility Permitted Flow	9 million gallons per day
Facility Design Flow	9 million gallons per day
Receiving Water	Eastern 2100 acres of Richland (HSA 904.52), Escondido (HSA 904.62), Del Dios (HSA 905.21), Felicita (HSA 905.23)
Receiving Water Type	Groundwater

- A.** The City of Escondido (hereinafter Discharger) is the owner and operator of the Hale Avenue Resource Recovery Facility (hereinafter Facility), a publicly owned treatment works (POTW).

For the purposes of this Order, references to the “discharger” in applicable state laws, regulations, plans, or policy are held to be equivalent to references to the Discharger herein.

- B.** The Facility discharges disinfected tertiary recycled wastewater to the eastern approximately 2100 acres of Richland hydrologic subarea (HSA) 904.52 of San Marcos hydrologic area (HA) 904.5, and Escondido HSA 904.62 of Escondido HA 904.6, each of Carlsbad hydrologic unit (HU) 904; and Del Dios HSA 905.21 and Felicita HSA 905.23, each of Hodges HA 905.2 of San Dieguito HU 905, waters of the United States, and is currently regulated by Order No. 93-70 which was adopted on June 21, 1993 and Addendum No. 1 thereto adopted on March 10, 1999.
- C.** The Discharger filed a report of waste discharge and submitted an application for revision of its Waste Discharge Requirements (WDRs) on January 30, 2003. Supplemental information was received on September 30, 2005, January 20, 2010, and February 2, 2010. A site visit was conducted on March 24, 2010, to observe operations and collect additional data to develop permit limitations and conditions.

II. FACILITY DESCRIPTION

The Facility provides 18 million gallons per day (mgd) secondary treatment capacity of residential, commercial and industrial wastewater generated within the City of Escondido, including 5.3 mgd capacity for wastewater from a portion of the community of Rancho Bernardo within the City of San Diego. The Facility has a tertiary treatment capacity of 9 mgd.

- A. Description of Wastewater and Biosolids Treatment or Controls.** Primary and secondary treatment occurs through mechanically cleaned bar screens, cyclonic grit chambers, primary clarifiers, fixed fine-bubble aeration basins, and secondary clarifiers. Associated solids handling occurs through dissolved air flotation thickeners, primary and secondary anaerobic digesters, centrifuge dewatering units, and odor control system. Tertiary treatment occurs through chemical coagulation and flocculation, monomedia continuous backwash upflow filtration, and ultraviolet disinfection and/or chlorination. Screened solids are trucked to a landfill and dewatered sludge is trucked offsite for land application. Excess recycled water that is not reused will be dechlorinated as needed and discharged to the San Elijo Ocean Outfall. The discharge from the Facility to San Elijo Ocean Outfall and biosolids treatment are separately regulated under Order No. R9-2005-0101 (NPDES CA0107981).
- B. Discharge Points and Receiving Waters.** All recycled water discharges from the Facility are located in the eastern approximately 2100 acres of Richland hydrologic subarea (HSA) 904.52 of San Marcos hydrologic area (HA) 904.5, and Escondido HSA 904.62 of Escondido HA 904.6, each of Carlsbad hydrologic unit (HU) 904; and Del Dios HSA 905.21 and Felicita HSA 905.23, each of Hodges HA 905.2 of San Dieguito HU 905. The Discharger constructed a recycled water distribution network to serve users within the City of Escondido and Rincon Del Diablo Water District (RDDWD). Recycled water is used primarily for industrial services including power generation that would not result in discharge to groundwater. Additional use, approximately 18 percent, is for landscape irrigation. Significant recycled water users are the San Diego Gas and Electric Palomar Energy Center, RDDWD, Kit Carson Park, Reidy Creek Golf Course, and Vineyard Golf Course.

C. Summary of Existing Requirements and Self-Monitoring Report (SMR) Data.
 Effluent Limitations/Discharge Specifications contained in the existing Order for discharges from the recycled water distribution system and representative monitoring data from the term of the previous Order are as follows:

Table D-2. Historic Effluent Limitations and Monitoring Data

Parameter	Units	Effluent Limitation			Monitoring Data From 01/2008 – To 12/2009
		12-month Average	30-day Average	Maximum Daily	12-month Average
Biochemical Oxygen Demand ₅	mg/L		30	45	7.3
Total Suspended Solids	mg/L		30	45	4.6
pH	pH units	Within the limits of 6.0 to 9.0 at all times.			7.7
Total Coliform	Organisms per 100 ml	The median number of coliform organisms shall not exceed 2.2 per 100 milliliters and the number of coliform organisms shall not exceed 23 per 100 milliliters in more than one sample within any 30-day period.			<2
Total Dissolved Solids (TDS)	mg/L	1,000		1,100	902
Chloride (Cl)	mg/L	300		330	201
Sulfate (SO ₄)	mg/L	350		400	227
Percent Sodium (% Na)	%	60		65	55.0
Nitrate (NO ₃ as N)	mg/L			?	8.66
Iron (Fe)	mg/L	0.3		0.4	0.078
Manganese (Mn)	mg/L	0.05		0.06	0.06
Methylene Blue-Activated Substances (MBAS)	mg/L				0.22
Boron (B)	mg/L	0.8			0.38
Odor	Units				--
Turbidity (NTU)	NTU	Not to exceed an average operating turbidity of 2 turbidity units. Not to exceed 5 turbidity units more than 5 percent of the time during any 24-hour period.			1.0
Color	Units				--
Fluoride (F)	mg/L	2.0			0.71

D. Compliance Summary. The Discharger has repeatedly violated the daily maximum and 12-month average specifications for manganese. Manganese is a naturally occurring mineral that varies in concentration depending on the imported water supply source for the Discharger.

E. Planned Changes. The Discharger has modified the design and operation of the ultraviolet disinfection system to maximize water recycling. The California Department

of Public Health has reviewed the Title 22 Engineering Report and provided recommendations for the Discharger to meet the design requirements.

III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

The requirements contained in the proposed Order are based on the requirements and authorities described in this section.

A. Legal Authorities. This Order is issued pursuant to section 13263 and 13523 of the California Water Code. This Order serves as a master reclamation permit pursuant to article 4, chapter 4, division 7 of the Water Code. A master reclamation permit includes requirements for waste discharge, recycling, user rules and regulations, summary reporting, user inspection, and others as appropriate.

B. California Environmental Quality Act. This project involves requirements for existing waste treatment facilities. As such, this project is categorically exempt from the requirements of the California Environmental Quality Act (CEQA) as provided by Section 15301, and in compliance with Section 15300.2, of California Code of Regulations Title 14. The Discharger certified a final Environmental Impact Report for this project in June 1992 in accordance with the CEQA (Public Resources Code section 21000, et seq.). The project identified no significant groundwater impact.

C. Water Quality Control Plans. The San Diego Water Board adopted a Water Quality Control Plan for the San Diego Region (hereinafter Basin Plan) on September 8, 1994 that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. In addition, the Basin Plan implements State Water Resources Control Board (State Water Board) Resolution No. 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply. Beneficial uses applicable to the eastern approximately 2100 acres of Richland hydrologic subarea (HSA) 904.52 of San Marcos hydrologic area (HA) 904.5, and Escondido HSA 904.62 of Escondido HA 904.6, each of Carlsbad hydrologic unit (HU) 904; and Del Dios HSA 905.21 and Felicita HSA 905.23, each of Hodges HA 905.2 of San Dieguito HU 905 are municipal and domestic supply, agricultural supply, and industrial service supply.

Requirements of this Order implement the Basin Plan.

D. Recycled Water Policy. The State Water Board established the Recycled Water Policy in Resolution No. 2009-0011. The Recycled Water Policy establishes criteria for recycled water projects and permits. The intent of the Policy is to increase recycled water use, streamline permitting for appropriate projects, and manage salt and nutrients on a basin-wide approach.

E. Antidegradation Policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 requires that existing quality of waters be maintained unless degradation is justified based on specific findings.

IV. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations

The Order establishes numeric discharge specifications for the discharge of recycled water to the service system. The discharge specifications are based on California Department of Public Health (CDPH) standards, groundwater water quality objectives for the specific hydrologic areas, and actual recycled water quality data provided with the ROWD and reported pursuant to Order No. 93-70.

Table D-3. Basin Plan Groundwater Water Quality Objectives

Hydrologic Area	TDS	Cl	SO ₄	%Na	NO ₃	Fe	Mn	M B A S	B	O D O R	TURB (NTU)	COLOR	F
San Marcos HA 904.5	1,000	400	500	60	10	0.3	0.05	0.5	0.75	None	5	15	1.0
Escondido HSA 904.62	1,000	300	400	60	10	0.3	0.05	0.5	0.75	None	5	15	1.0
Hodges HA 905.2	1,000 ¹	400 ¹	500 ¹	60	10 ¹	0.3 ¹	0.05 ¹	0.5	0.75 ¹	None	5	15	1.0

Concentrations not to be exceeded more than 10% of the time during any one year period. (mg/L or as noted)

¹ Detailed salt balance studies are recommended for this area to determine limiting mineral concentration levels for discharge. On the basis of existing data, the tabulated objectives would probably be maintained in most areas. Upon completion of the salt balance studies, significant water quality objective revisions may be necessary. In the interim period of time, projects of groundwater recharge with water quality inferior to the tabulated numerical values may be permitted following individual review and approval by the San Diego Water Board if such projects do not degrade existing groundwater quality to the aquifers affected by the recharge.

Where the recycled water quality effluent does not meet groundwater water quality objectives for fluoride, iron, and manganese, the Discharger conducted an assimilative capacity analysis (detailed salt balance recommended in the Basin Plan) to model the long-term, steady-state concentrations in groundwater. The analysis in the 2003 ROWD, which includes by reference analysis for fluoride in the original 1993 report of waste discharge, concludes that a discharge in compliance with the specifications will not cause the groundwater to exceed water quality objectives. Iron is a component of the chemical treatment process. Manganese and fluoride vary for different water supplies. The analysis considers potential flow, vegetation uptake, groundwater recharge, and mass flux to estimate long-term concentrations in groundwater as a result of the discharge. The analysis is based on projected constant "worst-case" discharge specifications of 0.5 mg/L iron and 0.2 mg/L manganese.

Table D-4. Estimated Long-Term Concentrations of Iron and Manganese

Hydrologic Area	Recycled Water Use (mgd)	Constituent	Basin Plan Groundwater Quality Objective (mg/L)	Long-Term Steady-State Groundwater Concentration (mg/L)
San Marcos HA	Up to 0.3	Iron	0.30	0.21

			Manganese	0.05	0.05
Escondido HSA 904.62		Up to 1.5	Iron	0.30	0.20
			Manganese	0.05	0.04
Hodges HA 905.2	905.21	Up to 1.0	Iron	0.30	0.21
			Manganese	0.05	0.05
	905.23	Up to 0.1	Iron	0.30	0.21
			Manganese	0.05	0.03

The degradation in water quality is justified as consistent with the maximum benefit to the people of California because recycling reduces discharges to the ocean and replaces demand for imported water. Further, the degradation is not expected to result in water quality poorer than described in the Basin Plan and therefore is not expected to unreasonably affect beneficial uses protected by the water quality objectives. The completed analysis makes the included basins low priorities for a Salt/Nutrient Management Plan, however, should the Discharger or other stakeholder complete a Salt/Nutrient Management Plan for the included basins, the Order may be modified accordingly. The Discharger recognizes that modeling uncertainties exist in the analysis pertaining to effluent quality, groundwater quality data, groundwater recharge, and groundwater outflow that require confirmation groundwater monitoring and reporting.

Historical data demonstrates that the nitrate concentration in the Receiving Groundwater in the Recycled Water Service Areas is above the water quality objectives. Recent recycled water use, however, has not further degraded groundwater quality. Nitrogen is a nutrient taken in by plants. Nitrogen concentration in applied irrigation water that percolates past the root zone is thereby reduced. Rules and Regulations for Recycled Water Use CC, DD and EE (Attachment E) require recycled water be applied at agronomic rates to ensure that the application of recycled water does not contribute to the exceedances of the nitrate water quality objective in the receiving water. The uncertainty in calculating agronomic rates requires confirmation groundwater monitoring and reporting.

Table D-5. Summary of Effluent Limitations

Constituent	12-Month Average ¹ (mg/L or as noted)
Chlorine Residual	See Specification A.2.a
Chlorine-Contact Time (CT)	See Specification A.2.a
Total Coliform Bacteria ^c	See Specification A.2.b
Turbidity (TURB)	See Specification A.2.c
Total Dissolved Solids (TDS)	1,000
Chloride (Cl)	300
Sulfate (SO ₄)	350
Percent Sodium (% Na)	60%
Iron (Fe)	0.50
Manganese (Mn)	0.20
Methylene Blue- Activated Substances (MBAS)	0.5

Constituent	12-Month Average ¹ (mg/L or as noted)
Boron (B)	0.75
Odor	N/A
Color	15 units
Fluoride (F)	2.0
Aluminum	1
Arsenic	0.05
Antimony	0.006
Asbestos	7 million fibers per liter
Barium	1
Beryllium	0.004
Cadmium	0.005
Cyanide	0.2
Mercury	0.002
Nickel	0.1
Perchlorate	0.006
Selenium	0.05
Thallium	0.002

¹ The 12-month average effluent limitation shall apply to the arithmetic mean of the results of all samples collected during any 12 consecutive calendar month period.

B. Title 22 Specifications

The Title 22 Specifications are based on recommendations of the CDPH for the protection of human health at use sites. Recycled water effluent from the Facility shall meet the definition of “disinfected tertiary recycled water” in CCR Title 22 section 60301.230 and by reference “filtered wastewater” in section 60301.320 incorporated by reference, including future changes to the incorporated provisions as the changes take effect.

V. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

Water Code sections 13267 authorizes the San Diego Water Board to require technical and monitoring reports. The Monitoring and Reporting Program (Attachment C) establishes monitoring and reporting requirements to implement State requirements. The use of laboratories certified for federally standardized test methods, and quality assurance and control procedures ensures the reliability and validity of the data as well as consistency and comparability with regulations. The assessment summary of NPDES monitoring is necessary to determine if discharge specifications are required for discharges to land. Recycled water use reports are required in the Water Code for master reclamation permits and determine the effectiveness of the Order on recycled water users and the Discharger’s impact on the State goal for increased water recycling.

A. Effluent Monitoring

Effluent monitoring is required to determine compliance with discharge specifications, facility design and operation specifications, and reclamation requirements.

B. Receiving Water Monitoring

- 1. Groundwater.** Groundwater monitoring is required based on the modeling uncertainties in the assimilative capacity analysis.

VI. RATIONALE FOR PROVISIONS

A. Standard Provisions

The standard provisions contain language the San Diego Water Board finds necessary to ensure the Order is enforced. Provisions include need for inspection, spill and emergency reporting, records are maintained, and changes are reported. Standard provisions apply to all WDRs and are consistent with San Diego Water Board findings.

B. Monitoring and Reporting Program Requirements

The MRP is a requirement of the Order. Details on the rationale are provided in section V of the Information Sheet above.

C. Special Provisions

- 1. Facility Design and Operation Specifications.** The existing Facility was designed and constructed in accordance with CDPH-reviewed Title 22 Engineering Reports.

The Specifications here, which continually apply, include need for properly trained operators, operation and maintenance manuals and references, and best management practices for the protection of human health.

2. Reclamation Specifications. Reclamation Specifications are included pursuant to Water Code section 13523 with recommendations based on CDPH and San Diego County Department of Environmental Health (County DEH) requirements. In accordance with California Code of Regulations (CCR) Title 22, the CDPH reviews engineering reports for the production, distribution, and use of recycled water. The San Diego Water Board relies on the expertise of the CDPH for recommendations needed to protect human health for inclusion in the requirements. The Discharger must certify that the Facility and other existing purveyance facilities meet CDPH requirements, or must update the Title 22 engineering report to comply. The Discharger must also certify or update the Rules and Regulations for Recycled Water Users including inspection and cross-connection testing to comply with CDPH and County DEH requirements.

3. Notifications. The notifications inform the Discharger of administrative issues regarding this Order.

VII. PUBLIC PARTICIPATION

The California Regional Water Quality Control Board, San Diego Region (San Diego Water Board) is considering the issuance of waste discharge requirements (WDRs) that will serve as a master reclamation permit for the Hale Avenue Resource Recovery Facility. As a step in the WDR adoption process, the San Diego Water Board staff has developed tentative WDRs. The San Diego Water Board encourages public participation in the WDR adoption process.

A. Notification of Interested Parties

The San Diego Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Notification was provided through the San Diego Water Board website and board meeting agenda publication.

B. Written Comments

The staff determinations are tentative. Interested persons are invited to submit written comments concerning these tentative WDRs. Comments must be submitted either in person or by mail to the Executive Office at the San Diego Water Board at the address above on the cover page of this Order.

To be fully responded to by staff and considered by the San Diego Water Board, written comments must be received at the San Diego Water Board offices by 5:00 p.m. on May 6, 2010.

C. Public Hearing

The San Diego Water Board will hold a public hearing on the tentative WDRs during its regular Board meeting on the following date and time and at the following location:

Date: **July 14, 2010**
Time: **9:00 am**
Location: **San Diego Water Board Meeting Room**
9174 Sky Park Ct, Suite 100
San Diego, California 92123

Interested persons are invited to attend. At the public hearing, the San Diego Water Board will hear testimony, if any, pertinent to the discharge, WDRs, and permit. Oral testimony will be heard; however, for accuracy of the record, important testimony should be in writing.

Please be aware that dates and venues may change. Our Web address is http://www.waterboards.ca.gov/sandiego/board_info/agendas/ where you can access the current agenda for changes in dates and locations.

D. Waste Discharge Requirements Petitions

Any aggrieved person may petition the State Water Resources Control Board to review the decision of the San Diego Water Board regarding the final WDRs. The petition must be submitted within 30 days of the San Diego Water Board's action to the following address:

State Water Resources Control Board
Office of Chief Counsel
P.O. Box 100, 1001 I Street
Sacramento, CA 95812-0100

E. Information and Copying

The Report of Waste Discharge (ROWD), related documents, tentative effluent limitations and special provisions, comments received, and other information are on file and may be inspected at the address above at any time between 8:30 a.m. and 4:45 p.m., Monday through Friday. Copying of documents may be arranged through the San Diego Water Board by calling 858-467-2952.

F. Register of Interested Persons

Any person interested in being placed on the mailing list for information regarding the Order should contact the San Diego Water Board, reference this facility, and provide a name, address, and phone number.

G. Additional Information

Requests for additional information or questions regarding this order should be directed to Robert Pierce at 858-627-3935.

ATTACHMENT E – RULES AND REGULATIONS FOR RECYCLED WATER USE

Pursuant to Water Code section 13523.1(b)(3), this Order requires the Discharger to establish and to enforce rules and regulations governing the design, construction and use of recycled water distribution and disposal systems by its customers. The rules and regulations shall be consistent with the following criteria:

- Title 22, Division 4, Chapter 3, *Water Recycling Criteria*;
- Title 17, Division 1, Chapter 5, Group 4, Article 1 & 2, of the California Code of Regulations;
- The California Department of Public Health (CDPH) *Preparation of an Engineering Report for the Production, Distribution and Use of Recycled Water*.
- Any measures that are deemed necessary for protection of public health, such as the American Water Works Association (AWWA) California/Nevada section, *Guidelines for the Distribution of Non-Potable Water and Guidelines for Retrofitting To Recycled Water* or alternate measures that are acceptable to the CDPH.

At a minimum, the rules and regulations shall notify the users that:

- A. The use of recycled water shall not cause pollution, contamination, or nuisance, as defined by section 13050 of the Water Code.
- B. The Discharger, the San Diego Water Board, the CDPH, and the County DEH or an authorized representative of these parties, upon presentation of proper credentials, shall have the right to enter upon the recycled water use site during reasonable hours, to verify that the user is complying with the Discharger's rules and regulations.
- C. The recycled water user shall provide written notification, in a timely manner, to the Discharger of any material change or proposed change in the character of the use of recycled water.
- D. Prior to the initiation of recycled water service, the recycled water user shall submit plans and specifications for recycled water distribution facilities to the Discharger.
- E. The recycled water user shall designate a recycled water supervisor who is responsible for the recycled water system at each use area under the user's control. Specific responsibilities of the recycled water supervisor include the proper installation, operation, and maintenance of the irrigation system; compliance of the project with the Discharger's rules and regulations, prevention of potential hazards and preservation of the recycled water distribution system plans in "as built" form. Designated recycled water supervisors shall obtain instruction in the use of recycled water from an institution approved by the CDPH and County DEH. Additional guidance regarding recycled water supervisor responsibilities and instruction requirements is provided in Attachments 17 and 18 of the *Recycled Water Plan Check and Inspection Manual* developed by the County DEH, and which are incorporated herein by reference.

- F.** The Discharger may terminate service to a recycled water user who uses, transports, or stores such water in violation of the Discharger's rules and regulations.
- G.** All recycled water storage facilities owned and/or operated by recycled water users shall be protected against erosion, overland runoff, and other impacts resulting from a 100-year, 24-hour frequency storm unless the San Diego Water Board approves relaxed storm protection measures for the facility.
- H.** All recycled water storage facilities owned and/or operated by recycled water users shall be protected against 100-year frequency peak stream flows as defined by the San Diego County flood control agency unless the San Diego Water Board approves relaxed storm protection measures for the facility.
- I.** The San Diego Water Board may initiate enforcement action against any recycled water user, including but not limited to the termination of the reclaimed water supply, who:

 - 1. Discharges recycled water in violation of any applicable discharge requirement prescribed by the San Diego Water Board or in a manner which creates or threatens to create conditions of pollution, contamination, or nuisance, as defined in Water Code section 13050.
 - 2. Uses, transports, or stores such water in violation of the rules and regulations governing the design, construction and use of recycled water distribution and disposal systems issued by the Discharger in accordance with this attachment; or in a manner which creates or threatens to create conditions of pollution, contamination, or nuisance, as defined in Water Code section 13050.
- J.** A copy of the recycled water rules and regulations, irrigation system layout map, and a recycled water system operations manual shall be maintained at the use area. These documents shall be available to operating personnel at all times.
- K.** Irrigation with disinfected tertiary recycled water shall not take place within 50 feet of any domestic water supply well unless all of the following conditions have been met:

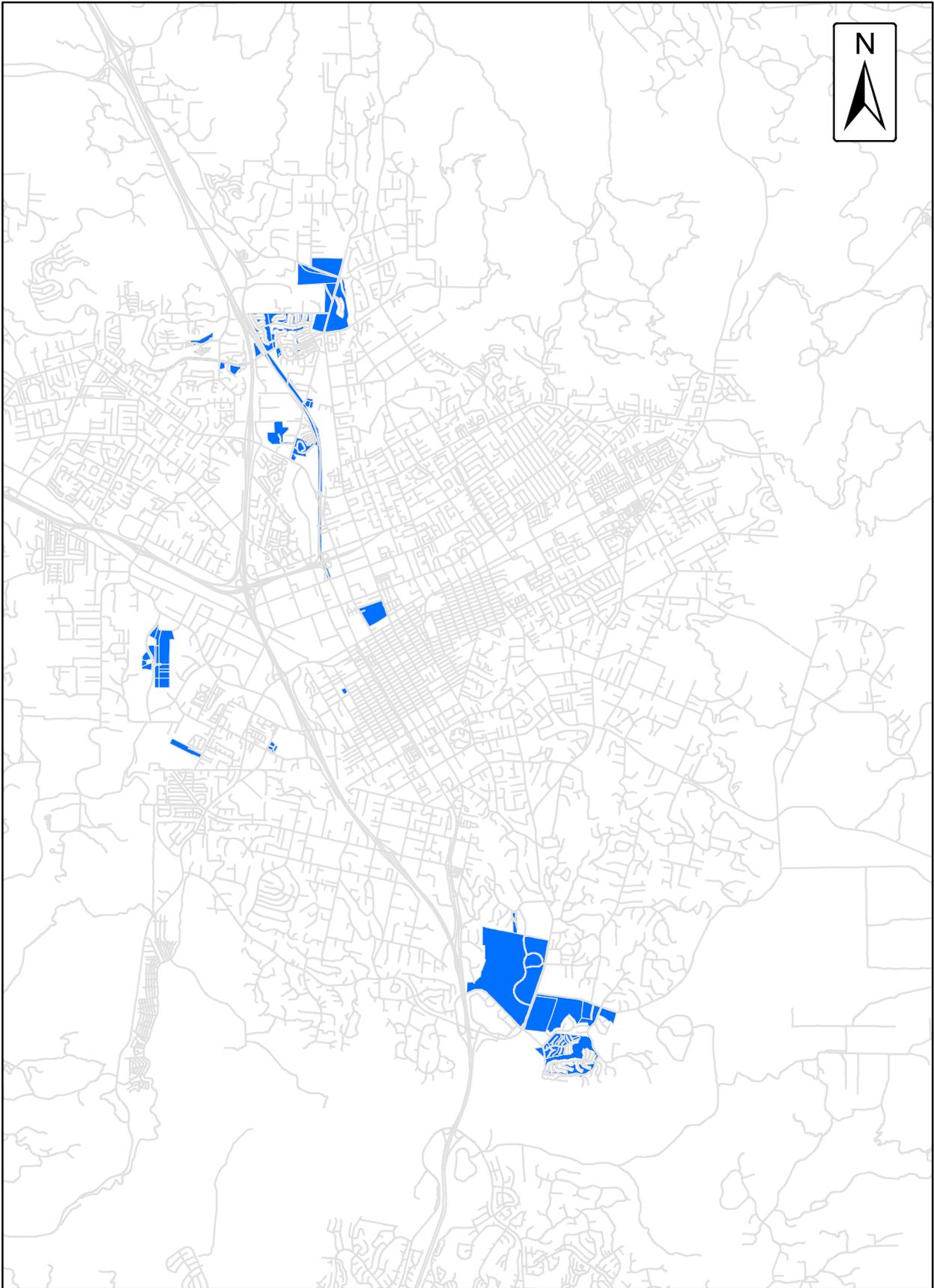
 - 1. A geological investigation demonstrates that an aquitard exists at the well between the uppermost aquifer being drawn from and the ground surface.
 - 2. The well contains an annular seal that extends from the surface into the aquitard.
 - 3. The well is housed to prevent any recycled water spray from coming into contact with the wellhead facilities.
 - 4. The ground surface immediately around the wellhead is contoured to allow surface water to drain away from the well.
 - 5. The owner of the well approves of the elimination of the buffer zone requirement.
- L.** Impoundment of disinfected tertiary recycled water shall not occur within 100 feet of any domestic water supply well.

- M.** Irrigation with, or impoundment of, disinfected secondary-2.2 or disinfected secondary-23 recycled water shall not take place within 100 feet of any domestic water supply well.
- N.** Irrigation with, or impoundment of, undisinfected secondary recycled water shall not take place within 150 feet of any domestic water supply well.
- O.** Reclaimed water facilities shall be operated in accordance with best management practices (BMPs) to prevent direct human consumption of reclaimed water and to minimize misting, ponding, and runoff. BMPs shall be implemented that will minimize both public contact and discharge onto areas not under customer control.
- P.** All windblown spray and surface runoff of reclaimed water applied for irrigation onto property not owned or controlled by the discharger or reclaimed water user shall be prevented by implementation of BMPs.
- Q.** Irrigation with reclaimed water shall be during periods of minimal human use of the service area. Consideration shall be given to allow an adequate dry-out time before the irrigated area will be used by the public.
- R.** All drinking fountains located within the approved use area shall be protected by location and/or structure from contact with recycled water spray, mist, or runoff. Protection shall be by design, construction practice, or system operation.
- S.** Facilities that may be used by the public, including but not limited to eating surfaces and playground equipment and located within the approved use areas, shall be protected to the maximum extent possible by siting and/or structure from contact by irrigation with recycled water spray, mist, or runoff. Protection shall be by design, construction practice or system operation.
- T.** Spray irrigation with recycled water, other than disinfected tertiary recycled water, shall not take place within 100 feet of the property line of a residence or a place where public exposure could be similar to that of a park, playground, or school yard.
- U.** All use areas where recycled water is used and that are accessible to the public shall be posted with conspicuous signs, in a size no less than 4 inches by 8 inches, that include the following wording and picture in a size no less than 4 inches high by 8 inches wide: "RECYCLED WATER - DO NOT DRINK". The sign(s) shall be of a size easily readable by the public. The prescribed wording should also be translated into Spanish and other appropriate languages and included in the required signs.
- V.** No physical connection shall be made or allowed to exist between any recycled water system and any separate system conveying potable water.
- W.** The recycled water piping system shall not include any hose bibs. Quick couplers that are different from that used on the potable water system may be used.

- X. The public water supply shall not be used as a backup or supplemental source of water for a recycled water system unless the connection between the two systems is protected by an air gap separation which complies with the requirements of sections 7602(a) and 7603(a) of Title 17 and the approval of the public water system has been obtained. If a "Swivel-ell" type connection is used it must be used in accordance with the provisions of the Department of Public Health Policy Memo 95-004. Approved backflow prevention devices shall be provided, installed, tested, and maintained by the recycled water user in accordance with the applicable provisions of Title 17, Division 1, Chapter 5, Group 4, Article 2.
- Y. No person other than the Discharger shall deliver recycled water to a facility. Connection to the irrigation system by an individual residence is prohibited.
- Z. All recycled water piping and appurtenances in new installations and appurtenances in retrofit installations shall be colored purple or distinctively wrapped with purple tape in accordance with Chapter 7.9, section 4049.54 of the California Health and Safety Code.
- AA. Customer complaints concerning recycled water use that may involve public illness shall be reported to the County DEH and the CDPH, and to the Discharger who shall maintain a log of all customer complaints regarding recycled water.
- BB. Any backflow prevention device installed to protect the public water system shall be inspected and maintained in accordance with section 7605 of Title 17.
- CC. Application of recycled water to the use area shall be at reasonable agronomic rates and shall consider soil, climate, and nutrient demand. The description of agronomic application compliance shall be included in the Quarterly Recycled Water Summary (Monitoring and Reporting Program, Attachment C, V.B.).
- DD. The seasonal nutritive loading of the use area including the nutritive value of organic and chemical fertilizers and of the recycled water, shall not exceed the nutritive demand of the landscape. The Discharger shall communicate to the users the nutrient levels in the recycled water.
- EE. The recycled water irrigation users shall report the volume of recycled water, total number of use areas in each basin, the total area of application, nitrogen application rate, and salinity application rate.

APPENDIX B

Existing Recycled Water Use Data (2010)



ATKINS

EXISTING RECYCLED WATER CUSTOMERS

DISCHARGER CITY OF ESCONDIDO, Hale Avenue Resource Recovery Facility

ORDER/RESOLUTION No. R9-2010-0032

REPORT FOR: JAN-DEC 2010

REPORT DUE MARCH 1, 2011

SIGNED UNDER PENALTY OF PERJURY _____

	Location/ Service Order Num.	Acct #	Reclaimed Water Use Site Address	Basin Plan	Total Volume Of Recycled Water Supplied (Thousands)	Acre-Foot
1	Grape Day Park	1920279589	131 Woodward, Escondido	4.62	409	1.26
2	Rod McLeod Park	3479914570	1701 S. Iris, Escondido	4.62	3114	9.56
3	Jesmond Dene Park	55701950000	2401 N. Broadway, Escondido	4.62	5148	15.80
4	Westside Park	5305649927	333 S. Spruce, Escondido	4.62	1736	5.33
5	Kit Carson Park	988067668	3333 Bear Valley PKWY @ Fire Station 4 & Sport Park	5.21	18000	55.24
6	Kit Carson Park	147293705	3333 Bear Valley PKWY @ South of Entrance Drive	5.21	9606	29.48
7	Kit Carson Park	6570195000	3333 Bear Valley PKWY @ Westside, Escondido	5.21	14862	45.61
8	Grape Day Park	0280195000	340 N. Broadway, Escondido	4.62	9847	30.22
9	Reidy Creek Golf Course	9474839470	2300 N Broadway	4.62	36317	111.45
10	North Centre City PKWY	7563339691	North Centre City PKWY & El Norte	4.62	4008	12.30
11	Vineyard Golf Course	9321541001	Vineyard Golf Course	4.62	33417	102.55
12	1636 Del Dios Hwy	7271313671	1636 Del Dios Hwy	4.62	1036	3.18
13	Escondido Hills HOA	99-0000-1	Village Pool	4.52	1431	4.39
14	Escondido Views HOA	99-0001-0	Dogwood Place	4.62	746	2.29
15	Escondido Views HOA	99-0002-0	N. Iris Lane	4.62	404	1.24
16	Escondido Views HOA	99-0003-0	Eastridge Lane & Country Club Lane	4.62	1731	5.31
17	N. Broadway School	99-0004-0	N. Broadway School	4.62	3390	10.40
18	Escondido Views HOA	99-0005-0	2345 Oakridge Place	4.62	1131	3.47
19	Escondido Views HOA	99-0007-0	222 Eveningside Glen	4.62	165	0.51
20	Escondido Views HOA	99-0010-0	Between 267 & 305 Skyridge Lane	4.62	989	3.04
21	Escondido Views HOA	99-0015-0	Valley View Place	4.62	866	2.66
22	Escondido Views HOA	99-0020-0	Valley View Place	4.62	468	1.44

	Location/ Service Order Num.	Acct #	Reclaimed Water Use Site Address	Basin Plan	Total Volume Of Recycled Water Supplied (Thousands)	Acre-Foot
23	Escondido Views HOA	99-0025-0	429 Skyridge Lane	4.62	1552	4.76
24	Escondido Views HOA	99-0030-0	430 Skyridge Lane	4.62	1034	3.17
25	Escondido Views HOA	99-0035-0	2341 Viewridge Place	4.62	1877	5.76
26	Escondido Views HOA	99-0040-0	Skyridge Lane	4.62	2173	6.67
27	Escondido Views HOA	99-0045-0	Skyridge Lane	4.62	1801	5.53
28	Escondido Views HOA	99-0050-0	End of Amber Lane	4.52	579	1.78
29	Escondido Views HOA	99-0055-0	Amber Lane	4.62	100	0.31
30	Escondido Views HOA	99-0060-0	Amber Lane	4.62	1298	3.98
31	Escondido Views HOA	99-0065-0	Country Club Lane 90' East of Village	4.62	1913	5.87
32	Escondido Views HOA	99-0067-0	302 1/2 Eastridge Lane	4.62	450	1.38
33	Escondido Hills HOA	99-0068-0	0 Country Club Ln across from Eastridge	4.62	239	0.73
34	Country Club Gardens Apts	99-0069-0	610 W Country Club Lane (apts)	4.62	1034	3.17
35	City of Escondido	99-0070-0	1087 W Country Club Lane	4.52	26	0.08
36	Escondido Hills HOA	99-0071-0	222 Ranchwood Gl	4.52	121	0.37
37	Gloria Dei Luthern	99-0075-0	1087 Country Club Lane (Church)	4.52	432	1.33
38	City of Escondido	99-0080-0	Country Club Lane	4.52	194	0.60
39	Esc. C.C. Terrace HOA	99-0085-0	Gary Lane East of Lark	4.52	43	0.13
40	Esc. C.C. Terrace HOA	99-0087-0	Lark Glen	4.52	71	0.22
41	City of Escondido	99-0090-0	Country Club Lane	4.52	134	0.41
42	Neighborhood Church	99-0093-0	1001 Country Club Lane	4.52	278	0.85
43	City of Escondido	99-0094-0	S E corner Country Club	4.52	3411	10.47
44	City of Escondido	99-0095-0	Country Club Lane	4.52	171	0.52
45	7-11	99-0096-0	555 Country Club Ln.	4.52	484	1.49
46	Escondido Hills HOA	99-0097-0	Country Club Ln.	4.52	745	2.29
47	City of Escondido	99-0098-0	Country Club Lane (Park)	4.52	1497	4.59
48	Escondido Hills HOA	99-0099-0	Shadybrook Pool	4.52	481	1.48
49	Sonata Maint HOA	99-0100-0	Beethoven/Huckleberry Tennis Courts	5.21	1694	5.20
50	Sonata Maint. HOA	99-0105-0	Beethoven/Concerto	5.21	130	0.40
51	Sonata Single Fam.HOA	99-0110-0	3901 Summer Way	5.21	2955	9.07
52	Sonata Single Fam.HOA	99-0120-0	831/841 Inspiration Lane	5.21	961	2.95
53	Sonata Single Fam.HOA	99-0130-0	Inspiration Lane	5.21	308	0.95
54	Sonata Single Fam.HOA	99-0140-0	Pinnacle Place	5.21	801	2.46
55	Sonata Single Fam.HOA	99-0150-0	Observation Place	5.21	2066	6.34
56	Sonata Single Fam.HOA (NEW)	99-1550-0	Upper Beethoven/Inspiration	5.21	581	1.78

	Location/ Service Order Num.	Acct #	Reclaimed Water Use Site Address	Basin Plan	Total Volume Of Recycled Water Supplied (Thousands)	Acre-Foot
57	Sonata Maint. HOA	99-0160-0	Upper Beethoven/Inspiration	5.21	2118	6.50
58	Sonata Single Fam.HOA	99-0162-0	Wind Place	5.21	577	1.77
59	Sonata Patio HOA	99-0165-0	Huckleberry Ln.	5.21	157	0.48
60	Sonata Patio HOA	99-0170-0	Huckleberry Ln.	5.21	18	0.06
61	Sonata Patio HOA	99-0180-0	Huckleberry Ln.	5.21	38	0.12
62	Sonata Patio HOA	99-0185-0	Huckleberry Ln.	5.21	2	0.01
63	Morniningside Woods	99-0187-0	S. Iris Lane	4.62	162	0.50
64	Morniningside Woods	99-0189-0	S. Iris Lane	4.62	0	0.00
65	Sonata Patio HOA	99-0190-0	Huckleberry Ln.	5.21	99	0.30
66	Sonata Patio HOA	99-0195-0	Huckleberry Ln.	5.21	61	0.19
67	450 W. El Norte Pkwy	99-1000-0	AM/PM	4.62	305	0.94
68	JRMC (NEW)	99-1030-0	Citracado Parkway	5.21	1885	5.78
69	JRMC (NEW)	99-1060-0	Citracado Parkway	5.21	2025	6.21
70	JRMC (NEW)	99-1090-0	Citracado Parkway	5.21	2555	7.84
71	Sempre (16" Landscape)	99-1100-0	2300 Harveson Place	4.62	1426384	4377.41
72	Sempre (3" Landscape)	99-1110-0	2300 Harveson Place	4.62	4771	14.64
73	JRMC (NEW)	99-1200-0	Citracado Parkway	5.21	1540	4.73
74	JRMC (NEW)	99-1300-0	Citracado Parkway	5.21	5797	17.79
75	JRMC (NEW)	99-1400-0	Citracado Parkway	5.21	3910	12.00
76	JRMC (NEW)	99-1500-0	Citracado Parkway	5.21	5227	16.04
77	JRMC (NEW)	99-1600-0	Citracado Parkway	5.21	3280	10.07
78	JRMC (NEW)	99-1700-0	Citracado Parkway	5.21	297	0.91
79	JRMC (NEW)	99-1800-0	Citracado Parkway	5.21	874	2.68
80	Forest Glen Apts	99-2100-0	Forest Glen/Beaumont Glen	4.62	4774	14.65
81	Rincon Water District	99-2100-0	1920 N. Iris Lane	4.62	111	0.34

Total Volume of reclaimed water supplied to City of Escondido					137,500,000	421.97
Total Volume of reclaimed water supplied to Rincon Del Diablo MWD					1,498,601,000	4599.04
Total Volume of reclaimed water supplied to all reclaimed users					1,544,375,000	4739.51

APPENDIX C

Long Term Recycled Water Agreements between City and District



Jeffrey R. Epp, City Attorney
(760) 839-4608, FAX (760) 741-7541
E-mail: Jepp@ci.escondido.ca.us

October 3, 2005

Annette Hubbell
Rincon del Diablo Municipal District
1920 North Iris Lane
Escondido, CA 92026-1399

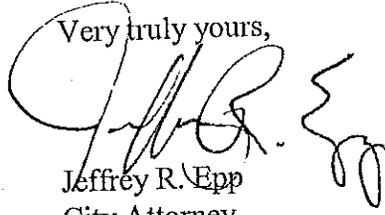
RECEIVED
OCT 10 2005
CITY OF ESCONDIDO

Re: Second Amendment to the Recycled Water Service Agreement

Dear Ms. Hubbell:

Please find enclosed a copy of the fully executed Amendment to the Recycled Water Service Agreement for your files.

Very truly yours,



Jeffrey R. Epp
City Attorney

SECOND AMENDMENT
to the
RECYCLED WATER SERVICE AGREEMENT

This **SECOND AMENDMENT TO THE RECYCLED WATER SERVICE AGREEMENT** ("Second Amendment"), effective as of 9-13-05, 2005, is entered into by and among the **CITY OF ESCONDIDO**, a California general law city ("Escondido"), the **RINCON DEL DIABLO MUNICIPAL WATER DISTRICT**, a municipal water district organized and operating pursuant to the Municipal Water District Law of 1911, California Water Code section 71000 *et seq.* ("Rincon"), and **PALOMAR ENERGY, LLC**, a Delaware limited liability company ("Palomar") the sole member of which is a subsidiary of Sempra Energy Resources.

- RECITALS -

This Second Amendment is made with reference to the following:

A. The Parties entered into the Recycled Water Service Agreement ("Primary Agreement") as of March 26, 2003. The Primary Agreement defines the contractual relationship among the Parties with respect to recycled water service to and brine return from the Project. Unless otherwise stated, capitalized terms used herein and not otherwise defined herein shall have the meaning ascribed to such terms in the Primary Agreement.

B. The Parties entered into the First Amendment to the Recycled Water Service Agreement ("First Amendment") as of October 6, 2004. The First Amendment modified certain terms and conditions in the Primary Agreement to recognize Escondido's effort to expedite the original timeframe for completion of the Escondido Facilities. Under the First Amendment, the definition for the Initial Service Date was revised to mean the date on which Escondido first provides recycled water to Rincon for the Project and/or first receives brine return from the Project. Under the Primary Agreement, various capacity charges commence in the month following the month in which the actual Initial Service Date occurs.

C. Palomar anticipates that it will first require recycled water beginning in September 2005 for system flush and other similar purposes, with an increase in the Project's recycled water requirements expected to occur in December 2005 for testing purposes.

D. Escondido is willing to modify the payment schedule for the Additional Capacity Charge in consideration for certain modifications to the operational milestones associated with the Escondido Facilities, and for certain other changes to the Primary Agreement.

- SECOND AMENDMENT -

The Parties agree as follows:

1. Second Amendment Effective Date. This Second Amendment shall be effective as of the date of last execution by the Parties, and shall remain in effect concurrently with the Primary Agreement.
2. Operational Milestones. Section 3.4.2.3 of the Primary Agreement (as described in Section 4 of the First Amendment) is revised (a) by substituting the date "November 20, 2005" for the date "September 30, 2005", which date occurs twice in Section 3.4.2.3 of the Primary Agreement and (b) by substituting the date "November 21, 2005" for the date "October 1, 2005", which date occurs twice in Section 3.4.2.3 of the Primary Agreement.
3. Additional Payment. Section 3.4.2.4 of the Primary Agreement (as described in Section 4 of the First Amendment) is revised by substituting the phrase "not to exceed \$450,000" for the phrase "not to exceed \$400,000", which phrase occurs at the end of the first sentence.
4. Use of Recycled Water. Section 4.1 of the Primary Agreement is revised in its entirety to read as follows:

"4.1 Description of Recycled Water. Recycled water provided by Escondido through Rincon under this Agreement shall meet all federal, state and local standards for use of recycled water by the Project other than for sanitary and domestic purposes and shall specifically comply with the requirements specified in Title 22 of the California Code of Regulations for use of Disinfected Tertiary Treated Recycled Water for uses including but not limited to cooling tower make-up water, structural and non-structural fire fighting water, industrial process water (make-up water for boilers), service water, and irrigation."
5. Additional Capacity Charge. Section 5.1.2 of the Primary Agreement is revised by substituting the phrase "Beginning on January 1, 2006" for the phrase "Beginning in the calendar month following the month in which the Initial Service Date occurs".
6. Escondido Volumetric Charge. Section 5.1.3 of the Primary Agreement is clarified (a) by deleting the introductory phrase "Beginning in the calendar month following the month in which the Initial Service Date occurs," and (b) by capitalizing the first letter in the immediately succeeding word, "the".
7. Monthly Billing Statement. Section 6.1 of the Primary Agreement is clarified by deleting the introductory phrase "Beginning in the calendar month following the month in which the Initial Service Date occurs,".

8. Primary Agreement to Remain in Effect. Except as expressly amended herein, all other terms and conditions of the Primary Agreement and the First Amendment shall remain unchanged and in full force. Without limiting the generality of the foregoing, this Second Amendment does not modify Section 5.3 of the Primary Agreement with respect to the applicability of and schedule for a delayed implementation fee.

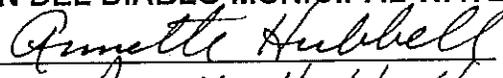
IN WITNESS WHEREOF, the Parties have caused this Second Amendment to the Recycled Water Service Agreement to be duly executed by their authorized representatives as of the dates set forth below.

CITY OF ESCONDIDO

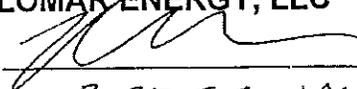
By: 
Name: Lori Holt Pfeiler
Title: Mayor
Date: 9/28/05

Attest: 
Marsha Whalen, City Clerk

RINCON DEL DIABLO MUNICIPAL WATER DISTRICT

By: 
Name: Annette Hubbell
Title: General Manager
Date: 9/20/05

PALOMAR ENERGY, LLC

By: 
Name: ROBERT C. JACKSON
Title: PROJECT DIRECTOR
Date: 9/22/05

RESOLUTION NO. 2004-185 (R)

A RESOLUTION OF THE CITY COUNCIL OF
THE CITY OF ESCONDIDO, CALIFORNIA,
AUTHORIZING THE MAYOR AND CITY CLERK
TO EXECUTE, ON BEHALF OF THE CITY, A
FIRST AMENDMENT TO THE RECYCLED
WATER SERVICE AGREEMENT

WHEREAS, on March 26, 2003, the Escondido City Council authorized the execution of a Recycled Water Service Agreement ("Agreement") in connection with the Development Agreement for the Escondido Research and Technology Park project; and

WHEREAS, the parties wish to amend the Agreement to reflect modified terms and conditions which are associated with Escondido's effort to expedite the original timeframe for completion and the updated recycled water and brine return requirements; and

WHEREAS, the City Council desires at this time, and deems it to be in the best public interest, to approve a First Amendment to the Recycled Water Service Agreement;

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Escondido, California, as follows:

1. That the above recitations are true.
2. That the Mayor and City Clerk are hereby authorized to execute, on behalf of the City, a First Amendment to the Recycled Water Service Agreement, in substantially the form attached as Exhibit "1" to this resolution, subject to the approval of the City Attorney's Office.

A-2707

FIRST AMENDMENT
to the
RECYCLED WATER SERVICE AGREEMENT
among
CITY OF ESCONDIDO
and
RINCON DEL DIABLO MUNICIPAL WATER DISTRICT
and
PALOMAR ENERGY, LLC

This **FIRST AMENDMENT TO THE RECYCLED WATER SERVICE AGREEMENT** ("First Amendment"), effective as of October 6, 2004 is entered into by and among the **CITY OF ESCONDIDO**, a California general law city ("Escondido"), the **RINCON DEL DIABLO MUNICIPAL WATER DISTRICT**, a municipal water district organized and operating pursuant to the Municipal Water District Law of 1911, California Water Code section 71000 *et seq.* ("Rincon"), and **PALOMAR ENERGY, LLC**, a Delaware limited liability company ("Palomar") the sole member of which is a subsidiary of Sempra Energy Resources.

- RECITALS -

This First Amendment is made with reference to the following:

A. The Parties entered into the Recycled Water Services Agreement ("Primary Agreement") as of March 26, 2003. The Primary Agreement defines the contractual relationship among the Parties with respect to recycled water service to and brine return from the Project. Capitalized terms used herein and not otherwise defined herein shall have the meaning ascribed to such terms in the Primary Agreement.

B. Under Article 1 of the Primary Agreement, Palomar is required to submit to Escondido the Notice of Expected Initial Service Date at least 24 months prior to the expected Initial Service Date. The timing associated with the Notice of Expected Initial Service Date is intended to provide Escondido a minimum of 24 months to design, build and initiate operation of the Escondido Facilities. For reasons more fully described below, Palomar has not yet submitted to Escondido the Notice of Expected Initial Service Date.

C. The timing for construction and initial operation of the Project has been linked to, among other things, proceedings before the California Public Utilities Commission ("CPUC"). On June 9, 2004, the CPUC issued Decision 04-06-011, which authorized San Diego Gas & Electric Company ("SDG&E") to enter into a contract with Palomar ("SDG&E Contract") under which the Project will be transferred from Palomar to SDG&E after the Project achieves commercial operations.

D. Requirements in the SDG&E Contract relating to the construction and initial operation of the Project do not allow sufficient time for Palomar to provide the Notice of Expected Initial Service Date 24 months in advance of the expected Initial Service Date, as contemplated in the Primary Agreement. Pursuant to the provisions of Section 4.9 of the Development Agreement among Escondido, Palomar and JRM-ERTC I, Palomar and Escondido entered into the First Operating Memorandum on March 24, 2004. Under the First Operating

Memorandum, Escondido agreed to commence certain engineering and permitting work on the Escondido Facilities, and Palomar agreed to advance certain payments to cover such work prior to the issuance of the Notice of Expected Initial Service Date.

E. In developing the First Operating Memorandum, Escondido and Palomar contemplated that a subsequent agreement would be necessary in order to implement changes to the Primary Agreement occasioned by the expedited schedule. Accordingly, the Parties desire to enter into this First Amendment to modify certain terms and conditions in the Primary Agreement to recognize Escondido's effort to expedite the original timeframe for completion of the Escondido Facilities.

- FIRST AMENDMENT -

The Parties agree as follows:

1. First Amendment Effective Date. This First Amendment shall be effective as of the date of last execution by the Parties, and shall remain in effect concurrently with the Primary Agreement.
2. Notice of Expected Initial Service Date. Except as otherwise stated herein, the Notice of Expected Initial Service Date shall be deemed to have been delivered on June 15, 2003, providing notice that the expected Initial Service Date is June 15, 2005.
3. Additional Capacity Charge. Section 5.1.2 of the Primary Agreement is revised by substituting the date "July 31, 2004" for the phrase "the date on which Palomar has submitted the Notice of Expected Initial Service Date", which phrase occurs twice in Section 5.1.2 of the Primary Agreement.
4. Expedited Completion of the Escondido Facilities. The following is inserted after Section 3.4.2 of the Primary Agreement:

3.4.2.1 Expedited Efforts. As soon as reasonably practicable following the effective date of the First Amendment, Escondido shall (a) complete its preliminary design report for brine collection and the reclaimed water storage system and (b) enter into a final engineering design contract to complete the design of the Escondido Facilities. The final engineering design contract shall establish a milestone of December 31, 2004 as the expected date by which design of the Escondido Facilities shall have been completed. Escondido shall use its best efforts to complete the design and construction of the Escondido Facilities in accordance with Section 3.4.2.3.

3.4.2.2 Monitoring Equipment. Without limiting the generality of Sections 3.4.2 and 7.3, Palomar shall install all necessary monitoring equipment at or near the Project for the purpose of testing brine discharge from the Project prior to its entering the wastewater stream. Such monitoring equipment shall be capable of testing and providing any required information to the Regional Water Quality Control Board for purposes of discharge of brine from the HARRF pursuant to applicable waste discharge requirements.

3.4.2.3 Operational Milestones. Escondido shall use its best efforts to complete the Escondido Facilities to provide recycled water to Rincon for the Project in accordance with the following:

June 15, 2005 through September 30, 2005: Recycled water will be available at a rate of 1,500 gallons per minute (peak) and 935 gallons per minute (average).

October 1, 2005 through the term of the Primary Agreement: Recycled water will be available at a rate of 5,000 gallons per minute (peak) and 3,000 gallons per minute during Project operation (average). Palomar represents that the Contract Quantity set forth in Exhibit A is consistent with this average flow rate and reflects the Project's overall expected annual recycled water requirement.

Escondido also shall use its best efforts to complete the Escondido Facilities to receive brine return from the Project in accordance with the following:

June 15, 2005 through September 30, 2005: Brine return may be received at a rate of 600 gallons per minute (peak) and 350 gallons per minute (average)

October 1, 2005 through the term of the Primary Agreement: Brine return may be received at a rate of 1,650 gallons per minute (peak) and 935 gallons per minute during Project operation (average)

3.4.2.4 Additional Payments. Palomar shall reimburse Escondido for all of its costs associated with expediting the final engineering design contract to complete the design of the Escondido Facilities and with expediting necessary permits to deliver recycled water and receive brine return, not to exceed \$400,000. The determination of such expediting costs described in the preceding sentence shall be made by Escondido in its reasonable discretion. Escondido acknowledges that Palomar previously made a payment of \$50,000 under the First Operating Memorandum to commence certain engineering and permitting work on the Escondido Facilities. Palomar agrees that such \$50,000 payment shall be retained by Escondido, and applied as a credit against costs described in this Section 3.4.2.4. Additional payments shall be made by Palomar within 15 days of receiving Escondido's written invoice for reimbursement of costs under this Section 3.4.2.4.

5. Definition of the Initial Service Date. The definition of "Initial Service Date" in Exhibit A to the Primary Agreement is revised in its entirety to read as follows:

"Initial Service Date" means the date on which Escondido first provides recycled water to Rincon for the Project and/or first receives brine return from the Project. As described in Section 2 of the First Amendment and Section 3.4.2.3, the expected Initial Service Date is June 15, 2005.

6. Updated Recycled Water Requirements. Within 30 days after the effective date of this First Amendment, Palomar shall provide to Escondido the updated recycled water

requirements for the Project, including the information described in Section 7.1 of the Primary Agreement. In addition, Palomar shall also provide to Escondido the current technical and operating assumptions underlying the recycled water and brine return flow rates specified in Section 3.4.2.3 of the Primary Agreement. Without limiting the generality of Section 7.1, Escondido acknowledges that the information to be provided by Palomar is based upon current assumptions concerning operation of the Project by SDG&E, and that future desired changes in such operation by SDG&E are not within Palomar's control.

7. Primary Agreement to Remain in Effect. Except as expressly amended herein, all other terms and conditions of the Primary Agreement shall remain unchanged and in full force.

IN WITNESS WHEREOF, the Parties have caused this First Amendment to the Recycled Water Services Agreement to be duly executed by their authorized representatives as of the date set forth below.

CITY OF ESCONDIDO

By: [Signature]

Name: _____

Title: _____

Date: 10-6-04

Attest: [Signature]
Marsha Whalen, City Clerk 10-6-04

RINCON DEL DIABLO MUNICIPAL WATER DISTRICT

By: [Signature]

Name: Annette S. Hubbell

Title: General Manager

Date: August 30, 2004

PALOMAR ENERGY, LLC

By: [Signature]

Name: ROBERTS C. JACKSON

Title: PROJECT MANAGER

Date: 10/5/04

Marsha Whalen, City Clerk
(760) 839-4560, FAX (760) 741-7541
E-mail: MWhalen@ci.escondido.ca.us

March 7, 2003

RECEIVED

MAR 10 2003

RINCON DEL DIABLO M.W.D.
ESCONDIDO



**CITY OF
ESCONDIDO**

201 NORTH BROADWAY
ESCONDIDO, CA 92025

Annette Hubbell
Rincon del Diablo Municipal Water District
1920 North Iris Lane
Escondido, CA 92026

Dear Annette:

I am writing this letter to set forth the manner in which the City of Escondido believes a certain portion of a contractual agreement between your agency and the City should be interpreted, and with your concurrence by signature below, establish the manner in which the contract should be applied.

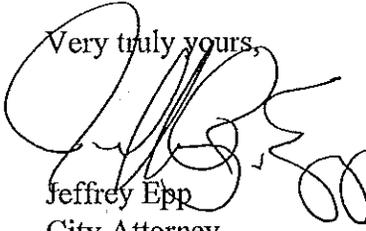
More specifically, on February 9, 1999, the City of Escondido and the Rincon del Diablo Municipal Water District entered into an "Agreement for Purchase of Recycled Water" ("1999 Agreement"). The 1999 Agreement provided certain terms and conditions under which Rincon del Diablo would purchase recycled water produced at the City's Hale Avenue Resource Recovery Facility. Section 8 of the 1999 Agreement states that the City agrees to provide the District "with not less than 0.4 MGD, and not less than 2.0 MGD during Peak Demand periods, of Recycled Water . . . upon request from the District." Likewise, the Agreement provides that "The District shall purchase a minimum of 462 acre feet of Recycled Water each year, whether or not the District actually uses this amount of Recycled Water...."

This so-called "take or pay" provision for the District to purchase 462 acre feet of water on an annual basis came up during our recent negotiations of an agreement between the City, Rincon, and Palomar Energy LLC, etc. ("Palomar Agreement"). Palomar is proposing to develop and construct a natural gas-fired, combined-cycle power generating facility in the Escondido Research and Technology Center, which is located in Rincon's service area. State policy promotes the use of recycled water in cooling towers for such power generating facilities if recycled water is available. The Palomar Agreement is for the purpose of providing for Rincon's purchase of recycled water from Escondido for resale to Palomar.

Lori Holt Pfeiler, Mayor
Marie Waldron, Mayor Pro Tem
Tom D'Agosta
Ed Gallo
Ron Newman

March 7, 2003
Page 2

During the recent negotiations, Rincon indicated concern as to whether recycled water used under the Palomar Agreement would be credited towards the 462 acre feet "take or pay" requirement of the City's 1999 agreement with Rincon. After reviewing the matter, it is the City's position that our 1999 agreement with Rincon, read in conjunction with the Palomar agreement, would cause amounts of water actually used under the terms of the Palomar Agreement are to be credited towards the 462 acre feet "take or pay" requirement of the City's Agreement with Rincon. Moreover, assuming Rincon concurs, we believe this is the correct manner in which to interpret these two agreements.

Very truly yours,

Jeffrey Epp
City Attorney

JRE:lj

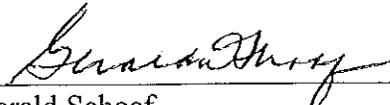
cc: Gerald Schoaf
Jack Hoagland

If you concur on behalf of Rincon, please sign as indicated below.


Annette Hubbell
General Manager
Rincon del Diablo Municipal Water District

3-21-03
Date

APPROVED AS TO FORM:


Gerald Schoaf

Marsha Whalen, CMC
City Clerk
(760) 839-4617
FAX (760) 741-7541



**CITY OF
ESCONDIDO**

201 NORTH BROADWAY
ESCONDIDO, CA 92025

November 16, 2001

RECEIVED

NOV 19 2001

RINCON DEL DIABLO M.W.D.
ESCONDIDO

Rincon Del Diablo Municipal Water District
1920 North Iris Lane
Escondido, CA 92026

RE: Agreement Affirming Respective Roles Responsibilities and Reporting
Requirements with Respect to Complying with Waste Discharge Order No.
93-70 (A-2514)

To Whom It May Concern:

Enclosed please find a fully executed original of the above agreement between
Rincon Del Diablo Municipal Water District and the City of Escondido, along
with a copy of the authorizing resolution (R. 2001-229).

Please feel free to call this office if you have any questions.

Sincerely,

A handwritten signature in cursive script, appearing to read "Melody A. Smith".

Melody A. Smith
Department Assistant

Enclosures

c: John Hoagland, Utilities Manager (w/copy of agreement)

Lori Holt Pfeiler, Mayor
Tom D'Agosta
Ed Gallo
June Rady
Marie Waldron



AGREEMENT BETWEEN RINCON DEL DIABLO MUNICIPAL WATER DISTRICT AND THE CITY OF ESCONDIDO AFFIRMING THEIR RESPECTIVE ROLES RESPONSIBILITIES AND REPORTING REQUIREMENTS WITH RESPECT TO COMPLYING WITH WASTE DISCHARGE ORDER NO. 93-70

This Agreement is made this 15th day of November, 2001.

Between: Rincon Del Diablo Municipal Water District
1920 North Iris Lane
Escondido, CA 92026
("District")

And: City of Escondido
A Municipal Corporation
201 N. Broadway
Escondido, CA 92025
("City")

Witness That Whereas:

- A. On or about March 9, 1999, the City of Escondido and the Rincon Del Diablo Municipal Water District entered into an agreement which, among other things, provided for the sale of recycled water by the City to the District as part of the District's Water Recycling Program. A copy of said agreement is attached hereto marked Exhibit "A"; and
- B. The District has applied for a loan and a grant for its Water Recycling Program from the State Water Resources Control Board ("SWRCB") under SWRCB's Water Reclamation Grant Program ("WRGP"); and
- C. The District's Water Recycling Program has received conceptual approval as set forth in the Facilities Plan Approval Letter dated August 1, 2001 ("FPA Letter") issued by the SWRCB; and
- D. The City and the District will oversee the use of recycled water within their respective service jurisdictions; and
- E. A Waste Discharge Order for recycled water was issued by the Regional Water Quality Control Board ("RWQCB") to the City (Waste Discharge Order No. 93-70) for the portion of the user sites identified within the jurisdictions of the City and the District; and
- F. It is anticipated that the RWQCB will not require a separate Waste Discharge Order for the District; and
- G. The SWRCB, in conjunction with the District's loan/grant application requirements, has requested that the District and the City enter into an agreement affirming their respective roles, responsibilities and reporting requirements with respect to complying with Waste Discharge Order No. 93-70;

NOW, THEREFORE, the parties hereby agree as follows:

1. Incorporation of Recitals. The Recitals set forth above are hereby made a part of this Agreement and are incorporated herein as though set forth in full by this reference.
2. Term. This Agreement shall terminate on February 9, 2033. This termination date coincides with the termination date of the agreement referenced in the first Recital of this Agreement.
3. Roles and Responsibilities.

A. Water Quality.

The City agrees that the recycled water the City provides the District pursuant to the District's Water Recycling Program will meet all federal, state and local requirements for unrestricted body contact as these requirements may change from time to time during the term of this Agreement.

B. Application of Waste Discharge Order 93-70.

The City agrees that all of the recycled water that the City provides the District pursuant to the agreement set forth in Exhibit "A" of this Agreement shall be subject to Waste Discharge Order No. 93-70. As such, the City shall be responsible for all applicable reporting requirements to the Regional Water Quality Control Board. The District agrees to abide by all prohibitions and discharge specifications set forth therein which are applicable to the District's Water Recycling Program.

C. District's Reporting Requirements.

The District agrees to provide the City with all information reasonably needed by the City to fulfill its reporting requirements as provided for in Section 3(B) above which are applicable to the District's Water Recycling Program.

Such reporting information shall include the following:

- (i) Quarterly reclaimed water users summary report for the District's customers containing the following information:
 - (a) Total volume of reclaimed water supplied to all reclaimed water users for each month of the reporting period.
 - (b) Total number of reclaimed water use sites.
 - (c) Address of the reclaimed water use site.
 - (d) Basin Plan name and number of hydrologic subarea underlying the reclaimed water use site.

(ii) Annual reclaimed water users compliance report for the for the District's customers containing the following information:

- (a) Name of the reclaimed water use site.
- (b) Owner of the reclaimed water use facility.
- (c) Name of the reclaimed water use supervisor.
- (d) Phone number of the reclaimed water use supervisor.
- (e) Mailing address of the reclaimed water use supervisor, if different from site address.
- (f) Volume of reclaimed water delivered to the reclaimed water site on a monthly basis.
- (g) Number of reclaimed water use site inspections conducted by the District staff and identification of sites inspected for the reporting period.
- (h) The District shall identify all of its reclaimed water users known by the District to be in violation of the District's rules and regulations for reclaimed water users. This information shall include a description of the noncompliance and its cause, including the period of noncompliance, and if the noncompliance has not been corrected; the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

4. District's Recycled Water Rules and Regulations. The District has adopted rules and regulations to establish procedures, specifications and limitations for the safe and orderly development and operation of its recycled water facilities and systems in the District's service area. Said rules and regulations were approved and promulgated by the District's Board of Directors by Resolution No. 2001-927.

The District's rules and regulations provide the basic foundation under which the District will administer and enforce its Water Recycling Program within its jurisdiction. The District will be solely responsible for administering its Water Recycling Program, including the issuance of water recycling permits and enforcement/inspections for recycled water users within its jurisdiction.

5. Miscellaneous Provisions.

A. Applicable Law.

This Agreement and any disputes relating to this Agreement shall be construed in accordance with the laws of the State of California.

B. Venue.

In the event of any legal or equitable proceeding to enforce or interpret the terms or conditions of this Agreement, or to obtain a judgment confirming the arbitrator's award and to enforce the judgment, the parties agree that the venue shall lie only in the federal or state courts in or nearest to the North County Judicial District, County of San Diego, State of California.

C. Modification.

This Agreement may not be altered in whole or in part except by a written modification executed by all the parties to this Agreement.

D. Entire Agreement.

This Agreement, together with all exhibits attached hereto, contains the general understanding between the parties with respect to their respective roles, responsibilities and reporting requirements with respect to complying with Waste Discharge Order No. 93-70. However, if there are any inconsistencies between this Agreement and the agreement entered into on or about March 9, 1999 between the City and the District, which is attached to this Agreement marked Exhibit "A", the provisions in the agreement reflected in Exhibit "A" shall prevail.

E. Binding Effect.

This Agreement shall inure to the benefit of and shall be binding upon the parties and their respective purchasers, successors, heirs, and assigns.

F. Unenforceable Provisions.

The terms, conditions, and covenants of this Agreement shall be construed whenever possible as consistent with all applicable laws and regulations. To the extent that any provision of this Agreement is held to violate any applicable law or regulation, the remaining provisions shall nevertheless be carried into full force and effect and shall remain enforceable.

G. Notices.

All notices, statements, or other writings required to be given pursuant to this Agreement shall be deemed given upon posting in the United States mail or when transmitted if sent by facsimile to the following addresses or facsimile numbers:

City of Escondido
Attn: City Manager
201 North Broadway
Escondido, CA 92025-2798
Fax: 760/432-9512

Rincon del Diablo Municipal Water District
Attn: General Manager
1920 North Iris Lane
Escondido, CA 92026
Fax: 760/745-4235

Either party may change its address for notice at any time by giving written

notice of the new address to the other party.

H. Attorneys' Fees.

If any action or proceeding, including arbitration as provided above, is filed to challenge, invalidate, interpret, or enforce this Agreement, the prevailing party shall be entitled to reasonable attorneys' fees and costs in addition to other relief authorized by applicable law.

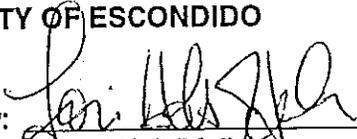
I. Counterparts.

This Agreement may be signed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date first written above.

CITY OF ESCONDIDO

Dated: 11/16, 2001.

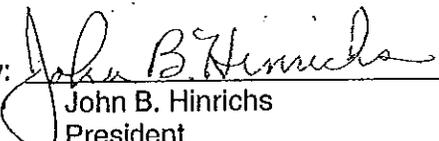
By: 
Lori Holt Pfeifer
Mayor

Dated: 11-16, 2001.

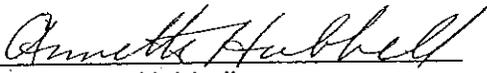
By: 
Marsha Whalen
City Clerk

**RINCON DEL DIABLO
MUNICIPAL WATER DISTRICT**

Dated: Oct 15, 2001.

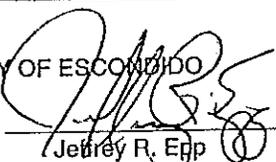
By: 
John B. Hinrichs
President

Dated: Oct. 15, 2001.

By: 
Annette Hubbell
General Manager/Secretary

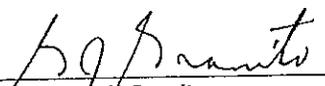
APPROVED AS TO FORM:

CITY OF ESCONDIDO

By: 
Jeffrey R. Epp
City Attorney

Dated: 11/5/, 2001.

REDWINE AND SHERRILL

By: 
Gilbert J. Granito
General Counsel for Rincon
del Diablo Municipal Water District

Dated: 10/19, 2001.

CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT

State of California

County of San Diego } ss.

On October 15, 2001, before me, Kathleen A. Blakely, Notary Public

Date

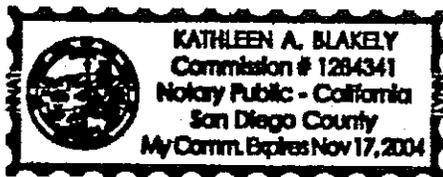
Name and Title of Officer (e.g., "Jane Doe, Notary Public")

personally appeared John B. Hinrichs & Annette Hubbell

Name(s) of Signer(s)

- personally known to me
 proved to me on the basis of satisfactory evidence

to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies) and that by his/her/their signature(s) on the instrument the person(s) or the entity upon behalf of which the person(s) acted, executed the instrument.



Place Notary Seal Above

WITNESS my hand and official seal.

Kathleen A. Blakely
Signature of Notary Public

OPTIONAL

Though the information below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent removal and reattachment of this form to another document.

Description of Attached Document

Title or Type of Document: Agreement between Luncon & City of Escondido re: Waste Discharge

Document Date: October 15, 2001

Number of Pages: 6

Signer(s) Other Than Named Above: _____

Capacity(ies) Claimed by Signer

Signer's Name: _____

- Individual
 Corporate Officer — Title(s): _____
 Partner — Limited General
 Attorney in Fact
 Trustee
 Guardian or Conservator
 Other: _____

Signer Is Representing: _____

RIGHT THUMBPRINT
OF SIGNER

Top of thumb here

RESOLUTION NO. 2001-229

B. S. J.

A RESOLUTION OF THE CITY OF ESCONDIDO
CITY COUNCIL APPROVING AN AGREEMENT
BETWEEN RINCON DEL DIABLO MUNICIPAL
WATER DISTRICT AND THE CITY OF
ESCONDIDO FOR COMPLIANCE WITH WASTE
DISCHARGE REQUIREMENT REPORTING OF
RECYCLED WATER INFORMATION TO THE
REGIONAL WATER QUALITY CONTROL
BOARD

WHEREAS, the City of Escondido received Waste Discharge Requirements from the San Diego Regional Water Quality Control Board governing the use of recycled water produced by the Hale Avenue Resource Recovery Facility and establishing reporting requirements for said usage; and

WHEREAS, the Rincon del Diablo Municipal Water District will utilize recycled water from the Hale Avenue Resource Recovery Facility for its recycled water delivery system; and

WHEREAS, the Rincon del Diablo Municipal Water District has requested that its recycled water usage be governed under the City of Escondido's Waste Discharge Requirements and related reporting requirements; and

WHEREAS, the City of Escondido is agreeable to such an arrangement; and

WHEREAS, the California State Water Resources Control Board and the San Diego Regional Water Quality Control Board desire that the relationship between the Rincon del Diablo Municipal Water District and City of Escondido for the joint compliance to the Waste Discharge Requirements be formalized; and

WHEREAS, an Agreement has been prepared that satisfies the requirements of the California State Water Resources Control Board and the San Diego Regional Water Quality Control Board; and

WHEREAS, the Director of Public Works recommends that the Agreement be approved in the best interest of the City of Escondido and its recycled water program;

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Escondido, California, as follows:

1. That the above recitations are true.
2. That the City Council accepts the Director of Public Works' recommendation to approve the Agreement between Rincon del Diablo Municipal Water District and the City of Escondido for compliance with Waste Discharge Requirement reporting of recycled water information to the Regional Water Quality Control Board.
3. That the City Council hereby authorizes the Mayor and City Clerk to execute, on behalf of the City, the Agreement attached as Exhibit A and incorporated by this reference.

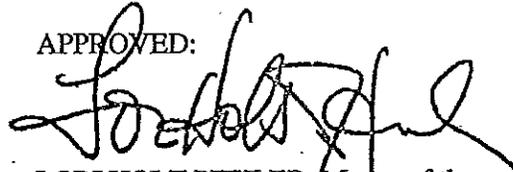
PASSED, ADOPTED AND APPROVED by the City Council of the City of Escondido at a regular meeting thereof this 19th day of September 2001, by the following vote to wit:

AYES : Councilmembers: D'AGOSTA, GALLO, PFEILER, RADY, WALDRON

NOES : Councilmembers: NONE

ABSENT : Councilmembers: NONE

APPROVED:



LORI HOLT PFEILER, Mayor of the
City of Escondido, California

ATTEST:



MARSHA WHALEN, City Clerk of the
City of Escondido, California

RECEIVED

SEP 21 2001

RINCON DEL DIABLO M.W.D.
ESCONDIDO

Marsha Whalen, CMC
City Clerk
(760) 839-4617
FAX (760) 741-7541



**CITY OF
ESCONDIDO**
201 NORTH BROADWAY
ESCONDIDO, CA 92025

September 20, 2001

Rincon Del Diablo Municipal Water District
1920 North Iris Lane
Escondido, CA 92026

Re: Agreement between Rincon Del Diablo Municipal Water District and the
City of Escondido Affirming Their Respective Roles Responsibilities and
Reporting Requirements with Respect to Complying with Waste Discharge
Order No. 93-70 (A-2514)

To Whom It May Concern:

Enclosed are two (2) originals of the above Agreement. Please execute all
copies, *notarizing the signatures*, and return same to the undersigned.

Upon receipt and approval of all required documents, the City of Escondido will
execute the documents and an original will be returned for your files.

If you have any questions, please feel free to call this office.

Sincerely,

Melody A. Smith
Department Assistant

Enclosure

Lori Holt Pfeiffer, Mayor
Jane Brady, Mayor Pro Tem
Tom D'Agosta
Ed Gazo
Marie Waldron



AGREEMENT BETWEEN RINCON DEL DIABLO MUNICIPAL WATER DISTRICT
AND THE CITY OF ESCONDIDO AFFIRMING THEIR RESPECTIVE ROLES
RESPONSIBILITIES AND REPORTING REQUIREMENTS WITH RESPECT TO
COMPLYING WITH WASTE DISCHARGE ORDER No. 93-70

This Agreement is made this 15 day of October, 2001.

Between: Rincon Del Diablo Municipal Water District
1920 North Iris Lane
Escondido, CA 92026
("District")

And: City of Escondido
A Municipal Corporation
201 N. Broadway
Escondido, CA 92025
("City")

Witness That Whereas:

- A. On or about March 9, 1999, the City of Escondido and the Rincon Del Diablo Municipal Water District entered into an agreement which, among other things, provided for the sale of recycled water by the City to the District as part of the District's Water Recycling Program. A copy of said agreement is attached hereto marked Exhibit "A"; and
- B. The District has applied for a loan and a grant for its Water Recycling Program from the State Water Resources Control Board ("SWRCB") under SWRCB's Water Reclamation Grant Program ("WRGP"); and
- C. The District's Water Recycling Program has received conceptual approval as set forth in the Facilities Plan Approval Letter dated August 1, 2001 ("FPA Letter") issued by the SWRCB; and
- D. The City and the District will oversee the use of recycled water within their respective service jurisdictions; and
- E. A Waste Discharge Order for recycled water was issued by the Regional Water Quality Control Board ("RWQCB") to the City (Waste Discharge Order No. 93-70) for the portion of the user sites identified within the jurisdictions of the City and the District; and
- F. It is anticipated that the RWQCB will not require a separate Waste Discharge Order for the District; and
- G. The SWRCB, in conjunction with the District's loan/grant application requirements, has requested that the District and the City enter into an agreement affirming their respective roles, responsibilities and reporting requirements with respect to complying with Waste Discharge Order No. 93-70;

NOW, THEREFORE, the parties hereby agree as follows:

1. Incorporation of Recitals. The Recitals set forth above are hereby made a part of this Agreement and are incorporated herein as though set forth in full by this reference.
2. Term. This Agreement shall terminate on February 9, 2033. This termination date coincides with the termination date of the agreement referenced in the first Recital of this Agreement.
3. Roles and Responsibilities.

A. Water Quality.

The City agrees that the recycled water the City provides the District pursuant to the District's Water Recycling Program will meet all federal, state and local requirements for unrestricted body contact as these requirements may change from time to time during the term of this Agreement.

B. Application of Waste Discharge Order 93-70.

The City agrees that all of the recycled water that the City provides the District pursuant to the agreement set forth in Exhibit "A" of this Agreement shall be subject to Waste Discharge Order No. 93-70. As such, the City shall be responsible for all applicable reporting requirements to the Regional Water Quality Control Board. The District agrees to abide by all prohibitions and discharge specifications set forth therein which are applicable to the District's Water Recycling Program.

C. District's Reporting Requirements.

The District agrees to provide the City with all information reasonably needed by the City to fulfill its reporting requirements as provided for in Section 3(B) above which are applicable to the District's Water Recycling Program.

Such reporting information shall include the following:

- (i) Quarterly reclaimed water users summary report for the District's customers containing the following information:
 - (a) Total volume of reclaimed water supplied to all reclaimed water users for each month of the reporting period.
 - (b) Total number of reclaimed water use sites.
 - (c) Address of the reclaimed water use site.
 - (d) Basin Plan name and number of hydrologic subarea underlying the reclaimed water use site.

- (ii) Annual reclaimed water users compliance report for the for the District's customers containing the following information:
 - (a) Name of the reclaimed water use site.
 - (b) Owner of the reclaimed water use facility.
 - (c) Name of the reclaimed water use supervisor.
 - (d) Phone number of the reclaimed water use supervisor.
 - (e) Mailing address of the reclaimed water use supervisor, if different from site address.
 - (f) Volume of reclaimed water delivered to the reclaimed water site on a monthly basis.
 - (g) Number of reclaimed water use site inspections conducted by the District staff and identification of sites inspected for the reporting period.
 - (h) The District shall identify all of its reclaimed water users known by the District to be in violation of the District's rules and regulations for reclaimed water users. This information shall include a description of the noncompliance and its cause, including the period of noncompliance, and if the noncompliance has not been corrected; the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

4. District's Recycled Water Rules and Regulations. The District has adopted rules and regulations to establish procedures, specifications and limitations for the safe and orderly development and operation of its recycled water facilities and systems in the District's service area. Said rules and regulations were approved and promulgated by the District's Board of Directors by Resolution No. 2001-927.

The District's rules and regulations provide the basic foundation under which the District will administer and enforce its Water Recycling Program within its jurisdiction. The District will be solely responsible for administering its Water Recycling Program, including the issuance of water recycling permits and enforcement/inspections for recycled water users within its jurisdiction.

5. Miscellaneous Provisions.

A. Applicable Law.

This Agreement and any disputes relating to this Agreement shall be construed in accordance with the laws of the State of California.

B. Venue.

In the event of any legal or equitable proceeding to enforce or interpret the terms or conditions of this Agreement, or to obtain a judgment confirming the arbitrator's award and to enforce the judgment, the parties agree that the venue shall lie only in the federal or state courts in or nearest to the North County Judicial District, County of San Diego, State of California.

C. Modification.

This Agreement may not be altered in whole or in part except by a written modification executed by all the parties to this Agreement.

D. Entire Agreement.

This Agreement, together with all exhibits attached hereto, contains the general understanding between the parties with respect to their respective roles, responsibilities and reporting requirements with respect to complying with Waste Discharge Order No. 93-70. However, if there are any inconsistencies between this Agreement and the agreement entered into on or about March 9, 1999 between the City and the District, which is attached to this Agreement marked Exhibit "A", the provisions in the agreement reflected in Exhibit "A" shall prevail.

E. Binding Effect.

This Agreement shall inure to the benefit of and shall be binding upon the parties and their respective purchasers, successors, heirs, and assigns.

F. Unenforceable Provisions.

The terms, conditions, and covenants of this Agreement shall be construed whenever possible as consistent with all applicable laws and regulations. To the extent that any provision of this Agreement is held to violate any applicable law or regulation, the remaining provisions shall nevertheless be carried into full force and effect and shall remain enforceable.

G. Notices.

All notices, statements, or other writings required to be given pursuant to this Agreement shall be deemed given upon posting in the United States mail or when transmitted if sent by facsimile to the following addresses or facsimile numbers:

City of Escondido
Attn: City Manager
201 North Broadway
Escondido, CA 92025-2798
Fax: 760/432-9512

Rincon del Diablo Municipal Water District
Attn: General Manager
1920 North Iris Lane
Escondido, CA 92026
Fax: 760/745-4235

Either party may change its address for notice at any time by giving written

notice of the new address to the other party.

H. Attorneys' Fees.

If any action or proceeding, including arbitration as provided above, is filed to challenge, invalidate, interpret, or enforce this Agreement, the prevailing party shall be entitled to reasonable attorneys' fees and costs in addition to other relief authorized by applicable law.

I. Counterparts.

This Agreement may be signed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date first written above.

CITY OF ESCONDIDO

Dated: _____, 2001.

By: _____
Lori Holt Pfeiler
Mayor

Dated: _____, 2001.

By: _____
Marsha Whalen
City Clerk

**RINCON DEL DIABLO
MUNICIPAL WATER DISTRICT**

Dated: Oct 15, 2001.

By: John B. Hinrichs
John B. Hinrichs
President

Dated: Oct 15, 2001.

By: Annette Hubbell
Annette Hubbell
General Manager/Secretary

APPROVED AS TO FORM:

CITY OF ESCONDIDO

By: _____
Jeffrey R. Epp
City Attorney

Dated: _____, 2001.

REDWINE AND SHERRILL

By: Gilbert J. Granito
Gilbert J. Granito
General Counsel for Rincon
del Diablo Municipal Water District

Dated: 10/19, 2001.

CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT

State of California
County of San Diego } ss.

On October 15, 2001, before me, Kathleen A. Blakely, Notary Public
Date Name and Title of Officer (e.g., "Jane Doe, Notary Public")
personally appeared John B. Hinrichs & Annette Hubbell
Name(s) of Signer(s)

personally known to me
 proved to me on the basis of satisfactory evidence

to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies) and that by his/her/their signature(s) on the instrument the person(s) or the entity upon behalf of which the person(s) acted, executed the instrument.



Place Notary Seal Above

WITNESS my hand and official seal.
Kathleen A. Blakely
Signature of Notary Public

OPTIONAL

Though the information below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent removal and reattachment of this form to another document.

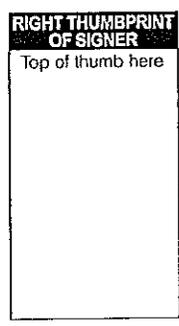
Description of Attached Document
Title or Type of Document: Agreement between Lincon & City of Esc. re: Waster Discharge
Document Date: October 15, 2001 Number of Pages: 6 Order No 93-70

Signer(s) Other Than Named Above: _____

Capacity(ies) Claimed by Signer

- Signer's Name: _____
- Individual
 - Corporate Officer — Title(s): _____
 - Partner — Limited General
 - Attorney in Fact
 - Trustee
 - Guardian or Conservator
 - Other: _____

Signer Is Representing: _____



AGREEMENT FOR PURCHASE OF RECYCLED WATER
BETWEEN CITY OF ESCONDIDO AND
RINCON DEL DIABLO MUNICIPAL WATER DISTRICT

THIS AGREEMENT FOR PURCHASE OF RECYCLED WATER ("Agreement"), by and between the Rincon del Diablo Municipal Water District, a municipal water district organized and operating pursuant to the Municipal Water District Law of 1911, California Water Code section 71000 *et seq.* ("District"), and the City of Escondido, a California general law city ("City"), is made effective as of the 9th day of February, 1999.

RECITALS

A. The District provides potable water service to a service area consisting of approximately 31,000 acres located in the north central coastal region of the County of San Diego, State of California.

B. All of the water which the District presently receives is imported water derived from the Colorado River and the California Aqueduct systems and transported to the District by the Metropolitan Water District ("MWD") and the San Diego County Water Authority ("SDCWA").

C. The SDCWA has from time to time notified the District that existing water demands may require a reduction in the water presently being provided to the District from the SDCWA.

D. The District desires to meet the growing demand for water within its service area and to compensate for the potential reduction in future imported water by providing facilities to distribute recycled water within the water service jurisdiction of the District.

E. In order to provide recycled water within its service area, the District must secure a source of supply from existing treated wastewater and construct expensive new capital facilities to store and distribute recycled water within the service area of the District.

F. The City provides sewage collection and treatment services to the geographic area generally known as Escondido and, by agreement, treatment service for sewage generated within the City of San Diego from the area commonly known as Rancho Bernardo.

G. The City and the District have adopted a policy of encouraging the use of recycled wastewater in the region as a water conservation measure.

H. The City currently discharges approximately 14 million gallons per day ("MGD") of secondary treated wastewater from its Hale Avenue Sewage Treatment Plant ("Hale Treatment Plant") to the Pacific Ocean via the Escondido Land Outfall ("Outfall").

I. The City has agreed to design and construct recycled water facilities, meeting all standards of Title 22 of the California Code of Regulations for unrestricted body contact, at the Hale Treatment Plant with transportation of the treated effluent through a reclaimed water distribution system to a turnout location for use by the District.

J. The City has agreed to deliver peak flows up to 2.0 MGD of its Title 22 effluent from the Hale Treatment Plant and Outfall to the District so as to provide the District with a source of high quality treated wastewater in accordance with the terms of this Agreement.

K. For purposes of this Agreement, "Year" shall be defined as July 1 through June 30 of the following calendar year.

AGREEMENT

1. Incorporation of Recitals. The Recitals set forth above are hereby made a part of this Agreement and are incorporated herein as though set forth in full by this reference.

2. Term. The term of this Agreement shall be thirty-four (34) years, commencing February 9th, 1999, and ending February 9th, 2033.

3. Extension of Term. The District shall be entitled to extend this Agreement for additional ten (10) year periods by giving the City written notice of its desire to extend the term at least ninety (90) days in advance of the scheduled termination date. The price of Recycled Water during any extensions of the term of this Agreement shall continue to be adjusted in accordance with Section 10 of this Agreement.

4. Quality of Recycled Water to Be Provided by City. The City agrees to provide the District with recycled water ("Recycled Water") which meets all federal, state, and local standards for the use of recycled water for unrestricted body contact, and which complies with all requirements of Title 22 of the California Code of Regulations for unrestricted body contact. The City agrees that this Recycled Water shall meet oxidized recycled water standards as defined in Title 22, California Code of Regulations, Chapter 3, Article 1, Section 60301, Definition (n). "Oxidized wastewater" means wastewater in which the organic matter has been stabilized, is non-putrescible, and contains dissolved oxygen. The City agrees that the Recycled Water provided to the District will contain a total dissolved solids concentration not greater than 1000 milligrams per liter with a biological oxygen demand of 30 milligrams per liter, and 30 milligrams per liter of suspended solids meeting the Environmental Protection Agency's "30/30 Rule." The parties agree that this Recycled Water will meet all federal, state, and local requirements for unrestricted body contact as these requirements may change from time to time during the term of this Agreement.

5. Cooperation to Reduce Total Dissolved Solids Concentration. The parties agree to cooperate and to work diligently to have the City of San Diego ban self-regenerating water softeners and to require the City of San Diego to require pre-treatment of all manufacturing, business, and commercial uses so as to reduce the total dissolved solids

concentration to 900 milligrams per liter or below.

6. Design and Construction of City's Recycled Water Facilities. The City shall design and construct recycled water facilities at its Hale Treatment Plant and a distribution system (collectively, "City's Recycled Water Facilities"). The City's Recycled Water Facilities shall be capable of delivering to the District not less than 2.0 MGD during Peak Demand periods, and not less than 0.4 MGD at all other times. The City's Recycled Water Facilities shall be constructed in such a manner to provide a turnout location, acceptable to the City and the District, necessary to deliver Recycled Water from the Hale Avenue Treatment Plant to the District. All fees and costs to design, construct, own, operate, modify, maintain, and repair the City's Recycled Water Facilities shall be paid for solely by the City, and ownership of the City's Recycled Water Facilities shall be vested solely in the City. The City's Recycled Water Facilities are more particularly shown on Exhibit "A" which is attached and incorporated herein by this reference. For purposes of this Agreement, "Peak Demand" shall be defined as the maximum amount of Recycled Water used by the District in a 24-hour period.

7. Design and Construction of District's Recycled Water Facilities. The District shall design and construct recycled water facilities ("District's Recycled Water Facilities") capable of using not less than 462 acre-feet per year of Recycled Water being provided by the City in accordance with this Agreement. The design and construction of the District's Recycled Water Facilities shall be determined solely by the District so long as the District's Recycled Water Facilities are capable of using at least 462 acre-feet per year of Recycled Water from the City's Recycled Water Facilities. All fees and costs to design, construct; own, operate, modify, maintain, and repair the District's Recycled Water Facilities shall be paid for solely by the District, and ownership of the District's Recycled Water Facilities shall be vested solely in the District.

8. Quantity of Recycled Water to Be Delivered and Purchased. The City agrees to provide the District with not less than 0.4 MGD, and not less than 2.0 MGD during Peak Demand periods, of Recycled Water from the Commencement Date, as defined below, of service from the City's Recycled Water Facilities upon request from the District. The District shall purchase a minimum of 462 acre-feet of Recycled Water each year, whether or not the District actually uses this amount of Recycled Water; provided, however, that during service disruptions from any cause, the obligation of the District to purchase Recycled Water shall be suspended and the 462 acre-feet per year commitment shall be reduced pro rata based upon the number of days per year service is actually provided to the District divided by 365 days and multiplied by 462 acre-feet. "Service disruption" shall mean the inability of the City to provide 2.0 MGD of Recycled Water to the District for a period of 24 hours or longer.

Bankman
If the District uses less Recycled Water during a given year than it is obligated to purchase pursuant to this section, the amount of Recycled Water purchased but not used shall be credited to the District and shall be available for use by the District in accordance with the provisions of this section in future years. The District may accumulate indefinitely a credited quantity not to exceed 924 acre-feet of Recycled Water which the City shall be obligated to deliver to the District at a price equal to the difference between the amount paid by the District for such credited quantity and the then-prevailing rate for purchases of Recycled Water by the

District under the terms of this Agreement.

9. Completion Date for City's Recycled Water Facilities. The City agrees to complete the City's Recycled Water Facilities so that it can deliver not less than 0.4 MGD of Recycled Water to the District, with a Peak Demand capacity of 2.0 MGD, and otherwise meet all requirements of this Agreement by no later than July 1, 2001. The failure of the City to complete the City's Recycled Water Facilities so that the City is capable of delivering not less than 0.4 MGD of Recycled Water daily, and 2.0 MGD daily during Peak Demand periods, by no later than July 1, 2001 ("Delivery Date"), shall constitute a material breach of this Agreement entitling the District to unilaterally terminate this Agreement by giving written notice to the City no later than 5:00 p.m. Pacific Standard Time on August 1, 2001. This right to terminate is separate from and in addition to the termination rights contained in Section 14 of this Agreement. It is the intention of the District to have all of its facilities completed by July 1, 2001. The District shall have no obligation to purchase any Recycled Water from the City until the City has completed the City's Recycled Water Facilities capable of delivering to the District not less than 0.4 MGD of Recycled Water, with a Peak Demand Capacity of 2.0 MGD.

10. Price and Payments Terms for Recycled Water. Commencing on the later of July 1, 2001, or the date the City actually begins delivering to the District not less than 0.4 MGD of Recycled Water ("Commencement Date"), the parties agree that the price per acre-foot payable by the District for Recycled Water purchased from the City shall be \$487 per acre-foot. This price per acre-foot shall remain in effect for the balance of the Year in which the City commences delivering Recycled Water to the District of the quantity and quality required by this Agreement.

Thereafter, on July 1 each year, the Consumer Price Index - All Urban Consumers (base years 1982-1984 = 100) for Los Angeles-Anaheim-Riverside, published by the United States Department of Labor, Bureau of Labor Statistics ("Index"), for the month of June immediately preceding ("Comparison Index"), shall be compared with the Index for the month of June immediately following the Commencement Date ("Beginning Index").

If the Comparison Index has increased or decreased over the Beginning Index, the price per acre-foot of Recycled Water during the next Year shall be set by multiplying the initial price per acre-foot set forth above by a fraction, the numerator of which is the Comparison Index and the denominator of which is the Beginning Index; provided, however, that the price per acre-foot of Recycled Water shall not (a) increase more than five percent (5%) from any one Year to the next Year, (b) exceed 90% of the then-prevailing SDCWA filtered non-interruptible water rate, nor (c) exceed 90% of the lowest rate charged by the City to any of its customers for Recycled Water. As soon as the adjusted price per acre-foot of Recycled Water is calculated, the City shall give the District notice of the new price per acre-foot for the next Year.

If the Index is changed so that the base year differs from that used as of the month most immediately preceding the date the term commences, the Index shall be converted in accordance with the conversion factor published by the United States Department of Labor, Bureau of Labor Statistics. If the Index is discontinued or revised during the term, such other government index or computation with which it is replaced shall be used in order to obtain substantially the same

result as would be obtained if the Index had not been discontinued or revised.

The City shall bill the District monthly for Recycled Water utilized during the preceding month computed by reading the meter for quantity and multiplying this quantity by the price per acre-foot computed in accordance with this Agreement. All such bills shall be payable within thirty (30) days following receipt by the District. If the amount of Recycled Water actually utilized by the District in any Year is less than 462 acre-feet, the balance payable by the District to meet this minimum quantity shall be billed to the District each year on July 1 of the following Year and shall be paid within thirty (30) days of receipt of the bill.

In the event of a billing dispute, the parties agree to meet and confer in an effort to resolve the dispute as quickly as possible. The City agrees to provide the District with all meter readings and data relied upon by the City in formulating the monthly bills promptly upon request.

11. Recycled Water Credits. The City understands and acknowledges that the District's financial projections require and anticipate \$350 per acre-foot of recycled water credits from the MWD and the SDCWA recycled water incentive programs. These credits consist of \$250 per acre-foot from the MWD from the Local Resources Program (June 1998) and \$100 per acre-foot from the SDCWA Recycled Water Development Fund. In order for the District's recycled water project to produce sufficient revenues to economically function, the parties agree that all credits and reimbursements paid by the MWD for the Local Resources Program (June 1998), or any successor program, and the SDCWA Recycled Water Development Fund, or any successor program, in the District's service territory shall be paid to the District in accordance with the rules and regulations of these respective incentive programs, and shall belong solely to the District. The parties further agree that the District shall be entitled to all future credits or reimbursements provided by any governmental agency for retail sales of Recycled Water within the District's service territory.

12. Water Emergency Demands. The City agrees to allow the District to purchase, in times of Water Emergencies, Available Water from the City at the then-prevailing SDCWA filtered non-interruptible water rates. For purposes of this Agreement, "Available Water" shall mean the water in the City's water system from either the SDCWA or local supplies. For purposes of this Agreement, "Water Emergency" shall mean a circumstance in which imported water deliveries to member agencies of the SDCWA are curtailed because of a natural or man-made physical disruption in the regional water delivery facilities of the SDCWA, the MWD, and/or any other entities responsible for providing water supplies to the San Diego region.

13. Water Shortages. The City agrees to allow the District to purchase, in times of Water Shortages, Available Water in an amount sufficient to make the proportional reductions in total water deliveries equal for both parties at the then-prevailing SDCWA filtered non-interruptible water rates. For purposes of this Agreement, "Water Shortages" shall mean a reduction by the SDCWA of imported water deliveries to member agencies because of drought conditions.

14. Termination of Agreement for Economic Reasons. In the event the City determines that it is not economically feasible for the City to proceed with development of Recycled Water in the manner contemplated by this Agreement, or through any alternative project for the development of Recycled Water, the City shall be entitled to unilaterally terminate this Agreement by giving written notice to the District no later than 5:00 p.m. Pacific Standard Time on July 1, 2001. The City shall have no right to terminate this Agreement under this section if it intends to proceed with the recycled water project described in this Agreement, or any alternative recycled water project as of July 1, 2001. The right of the City to terminate this Agreement as described in this section shall automatically expire on July 1, 2001, at 5:01 p.m. Pacific Standard Time, if written notice of termination is not delivered to the District by that time.

In the event the District determines that it is not economically feasible for the District to proceed with development of the District's Recycled Water Facilities contemplated by this Agreement, the District shall be entitled to unilaterally terminate this Agreement by giving written notice to the City no later than 5:00 p.m. Pacific Standard Time on July 1, 2001. The right of the District to terminate this Agreement as described in this section shall automatically expire on July 1, 2001, at 5:01 p.m. Pacific Standard Time, if written notice of termination is not delivered to the City by that time.

In the event either party elects to terminate this Agreement in accordance with this section, the terminating party shall provide the other party with the economic facts justifying termination of this Agreement as part of the termination notice. Nothing contained in this section shall be construed as allowing either party to terminate this Agreement except upon a showing that development of Recycled Water is not economically feasible at the time the termination notice is given.

15. Service Interruptions. The City agrees to notify the District, in writing, at least thirty (30) days prior to scheduling any service interruptions caused by normal repair and maintenance. The City agrees that such service interruptions shall not exceed a period of twenty-four (24) hours so as to minimize the harm to the District's retail customers. Service interruptions caused by emergencies or Acts of God shall be promptly repaired by the City, at the City's sole cost and expense, so as to minimize the period of service interruption to the District. Where the service interruption has been caused by any emergency or Act of God, the City agrees to commence the repair immediately and to complete the repair as quickly as possible so as to minimize down time. The City also agrees to promptly advise the District of the probable period of interruption after any service interruption caused by an emergency or Act of God so that the District can communicate this to its retail customers and afford alternative service where possible.

16. Approvals and Permits. Each party shall be solely responsible for obtaining all permits, contracts, approvals, easements, land rights, or other permission or consent necessary to proceed with its recycled water facilities, as contemplated by this Agreement.

17. Environmental Review. Prior to commencement of construction of any

recycled water facilities, the parties shall complete an environmental review evaluating all environmental impacts of the proposed project. The City shall act as the lead agency for the City's Recycled Water Facilities and the District shall act as the lead agency for the District's Recycled Water Facilities. The parties agree to share data and coordinate input and review of these environmental documents to ensure that the environmental impacts of the total project is properly examined. Each party shall be responsible for its own fees and costs in completing this environmental review.

18. Hold Harmless and Indemnity. The District agrees to indemnify, defend, and hold harmless the City from any and all third party claims or actions arising from the design, construction, ownership, operation, maintenance, repair, or replacement of the District's Recycled Water Facilities. The District shall further indemnify, defend, and hold harmless the City from any and all claims arising from any breach by the District in the performance of this Agreement or arising from any negligence of the District. The City agrees to indemnify, defend, and hold harmless the District from any and all third party claims or actions arising from the design, construction, ownership, operation, maintenance, repair, or replacement of the City's Recycled Water Facilities. The City shall further indemnify, defend, and hold harmless the District from any and all claims arising from any breach by the City in the performance of this Agreement or arising from any negligence of the City. These indemnities shall not apply to claims or actions arising from the negligence or intentional conduct of any representative or agent of the indemnified party.

19. Mutual Cooperation. The parties agree to jointly cooperate in obtaining federal, state, and local grants and low-interest loans to design and construct the recycled water facilities contemplated by this Agreement. Each party agrees to make reasonable efforts to assist the other party in obtaining such grants and loans for its recycled water facilities, as contemplated by this Agreement. Each party also agrees to operate, maintain, and repair its recycled water facilities in a manner which causes the least harm to the other party.

The parties recognize and acknowledge that each is relying upon the other's performance in proceeding with expensive capital facilities capable of using Recycled Water. With this in mind, each party agrees not to do anything which will prevent performance by the other party and will do everything possible to provide the other party with all benefits of this Agreement. Time is of the essence in the completion of each party's performance and each party agrees to promptly take all steps necessary and to execute all documents necessary to design and construct its recycled water facilities and to provide the necessary financing for these recycled water facilities. The breach of this provision by either party shall constitute a material breach of this Agreement.

20. Easements. Each party agrees to execute and deliver to the other party, without cost, any easements required for the recycled water facilities contemplated in this Agreement.

21. Metering and Measurement of Flows. The District agrees to install and maintain, at its expense, meters of an appropriate size and type for the purpose of measuring the quantity of Recycled Water delivered at each user's site pursuant to the terms of this Agreement.

The District, if requested by the City, agrees to have the meters independently calibrated and to provide copies of the results to the City.

22. Limitation of Use. The District acknowledges and agrees that the Recycled Water delivered by the City to the District pursuant to this Agreement has restricted uses. The District agrees to deliver this Recycled Water to selected customers for only those uses and purposes specified by state law for use of recycled water which complies with all requirements of Title 22 of the California Code of Regulations for unrestricted body contact.

23. Rights of Inspection. The District agrees to include a provision in its recycled water agreements with customers granting the City and the District the right, with prior advance notice, to enter the premises of the customer for the purposes of monitoring, sampling, analysis, and observation of the recycled water distribution facilities, as may be required by the San Diego region of the California Regional Water Quality Control Board or by any state or local health departments.

24. Miscellaneous Provisions.

a. Applicable Law. This Agreement and any disputes relating to this Agreement shall be construed in accordance with the laws of the State of California.

b. Venue. In the event of any legal or equitable proceeding to enforce or interpret the terms or conditions of this Agreement, or to obtain a judgment confirming the arbitrator's award and to enforce the judgment, the parties agree that venue shall lie only in the federal or state courts in or nearest to the North County Judicial District, County of San Diego, State of California.

c. Modification. This Agreement may not be altered in whole or in part except by a written modification executed by all the parties to this Agreement.

d. Entire Agreement. This Agreement, together with all exhibits attached hereto, contains all representations and the entire understanding between the parties with respect to purchase of recycled water from the City by the District. No other representations are intended or shall be implied. Any prior contemporaneous correspondence, memoranda, or agreements, whether oral or written, which are in conflict with this Agreement are intended to be replaced in total by this Agreement and the exhibits to this Agreement. The parties warrant and represent that there are no oral promises, representations, or agreements not contained in this Agreement.

e. Binding Effect. This Agreement shall inure to the benefit of and shall be binding upon the parties and their respective purchasers, successors, heirs, and assigns.

f. Unenforceable Provisions. The terms, conditions, and covenants of this Agreement shall be construed whenever possible as consistent with all applicable laws and regulations. To the extent that any provision of this Agreement is held to violate any applicable law or regulation, the remaining provisions shall nevertheless be carried into full force

and effect and shall remain enforceable.

g. Notices. All notices, statements, or other writings required to be given pursuant to this Agreement shall be deemed given upon posting in the United States mail or when transmitted if sent by facsimile to the following addresses or facsimile numbers:

City of Escondido
Attn: City Manager
201 North Broadway
Escondido, CA 92025-2798
Fax: 760/432-9512

Rincon del Diablo Municipal Water District
Attn: General Manager
1920 North Iris Lane
Escondido, CA 92026
Fax: 760/745-4235

Either party may change its address for notice at any time by giving written notice of the new address to the other party.

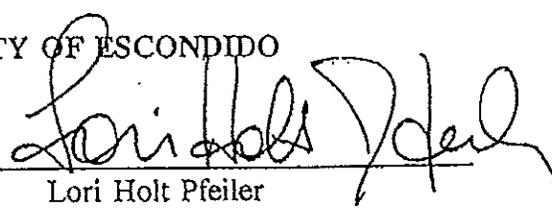
h. Attorneys' Fees. If any action or proceeding, including arbitration as provided above, is filed to challenge, invalidate, interpret, or enforce this Agreement, the prevailing party shall be entitled to reasonable attorneys' fees and costs in addition to other relief authorized by applicable law.

i. Counterparts. This Agreement may be signed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date first written above.

Dated: 3/10, 1999.

CITY OF ESCONDIDO

By: 
Lori Holt Pfeiler
Mayor

ATTEST:

Dated: 3/10, 1999.

By: 
Jeanne Bunch
City Clerk

RINCON DEL DIABLO
MUNICIPAL WATER DISTRICT

Dated: 3-9-99, 1999.

By: John B. Hinrichs
John B. Hinrichs
President

ATTEST:

Dated: 3-9-, 1999.

By: Frederick J. Adjarian
Frederick J. Adjarian
General Manager/Secretary

APPROVED AS TO FORM:

CITY OF ESCONDIDO

By: Jeffrey R. Epp
Jeffrey R. Epp
City Attorney

Dated: 3-10, 1999.

REDWINE AND SHERRILL

By: 3-9-99 Gilbert J. Granito
Gilbert J. Granito
General Counsel for Rincon del
Diablo Municipal Water District

Dated: 3-9, 1999.

srh95117.doc

CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT

No. 5907

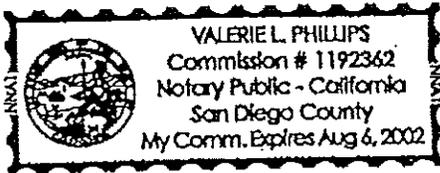
State of CALIFORNIA

County of SAN DIEGO

On MARCH 9, 1999 before me, VALERIE L. PHILLIPS, NOTARY PUBLIC
DATE NAME, TITLE OF OFFICER - E.G., 'JANE DOE, NOTARY PUBLIC'

personally appeared JOHN B. HINRICHS
NAME(S) OF SIGNER(S)

personally known to me - OR - proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.



WITNESS my hand and official seal.

Valerie L. Phillips
SIGNATURE OF NOTARY

OPTIONAL

Though the data below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent reattachment of this form.

CAPACITY CLAIMED BY SIGNER

- INDIVIDUAL
- CORPORATE OFFICER
- _____ TITLE(S)
- PARTNER(S) LIMITED
- GENERAL
- ATTORNEY-IN-FACT
- TRUSTEE(S)
- GUARDIAN/CONSERVATOR
- OTHER: PRESIDENT, BOARD OF DIRECTORS

DESCRIPTION OF ATTACHED DOCUMENT

AGREEMENT FOR PURCHASE OF RECYCLED WATER

_____ TITLE OR TYPE OF DOCUMENT

-----10-----

_____ NUMBER OF PAGES

FEBRUARY 9, 1999

_____ DATE OF DOCUMENT

SIGNER IS REPRESENTING:
NAME OF PERSON(S) OR ENTITY(IES)
RINCON DEL DIABLO MUNICIPAL WATER DISTRICT

FREDERICK J. ADJARIAN, GILBERT J. GRANITO
SIGNER(S) OTHER THAN NAMED ABOVE

CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT

No. 5907

State of CALIFORNIA

County of SAN DIEGO

On MARCH 9, 1999 before me, VALERIE L. PHILLIPS, NOTARY PUBLIC

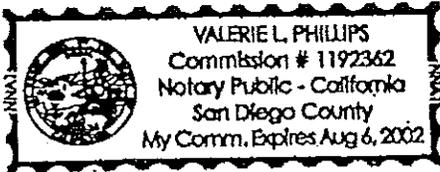
DATE

NAME, TITLE OF OFFICER - E.G., 'JANE DOE, NOTARY PUBLIC'

personally appeared FREDERICK J. ADJARIAN

NAME(S) OF SIGNER(S)

[X] personally known to me - OR - [] proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.



WITNESS my hand and official seal.

Valerie L. Phillips
SIGNATURE OF NOTARY

OPTIONAL

Though the data below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent reattachment of this form.

CAPACITY CLAIMED BY SIGNER

- [] INDIVIDUAL
[] CORPORATE OFFICER

TITLE(S)

- [] PARTNER(S) [] LIMITED
[] ATTORNEY-IN-FACT [] GENERAL
[] TRUSTEE(S)
[] GUARDIAN/CONSERVATOR
[X] OTHER: GENERAL MANAGER

DESCRIPTION OF ATTACHED DOCUMENT

AGREEMENT FOR PURCHASE OF RECYCLED WATER
TITLE OR TYPE OF DOCUMENT

-----10-----

NUMBER OF PAGES

FEBRUARY 9, 1999

DATE OF DOCUMENT

SIGNER IS REPRESENTING:
NAME OF PERSON(S) OR ENTITY(IES)

RINCON DEL DIABLO MUNICIPAL WATER DIST.

JOHN B. HINRICH, GILBERT J. GRANITO
SIGNER(S) OTHER THAN NAMED ABOVE

B.S.d.
a/jz

RESOLUTION NO. 99-19

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ESCONDIDO, CALIFORNIA, AUTHORIZING MAYOR AND CITY CLERK TO EXECUTE ON BEHALF OF THE CITY AN AGREEMENT FOR PURCHASE OF RECYCLED WATER BETWEEN CITY OF ESCONDIDO AND RINCON DEL DIABLO MUNICIPAL WATER DISTRICT

WHEREAS, the City of Escondido (City) is constructing a recycled water system; and

WHEREAS, the Rincon del Diablo Municipal Water District (Rincon) has several customers that can purchase recycled water; and

WHEREAS, the City's recycled water system will deliver recycled water to service areas of Rincon; and

WHEREAS, Rincon desires to purchase recycled water from the City and has approved the agreement providing for such purchases; and

WHEREAS, the City desires to sell reclaimed water to Rincon.

NOW, THEREFORE, BE IT RESOLVED, by the City Council of the City of Escondido, California, as follows:

1. That the above recitations are true.
2. That the City Council hereby approves the agreement for purchase of recycled water by Rincon.
3. That the Mayor and City Clerk are authorized to execute the agreement with Rincon for purchase of recycled water on behalf of the City. A copy of the agreement is attached as Exhibit "A" and is incorporated by this reference.

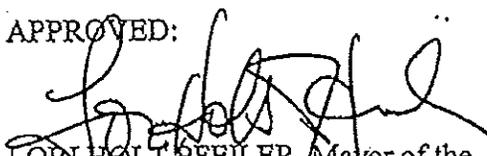
PASSED, ADOPTED AND APPROVED by the City Council of the City of Escondido at
a regular meeting thereof this 20th of January, 1999 by the following vote to wit:

AYES : Councilmembers: BEIER, KAUFMAN, PFEILER, RADY, WALDRON

NOES : Councilmembers: NONE

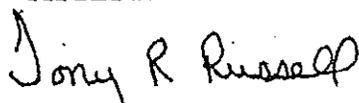
ABSENT : Councilmembers: NONE

APPROVED:



LORI HOLT PFEILER, Mayor of the
City of Escondido, California

ATTEST:



TONY RUSSELL, Deputy City Clerk of the
City of Escondido, California

2003 AMENDMENT OF RECYCLED WATER PURCHASE AGREEMENT

WHEREAS, the Rincon Del Diablo Municipal Water District ("DISTRICT") and the City of Escondido ("CITY") entered into that certain agreement entitled AGREEMENT FOR THE PURCHASE OF RECYCLED WATER on February 9, 1999 (the "Agreement"); and

WHEREAS, the AGREEMENT has provisions for purchase of 462 acre-feet of recycled water each year weather or not DISTRICT actually takes delivery of all of said water ("Take or Pay Provision"); and

WHEREAS, the CITY has experienced delays in completing the Recycled Water Facilities beyond the date contemplated in the AGREEMENT; and

WHEREAS, DISTRICT and CITY believe that extending the beginning of the Take or Pay Provision is equitable for both parties;

NOW, THEREFORE, the parties hereto agree as follows:

1. The foregoing recitals are true and correct.
2. Section 8, the First Paragraph of the agreement is changed to read:

Quantity of Recycled Water to Be Delivered and Purchased.

The City agrees to provide the District with not less than 0.4 MGD, and not less than 2.0 MGD during Peak Demand periods, of Recycled Water from the Commencement Date, as defined below, of service from the City's Recycled Water Facilities, upon request from the District. Beginning July 1, 2007, the District shall purchase a minimum of 462 acre-feet of Recycled Water each year, whether or not the District actually uses this amount of Recycled Water; provided, however, that during service disruptions from any cause, the obligation of the District to purchase Recycled Water shall be suspended and the 462 acre-feet per year commitment shall be reduced pro rata based upon the number of days per year service is actually provided to the District divided by 365 days and multiplied by 462 acre-feet. "Service disruption" shall mean the inability of the City to provide 2.0 MGD of Recycled Water to the District for a period of 24 hours or longer.

3. Remainder of Agreement Unchanged. Except as modified herein, the AGREEMENT shall remain unchanged, and shall remain in full force and effect.

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date first written above.

CITY OF ESCONDIDO

Date: _____

Lori Holt Pfeiler
Mayor

Date: _____

Marsha Whalen
City Clerk

APPROVED AS TO FORM:
OFFICE OF THE CITY ATTORNEY
Jeffrey R. Epp, City Attorney

By: _____

Date: 6-10-03

RINCON DEL DIABLO MUNICIPAL
WATER DISTRICT

John B. Hinrichs
John B. Hinrichs
President

Date: 6-10-03

Annette Hubbell
Annette Hubbell
Secretary

APPROVED AS TO FORM:
REDWINE AND SHERRILL
Gerald Schoaf, General Counsel for
Rincon del Diablo Municipal Water District

By: Gerald Schoaf



**Rincon del Diablo
Municipal Water
District**

Resolution No. 2003-112
EXHIBIT 1
Page 3 of 3

May 13, 2003.

A Public Agency
Serving the Greater
Escondido Valley Since 1954

John B. Hinrichs
President
Division III

Gregory M. Quist
Vice President
Division I

Willis G. Cornelius
Treasurer
Division II

Hanno E.G. Ix
Director
Division IV

Diana Towne
Director
Division V

Annette S. Hubbell
General Manager

Redwine and Sherrill
General Counsel

Mr. John Hoagland
Utilities Manager
City of Escondido
201 N Broadway
Escondido CA 92025

Dear Jack:

We have reviewed the proposed language relative to the change in the Agreement for Purchase of Recycled Water Between City of Escondido and Rincon Del Diablo Municipal Water District dated February 9, 1999. This language, amending the take or pay requirement commencement date to July 1, 2007 is acceptable and we understand that all other sections of the agreement shall remain in full force and effect.

Thank you for your cooperation and assistance in this manner.

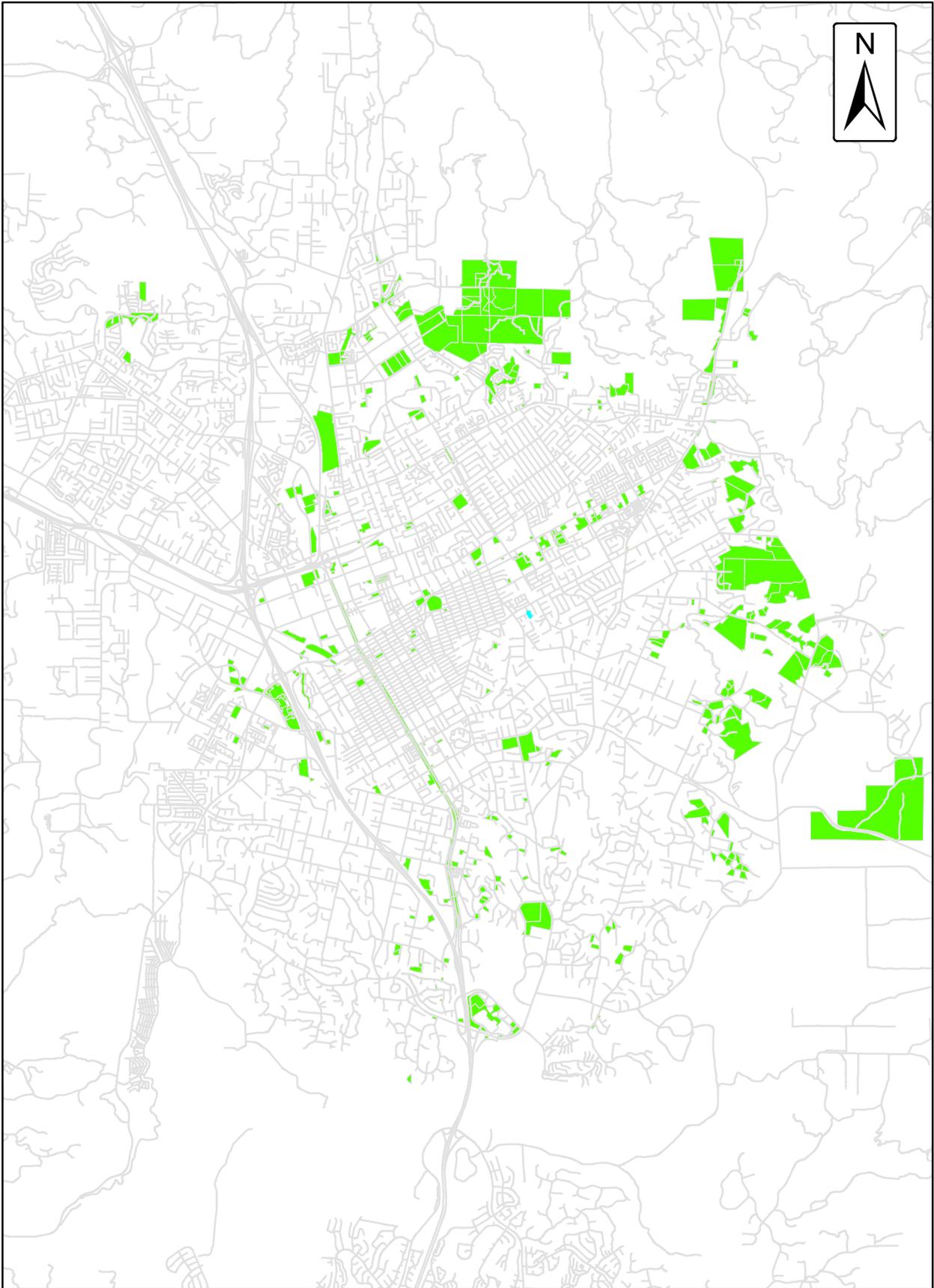
Sincerely,

Annette Hubbell
General Manager

AH:kab

APPENDIX D

City's Potable Water Users as Potential Recycled Water Users



Appendix D
Existing City of Escondido Potable Water Users
Irrigation and Agriculture Potential Conversion

Account_ID	Premise_ID	Premise_Type	Premise_Category	Parcel_Number	Acreage	Service_Point_ID	Meter_Type	KGAL	GPD	GPM	AFY
2081095000	3446434000	AG	SP_UNFIL	2250102500	40.39	3446434585	T4	79,742.00	218,471.23	151.72	245.61
2081095000	5446434000	AG	SP_UNFIL	2250102600	32.40	5446434589	T4	79,031.00	216,523.29	150.36	243.42
7541703640	7726434000	AG	AG	1900800800	0.00	7726434253	T4	62,059.00	170,024.66	118.07	191.14
5491842181	1681334000	IRRIG	INST	2244310300	3.85	1681334873	T4	40,712.00	111,539.73	77.46	125.39
2081095000	8447434000	AG	SP_UNFIL	2241005700	0.00	8447434595	T4	39,427.00	108,019.18	75.01	121.44
9090195000	1394534000	IRRIG	INST		0.00	1394534477	MM6	49,365.00	101,164.44	70.25	113.73
9003095000	8457434000	IRRIG	INST	2241005700	0.00	8457434795	T4	22,234.00	60,915.07	42.30	68.48
9055985000	4160434000	IRRIG	INST	2401800300	0.00	4160434687	PD2	18,578.00	50,898.63	35.35	57.22
2553407355	7180434000	AG	AG	2402303400	0.00	7180434093	T3	18,172.00	49,786.30	34.57	55.97
9090195000	1394534000	IRRIG	INST		0.00	1546434601	SUB2	23,610.00	48,384.33	33.60	54.39
1786985000	0671434000	IRRIG	INST		0.00	0671434979	T4	22,472.00	46,052.21	31.98	51.77
1844095000	6888434000	AG	AG	2241003300	2.65	6888434553	PD2	16,759.00	45,915.07	31.89	51.62
9494892808	5019680569	IRRIG	INST	2401104800	0.52	5019680198	T4	14,082.00	38,580.82	26.79	43.37
3645095000	5879434000	IRRIG	INST	2710600500	0.00	5879434367	T6	13,157.00	36,046.58	25.03	40.52
0249451507	8391434000	AG	AG	2371001700	10.74	8391434335	PD2	10,641.00	29,153.42	20.25	32.77
0675985000	4580434000	AG	AG	2410103300	0.00	4580434167	PD2	9,334.00	25,572.60	17.76	28.75
8415885000	7290334000	IRRIG	INST	2310603300	0.00	7290334877	PD2	8,312.00	22,772.60	15.81	25.60
1705985000	6020434000	IRRIG	INST	2401008300	15.74	6020434809	PD2	9,941.00	20,372.24	14.15	22.90
4956985000	9351434000	AG	AG	2342604300	2.07	9351434537	PD1.5	7,039.00	19,284.93	13.39	21.68
8766752268	6173054210	AG	AG	2401115300	12.90	6173054954	T2	6,791.00	18,605.48	12.92	20.92
9042826612	0500759118	AG	AG	2410201000	0.00	0500759608	T2	6,085.00	16,671.23	11.58	18.74
8507985000	2491434000	AG	AG	2410803500	10.19	2491434343	PD2	6,014.00	16,476.71	11.44	18.52
9363095000	4218434000	IRRIG	INST	2262112700	6.62	4218434985	PD2	5,981.00	16,386.30	11.38	18.42
0811095000	7071434000	AG	AG	2410200900	7.94	7071434873	PD1.5	5,936.00	16,263.01	11.29	18.28
1071095000	2436434000	AG	AG	2254802300	5.73	2436434383	PD2	5,691.00	15,591.78	10.83	17.53
3705985000	8020434000	AG	AG	2401008400	15.19	8020434813	PD2	5,506.00	15,084.93	10.48	16.96
6634311220	8691808304	IRRIG	LMD	2242900900	11.63	8691808631	PD1.5	5,255.00	14,397.26	10.00	16.19
5956985000	0451434000	AG	AG	2410402300	0.00	0451434539	PD2	4,807.00	13,169.86	9.15	14.81
8275985000	9180434000	AG	AG	2402303100	0.00	9180434097	T4	4,600.00	12,602.74	8.75	14.17
5756985000	0251434000	AG	AG	2410402300	0.00	0251434499	PD2	4,402.00	12,060.27	8.38	13.56
1976985000	8961434000	AG	AG	2411801600	9.02	8961434855	PD2	4,351.00	11,920.55	8.28	13.40
2476985000	2661434000	AG	AG	2411801700	9.68	2661434783	PD2	4,300.00	11,780.82	8.18	13.24
7101663075	2226850318	IRRIG	INST		0.00	5468583733	PD2	5,606.00	11,488.46	7.98	12.92
2596933843	0661186560	IRRIG	INST	2258112900	0.00	0661169547	PD1.5	4,058.00	11,117.81	7.72	12.50
3844095000	8888434000	AG	AG	1876232800	33.14	8888434557	CUFT	4,019.00	11,010.96	7.65	12.38
8551985000	3707334000	IRRIG	INST	2322404200	0.38	3707334503	T3	3,990.00	10,931.51	7.59	12.29
3751922319	7339923658	IRRIG	INST		0.00	7339949246	PD2	5,138.00	10,529.38	7.31	11.84
4551885000	5267234000	IRRIG	INST	2271614900	0.00	5267234165	PD2	3,607.00	9,882.19	6.86	11.11
2476985000	7561434000	AG	AG	2411800200	7.26	7561434773	PD1.5	3,479.00	9,531.51	6.62	10.72

Appendix D
Existing City of Escondido Potable Water Users
Irrigation and Agriculture Potential Conversion

Account_ID	Premise_ID	Premise_Type	Premise_Category	Parcel_Number	Acreage	Service_Point_ID	Meter_Type	KGAL	GPD	GPM	AFY
1945985000	2760434000	AG	AG	2401906100	0.00	2760434803	PD1.5	3,334.00	9,134.25	6.34	10.27
0140985000	1685334000	IRRIG	INST	2350710200	0.00	1685334989	PD1.5	3,301.00	9,043.84	6.28	10.17
8186448745	3769434000	IRRIG	INST	2711322100	0.45	3769434129	PD2	3,301.00	9,043.84	6.28	10.17
1601141719	0483771354	IRRIG	INST		0.00	0483771510	PD1.5	4,214.00	8,635.81	6.00	9.71
7416985000	4711434000	IRRIG	INST	2412801200	0.82	4711434807	PD1.5	3,141.00	8,605.48	5.98	9.67
4885985000	0790434000	IRRIG	INST	2412100900	6.13	0790434399	PD1.5	3,137.00	8,594.52	5.97	9.66
3858547179	1879986417	IRRIG	INST		0.00	1879964199	PD1.5	4,107.00	8,416.54	5.84	9.46
6891095000	9066434000	IRRIG	INST	2256334800	0.00	9066434917	PD2	3,055.00	8,369.86	5.81	9.41
4627796112	5480434000	RES_AG	RES_AG	2411600400	9.45	5480434149	PD2	3,006.00	8,235.62	5.72	9.26
4977340241	6205434000	IRRIG	INST	2362540100	0.00	6205434589	PD2	3,002.00	8,224.66	5.71	9.25
2844095000	7888434000	AG	AG	1873510100	33.39	7888434555	CUFT	2,955.00	8,095.89	5.62	9.10
1525095000	6959434000	IRRIG	INST	2711112100	0.00	6959434975	PD2	2,954.00	8,093.15	5.62	9.10
7854985000	4679334000	IRRIG	INST	2392101100	0.00	4679334913	PD2	2,900.00	7,945.21	5.52	8.93
7497885000	3053334000	IRRIG	INST	2294500600	10.01	3053334253	PD2	2,838.00	7,775.34	5.40	8.74
2750095000	2135434000	AG	AG	2351102200	8.38	2135434163	PD1.5	2,831.00	7,756.16	5.39	8.72
2266985000	8085486919	AG	AG	2411610200	5.77	8085486988	PD1	2,751.00	7,536.99	5.23	8.47
0980195000	8984534000	IRRIG	INST		0.00	8984534411	PD2	3,611.00	7,400.08	5.14	8.32
8186448745	8329434000	IRRIG	INST	2711405200	0.81	8329434257	PD1.5	2,643.00	7,241.10	5.03	8.14
7056885000	7612334000	IRRIG	INST	2249513800	0.00	7612334485	PD2	2,641.00	7,235.62	5.02	8.13
1750985000	1206334000	IRRIG	INST	2321503000	4.83	1206334313	PD2	2,640.00	7,232.88	5.02	8.13
2467092108	1561434000	AG	AG	2411800300	6.85	1561434761	PD1.5	2,620.00	7,178.08	4.98	8.07
2175158606	4593653362	IRRIG	LMD		0.00	4593653092	PD1.5	3,478.00	7,127.52	4.95	8.01
0198135529	1508434000	AG	AG	2256620100	6.59	1508434827	PD2	2,569.00	7,038.36	4.89	7.91
0023554389	7037166954	IRRIG	INST	2313322800	0.00	7037166444	PD2	2,510.00	6,876.71	4.78	7.73
9880195000	7984534000	IRRIG	INST		0.00	7984534409	PD2	3,352.00	6,869.30	4.77	7.72
2826885000	7591334000	IRRIG	INST	2247301459	0.00	7591334065	PD1.5	2,477.00	6,786.30	4.71	7.63
2856985000	7251434000	AG	AG	2411300600	5.24	7251434513	PD1.5	2,437.00	6,676.71	4.64	7.51
1885985000	7690434000	IRRIG	INST		0.00	7690434393	PD1.5	3,256.00	6,672.57	4.63	7.50
2190195000	4394534000	IRRIG	LMD	2249855100	2.61	4394534483	PD2	2,410.00	6,602.74	4.59	7.42
2145047189	4806329205	IRRIG	INST	2251412700	5.58	4806329020	PD2	2,392.00	6,553.42	4.55	7.37
8611958032	8229234000	IRRIG	INST	2302302700	0.25	8229234389	PD1.5	2,357.00	6,457.53	4.48	7.26
2306669152	0333924114	IRRIG	INST	2257904100	0.00	0333908737	PD2	2,357.00	6,457.53	4.48	7.26
8754985000	7579334000	IRRIG	INST	2392101100	0.00	7579334899	PD2	2,291.00	6,276.71	4.36	7.06
9821521191	4582356524	IRRIG	INST		0.00	4582390414	PD1.5	2,963.00	6,072.12	4.22	6.83
7015885000	4980334000	IRRIG	INST	2311103600	3.33	4980334805	PD2	2,170.00	5,945.21	4.13	6.68
6780195000	1884534000	IRRIG	INST		0.00	1884534377	PD2	2,871.00	5,883.58	4.09	6.61
7101663075	5468544164	IRRIG	INST		0.00	5468574789	PD2	2,870.00	5,881.53	4.08	6.61
7672944310	6010519354	IRRIG	INST		0.00	6010519303	PD1.5	2,869.00	5,879.48	4.08	6.61
8186448745	6529434000	IRRIG	INST		0.00	6529434293	PD2	2,856.00	5,852.84	4.06	6.58

Appendix D
Existing City of Escondido Potable Water Users
Irrigation and Agriculture Potential Conversion

Account_ID	Premise_ID	Premise_Type	Premise_Category	Parcel_Number	Acreage	Service_Point_ID	Meter_Type	KGAL	GPD	GPM	AFY
1989457204	0630326134	IRRIG	INST		0.00	0630326609	PD1.5	2,856.00	5,852.84	4.06	6.58
0525095000	5959434000	IRRIG	INST	2711102700	0.13	5959434973	PD2	2,124.00	5,819.18	4.04	6.54
5780195000	0884534000	IRRIG	INST	2352010500	0.51	0884534375	PD2	2,068.00	5,665.75	3.93	6.37
6863179607	2779561694	IRRIG	INST		0.00	2779546679	PD2	2,759.00	5,654.06	3.93	6.36
2925095000	0369434000	IRRIG	INST	2710110900	1.15	0369434043	PD1.5	2,060.00	5,643.84	3.92	6.34
0854966176	7770096529	IRRIG	INST		0.00	7770096698	PD1.5	2,703.00	5,539.30	3.85	6.23
9213095000	0667434000	AG	AG	2273202300	7.71	0667434019	PD1	2,015.00	5,520.55	3.83	6.21
7101663075	3923416909	IRRIG	INST		0.00	3923416349	PD1.5	2,691.00	5,514.71	3.83	6.20
8056885000	8612334000	IRRIG	INST	2249516900	0.00	8612334487	PD2	1,969.00	5,394.52	3.75	6.06
0946885000	0512334000	IRRIG	INST		0.00	0512334451	PD2	2,598.00	5,324.12	3.70	5.99
946885000	512334000	IRRIG	INST			512334451	PD2	2598	5,324	3.70	5.99
0256985000	7741434000	AG	AG	2410401800	0.00	7741434413	PD1.5	1,933.00	5,295.89	3.68	5.95
4583150486	9904172551	IRRIG	INST	2257800100	0.00	9904155190	PD2	1,902.00	5,210.96	3.62	5.86
0555095000	2689434000	IRRIG	INST	2256912600	0.63	2689434521	PD1.5	1,876.00	5,139.73	3.57	5.78
0633963665	5057167389	IRRIG	INST	2323601800	0.89	5057167596	PD1.5	1,873.00	5,131.51	3.56	5.77
0180195000	0084534000	IRRIG	LMD		0.00	0084534215	PD1.5	2,492.00	5,106.89	3.55	5.74
0638985000	1123434000	IRRIG	INST	2370204600	9.05	1123434899	PD2	1,841.00	5,043.84	3.50	5.67
6602885000	9808234000	IRRIG	INST	2241036400	0.00	9808234095	PD2	1,829.00	5,010.96	3.48	5.63
5547985000	4432434000	AG	AG	2371412500	0.00	4432434147	PD1	1,823.00	4,994.52	3.47	5.61
2784095000	8429434000	IRRIG	INST		0.00	8429434277	PD2	2,436.00	4,992.13	3.47	5.61
2463095000	8218434000	IRRIG	INST	2262112700	0.00	8218434993	PD2	1,807.00	4,950.68	3.44	5.57
9785985000	5690434000	IRRIG	INST		0.00	5690434389	PD1.5	2,390.00	4,897.86	3.40	5.51
1483556806	5027572858	IRRIG	INST		0.00	5027572565	PD1.5	2,320.00	4,754.41	3.30	5.34
3525095000	8959434000	IRRIG	INST	2711201300	0.00	8959434979	PD2	1,731.00	4,742.47	3.29	5.33
9661885000	5377234000	IRRIG	INST	2276010500	0.00	5377234385	PD2	1,715.00	4,698.63	3.26	5.28
5436885000	5102334000	IRRIG	INST	2249524500	0.00	5102334181	PD2	1,710.00	4,684.93	3.25	5.27
8885985000	4790434000	IRRIG	INST		0.00	4790434407	PD1.5	2,286.00	4,684.73	3.25	5.27
7396985000	3281434000	AG	AG	2372900600	0.00	3281434105	PD5/8	1,703.00	4,665.75	3.24	5.25
3792095000	4157434000	IRRIG	INST	2241315200	5.29	4157434727	PD1	1,702.00	4,663.01	3.24	5.24
2885985000	8690434000	IRRIG	INST		0.00	8690434395	PD1.5	2,259.00	4,629.40	3.21	5.20
5360985000	6906334000	IRRIG	INST	2321504400	0.84	6906334499	PD2	1,672.00	4,580.82	3.18	5.15
1180195000	1084534000	IRRIG	LMD	2249918700	6.89	1084534217	PD1.5	1,665.00	4,561.64	3.17	5.13
3899665040	8408390091	IRRIG	INST		0.00	8408390137	PD1.5	2,190.00	4,488.00	3.12	5.05
7053970455	5769234000	IRRIG	INST	2302411700	0.00	5769234309	PD2	1,629.00	4,463.01	3.10	5.02
4515363517	9285842520	IRRIG	INST	2251412700	0.00	9285842065	PD1	1,626.00	4,454.79	3.09	5.01
9439985000	6514434000	IRRIG	INST		0.00	6514434849	PD2	2,137.00	4,379.39	3.04	4.92
9439985000	6514434000	IRRIG	INST			6514434849	PD2	2137	4,379	3.04	4.92
4351985000	0507334000	IRRIG	INST	2325420400	1.60	0507334457	PD1.5	1,581.00	4,331.51	3.01	4.87
8186448745	2529434000	IRRIG	INST		0.00	2529434285	PD2	2,109.00	4,322.01	3.00	4.86

Appendix D
Existing City of Escondido Potable Water Users
Irrigation and Agriculture Potential Conversion

Account_ID	Premise_ID	Premise_Type	Premise_Category	Parcel_Number	Acreage	Service_Point_ID	Meter_Type	KGAL	GPD	GPM	AFY
1813973957	3145520711	IRRIG	INST		0.00	3145589198	PD2	2,105.00	4,313.81	3.00	4.85
1966885000	2332334000	IRRIG	INST	2241642300	7.41	2332334815	PD2	1,574.00	4,312.33	2.99	4.85
1662025138	8585660372	IRRIG	INST	2411302600	5.81	8585651817	PD1	1,553.00	4,254.79	2.95	4.78
1927885000	2882334000	IRRIG	INST		0.00	2882334915	PD2	2,076.00	4,254.38	2.95	4.78
1544095000	6588434000	AG	AG	2241433000	7.29	6588434493	PD2	1,552.00	4,252.05	2.95	4.78
9734556515	4038434000	IRRIG	INST	2262112300	7.26	4038434353	PD1.5	1,548.00	4,241.10	2.95	4.77
5933885000	3139234000	IRRIG	INST	2293202200	0.00	3139234559	PD1.5	1,545.00	4,232.88	2.94	4.76
7085095000	5900534000	IRRIG	INST	2276711600	0.17	5900534987	PD2	1,525.00	4,178.08	2.90	4.70
6587985000	3372434000	AG	AG	2342203100	1.96	3372434943	PD1.5	1,520.00	4,164.38	2.89	4.68
1477259724	7256334000	IRRIG	INST	2291808400	1.04	7256334401	PD2	1,504.00	4,120.55	2.86	4.63
2148985000	7523434000	AG	AG	2341802100	0.59	7523434991	PD1	1,504.00	4,120.55	2.86	4.63
7101663075	7983886160	IRRIG	INST		0.00	7983886026	PD1.5	1,969.00	4,035.10	2.80	4.54
5585074607	8860667601	IRRIG	INST		0.00	8860667746	PD1.5	1,968.00	4,033.05	2.80	4.53
3330257956	7087033710	IRRIG	INST		0.00	7087067960	PD2	1,965.00	4,026.90	2.80	4.53
2870195000	1674534000	IRRIG	INST	2274550200	0.07	1674534137	PD2	1,464.00	4,010.96	2.79	4.51
0906995998	5671434000	IRRIG	INST		0.00	5671434989	PD1.5	1,949.00	3,994.12	2.77	4.49
5389444183	9691434000	RES_AG	RES_SFD	2371602600	0.00	9691434397	PD1	1,449.00	3,969.86	2.76	4.46
0971903049	6309291466	IRRIG	INST		0.00	6309264911	PD2	1,915.00	3,924.44	2.73	4.41
5969657980	8324098846	IRRIG	INST		0.00	8324053291	PD1.5	1,883.00	3,858.86	2.68	4.34
8085095000	6900534000	IRRIG	INST	2276701400	0.00	6900534989	PD2	1,400.00	3,835.62	2.66	4.31
1763095000	7518434000	IRRIG	INST	2290304900	0.00	7518434051	PD2	1,397.00	3,827.40	2.66	4.30
2579985000	3354434000	RES_AG	RES_SFD	2384302600	0.74	3354434603	PD1	1,362.00	3,731.51	2.59	4.19
1117985000	4991434000	AG	AG	2370902200	3.47	4991434447	PD1	1,359.00	3,723.29	2.59	4.19
7494095000	0239434000	IRRIG	INST	2710302000	27.10	0239434421	PD2	1,352.00	3,704.11	2.57	4.16
3870195000	2674534000	IRRIG	INST		0.00	2674534139	PD2	1,778.00	3,643.68	2.53	4.10
9859095000	8744434000	IRRIG	INST	2382312400	0.00	8744434678	PD1.5	1,329.00	3,641.10	2.53	4.09
9821521191	3997566212	IRRIG	INST		0.00	3997504832	PD2	1,773.00	3,633.44	2.52	4.08
5679420834	5346434000	RES_AG	RES_AG	2250408600	1.59	5346434415	PD3/4	1,325.00	3,630.14	2.52	4.08
7050985000	9495334000	IRRIG	INST	2321312500	0.00	9495334165	PD2	1,320.00	3,616.44	2.51	4.07
9475985000	2480434000	AG	AG	2411700900	0.00	2480434143	PD2	1,320.00	3,616.44	2.51	4.07
2525095000	7959434000	IRRIG	INST	2711201300	0.00	7959434977	PD2	1,318.00	3,610.96	2.51	4.06
0556985000	1051434000	AG	AG	2410403000	0.00	1051434461	PD1	1,318.00	3,610.96	2.51	4.06
4872163452	6251434000	AG	AG	2411302100	10.25	6251434511	PD1	1,312.00	3,594.52	2.50	4.04
2869446472	7600268753	IRRIG	LMD	2373004500	0.00	7600268327	PD1.5	1,300.00	3,561.64	2.47	4.00
8940983256	1586334000	IRRIG	INST	2282707600	0.15	1586334049	PD1.5	1,294.00	3,545.21	2.46	3.99
0092331916	8797900100	IRRIG	INST	2282303900	0.00	8797940560	PD2	1,283.00	3,515.07	2.44	3.95
2142036567	2971938527	IRRIG	INST		0.00	2971938616	PD2	1,702.00	3,487.93	2.42	3.92
3364032464	2968273647	IRRIG	INST	2311402800	0.00	2968273807	PD2	1,269.00	3,476.71	2.41	3.91
1968985000	2253434000	IRRIG	INST	2370305800	17.65	2253434527	PD2	1,267.00	3,471.23	2.41	3.90

Appendix D
Existing City of Escondido Potable Water Users
Irrigation and Agriculture Potential Conversion

Account_ID	Premise_ID	Premise_Type	Premise_Category	Parcel_Number	Acreage	Service_Point_ID	Meter_Type	KGAL	GPD	GPM	AFY
2780195000	7784534000	IRRIG	INST		0.00	7784534369	PD2	1,689.00	3,461.29	2.40	3.89
2550095000	8925434000	IRRIG	INST		0.00	8925434135	PD2	1,684.00	3,451.05	2.40	3.88
3680195000	8684534000	IRRIG	AG	2280731600	6.64	8684534351	PD1	1,256.00	3,441.10	2.39	3.87
2907985000	8791434000	AG	AG	2371610400	1.86	8791434415	PD1	1,256.00	3,441.10	2.39	3.87
5751885000	6467234000	IRRIG	INST	2276030600	0.07	6467234207	PD2	1,254.00	3,435.62	2.39	3.86
8047985000	8502434000	RES_AG	RES_AG	2370905900	1.94	8502434575	PD1	1,250.00	3,424.66	2.38	3.85
2833095000	9887434000	IRRIG	INST	2262020700	0.00	9887434477	PD2	1,241.00	3,400.00	2.36	3.82
4408911876	8774434000	RES_AG	RES_AG	2382323100	2.11	8774434093	PD3/4	1,236.00	3,386.30	2.35	3.81
6407985000	1391434000	AG	AG	2372900200	1.94	1391434321	PD1	1,231.00	3,372.60	2.34	3.79
1580195000	4584534000	IRRIG	INST		0.00	4584534323	PD2	1,645.00	3,371.12	2.34	3.79
8970195000	0874534000	IRRIG	INST	2310924200	0.00	0874534175	PD2	1,226.00	3,358.90	2.33	3.78
4553343898	5108434000	AG	AG	2254802800	7.94	5108434745	PD2	1,224.00	3,353.42	2.33	3.77
0692863451	7725393797	IRRIG	INST	2258002300	0.00	7725345449	PD1.5	1,212.00	3,320.55	2.31	3.73
7865985000	7481434000	AG	AG	2372900400	2.25	7481434153	PD1	1,169.00	3,202.74	2.22	3.60
5450985000	9895334000	IRRIG	INST	2354002700	0.96	9895334245	PD1	1,166.00	3,194.52	2.22	3.59
2541201638	9101097075	IRRIG	INST		0.00	9101097222	PD1.5	1,558.00	3,192.83	2.22	3.59
2375985000	2280434000	AG	AG	2402201900	1.66	2280434103	PD1	1,165.00	3,191.78	2.22	3.59
5396985000	1281434000	AG	AG	2372901100	2.32	1281434101	PD1	1,161.00	3,180.82	2.21	3.58
0334985000	4359334000	RES_AG	RES_AG	2363221600	1.74	4359334453	PD1	1,153.00	3,158.90	2.19	3.55
3826885000	8591334000	IRRIG	INST	2247310524	0.00	8591334067	PD1.5	1,152.00	3,156.16	2.19	3.55
4084985000	4699334000	AG	AG	2311402700	8.51	4699334313	PD2	1,136.00	3,112.33	2.16	3.50
1653885000	8649234000	IRRIG	INST	2301333900	0.00	8649234879	PD1.5	1,132.00	3,101.37	2.15	3.49
0696985000	5481434000	AG	AG	2372900700	2.10	5481434149	PD3/4	1,131.00	3,098.63	2.15	3.48
6351985000	3507334000	IRRIG	INST	2325420900	1.62	3507334463	PD1.5	1,129.00	3,093.15	2.15	3.48
5190195000	7394534000	IRRIG	INST	2710441500	0.00	7394534489	PD2	1,129.00	3,093.15	2.15	3.48
0329095000	3012434000	RES_AG	AG	2392702100	1.49	3012434665	PD1	1,129.00	3,093.15	2.15	3.48
9954095000	3998434000	IRRIG	INST		0.00	3998434767	PD2	1,502.00	3,078.07	2.14	3.46
9374985000	2099334000	AG	AG	2372600700	1.86	2099334189	PD1	1,123.00	3,076.71	2.14	3.46
3902361224	4158247020	IRRIG	INST			4158247414	PD1.5	1501	3,076	2.14	3.46
3902361224	4158247020	IRRIG	INST		0.00	4158247414	PD1.5	1,501.00	3,076.02	2.14	3.46
5885985000	1790434000	AG	AG	2340400200	3.17	1790434401	PD1	1,120.00	3,068.49	2.13	3.45
3218096549	5698482449	IRRIG	INST	2257612500	0.00	5698457819	PD1	1,114.00	3,052.05	2.12	3.43
3507874392	9461434000	AG	AG	2411801300	0.00	9461434757	PD1	1,099.00	3,010.96	2.09	3.38
0120696747	1543333339	IRRIG	INST		0.00	1543333328	PD1.5	1,469.00	3,010.44	2.09	3.38
8591662671	4704294475	IRRIG	INST	2257640100	0.00	4704276328	PD1.5	1,097.00	3,005.48	2.09	3.38
2928319265	5769905863	IRRIG	INST	2251410400	37.64	5769958911	PD3/4	1,083.00	2,967.12	2.06	3.34
6090195000	8294534000	IRRIG	LMD	2249733500	1.91	8294534471	PD2	1,079.00	2,956.16	2.05	3.32
7694095000	9339434000	IRRIG	INST	2710302000	0.00	9339434459	PD2	1,054.00	2,887.67	2.01	3.25
3585523180	5026434000	AG	AG	2400110900	3.20	5026434109	PD1	1,054.00	2,887.67	2.01	3.25

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Irrigation and Agriculture Potential Conversion

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9821521191	7236275260	IRRIG	INST		0.00	7236246101	PD1.5	1,406.00	2,881.34	2.00	3.24
6816985000	0021434000	IRRIG	INST		0.00	0021434859	PD1.5	1,405.00	2,879.29	2.00	3.24
3885985000	9690434000	IRRIG	INST		0.00	9690434397	PD1.5	1,399.00	2,866.99	1.99	3.22
3084985000	3699334000	AG	AG	2311402000	4.21	3699334311	PD1	1,042.00	2,854.79	1.98	3.21
9701095000	6675434000	IRRIG	INST	2354608100	1.20	6675434133	PD2	1,038.00	2,843.84	1.97	3.20
9846885000	9412334000	IRRIG	INST			9412334449	PD2	1378	2,824	1.96	3.17
9846885000	9412334000	IRRIG	INST		0.00	9412334449	PD2	1,378.00	2,823.96	1.96	3.17
0869985000	3644434000	AG	AG	2382404100	1.64	3644434463	PD1	1,022.00	2,800.00	1.94	3.15
0536885000	0202334000	IRRIG	INST	2247310714	0.00	0202334191	PD1.5	1,018.00	2,789.04	1.94	3.14
7090195000	9294534000	IRRIG	LMD	2249855200	3.54	9294534473	PD2	1,018.00	2,789.04	1.94	3.14
7609985000	6783434000	AG	AG	2390511100	1.87	6783434235	PD1.5	1,002.00	2,745.21	1.91	3.09
2148985000	7223434000	AG	AG	2341805100	1.62	7223434931	PD1	985.00	2,698.63	1.87	3.03
8784095000	4529434000	IRRIG	INST		0.00	4529434289	PD1.5	1,314.00	2,692.80	1.87	3.03
9821521191	1712403082	IRRIG	INST		0.00	1712415069	PD1.5	1,306.00	2,676.41	1.86	3.01
1902688376	8105661743	IRRIG	INST		0.00	8105661648	PD3/4	1,305.00	2,674.36	1.86	3.01
2123885000	1585334000	IRRIG	INST	2321312900	0.44	1585334969	PD2	973.00	2,665.75	1.85	3.00
6340696364	8630189174	IRRIG	INST		0.00	8630169187	PD2	973.00	2,665.75	1.85	3.00
4784095000	0529434000	IRRIG	INST		0.00	0529434281	PD1.5	963.00	2,638.36	1.83	2.97
4784095000	529434000	IRRIG	INST			529434281	PD1.5	963	2,638	1.83	2.97
7231734108	1826095452	IRRIG	INST		0.00	1826088213	PD1.5	958.00	2,624.66	1.82	2.95
7231734108	1826095452	IRRIG	INST			1826088213	PD1.5	958	2,625	1.82	2.95
7117985000	0002434000	AG	AG	2371004900	5.34	0002434459	PD1.5	957.00	2,621.92	1.82	2.95
8476428457	7781358746	IRRIG	INST	2405402000	0.00	7781382793	PD1	956.00	2,619.18	1.82	2.94
0071095000	1436434000	AG	AG	2254801400	3.54	1436434381	PD1.5	949.00	2,600.00	1.81	2.92
2595422734	4664921793	IRRIG	INST		0.00	4664921961	PD1.5	1,266.00	2,594.43	1.80	2.92
5754484313	1244593550	IRRIG	INST		0.00	1244593329	PD1.5	1,266.00	2,594.43	1.80	2.92
0855143776	0339871693	IRRIG	INST	2291025200	0.45	0339871678	PD1	941.00	2,578.08	1.79	2.90
8364095000	0309434000	IRRIG	INST	2711311400	0.32	0309434841	PD1.5	937.00	2,567.12	1.78	2.89
6444813897	9983480793	IRRIG	INST		0.00	9983480861	PD1.5	1,249.00	2,559.59	1.78	2.88
7717985000	4602434000	AG	AG	2371504200	1.92	4602434587	PD5/8	933.00	2,556.16	1.78	2.87
4991850128	3247434000	AG	AG	2241421100	5.07	3247434545	PD1.5	932.00	2,553.42	1.77	2.87
4584383368	6523267401	IRRIG	INST	2320907300	6.71	6523274049	PD1.5	930.00	2,547.95	1.77	2.86
6742095000	3507434000	AG	AG	2256620300	2.84	3507434805	PD1.5	930.00	2,547.95	1.77	2.86
7660985000	1316334000	IRRIG	INST	2321001100	0.00	1316334569	PD1.5	929.00	2,545.21	1.77	2.86
7551985000	2707334000	IRRIG	INST	2325420500	0.00	2707334501	PD2	918.00	2,515.07	1.75	2.83
6210095000	2884434000	AG	AG	2365104300	2.40	2884434301	PD1	918.00	2,515.07	1.75	2.83
8121218906	4998434000	AG	AG	2393602700	3.70	4998434769	PD1	914.00	2,504.11	1.74	2.82
8139885000	4584334000	IRRIG	INST	2362233300	0.00	4584334963	PD1.5	912.00	2,498.63	1.74	2.81
9388471120	1701146499	IRRIG	INST			1701181303	PD1.5	911	2,496	1.73	2.81

Appendix D
Existing City of Escondido Potable Water Users
Irrigation and Agriculture Potential Conversion

Account_ID	Premise_ID	Premise_Type	Premise_Category	Parcel_Number	Acreage	Service_Point_ID	Meter_Type	KGAL	GPD	GPM	AFY
9388471120	1701146499	IRRIG	INST		0.00	1701181303	PD1.5	911.00	2,495.89	1.73	2.81
5336885000	5002334000	IRRIG	INST	2247301800	0.29	5002334161	PD2	908.00	2,487.67	1.73	2.80
1472683366	0027206626	IRRIG	INST		0.00	0027253387	PD2	892.00	2,443.84	1.70	2.75
1211985000	1956334000	IRRIG	INST	2291015600	0.00	1956334529	PD1	890.00	2,438.36	1.69	2.74
0011985000	0236334000	IRRIG	INST	2330320500	0.00	0236334562	PD3/4	888.00	2,432.88	1.69	2.74
2596985000	7381434000	AG	AG	2370706500	2.01	7381434133	PD1	887.00	2,430.14	1.69	2.73
5786885000	6942334000	IRRIG	INST		0.00	6942334143	PD1.5	887.00	2,430.14	1.69	2.73
5786885000	6942334000	IRRIG	INST			6942334143	PD1.5	887	2,430	1.69	2.73
9425095000	4959434000	IRRIG	INST		0.00	4959434971	PD1.5	1,181.00	2,420.24	1.68	2.72
4894885000	2870334000	IRRIG	INST	2310605800	0.00	2870334579	PD1	877.00	2,402.74	1.67	2.70
6438311734	8915454324	IRRIG	INST	2291308300	0.00	8915444950	PD1.5	871.00	2,386.30	1.66	2.68
7660985000	5709988557	IRRIG	INST	2320906200	9.82	5709905424	PD1.5	869.00	2,380.82	1.65	2.68
6684095000	2429434000	IRRIG	INST		0.00	2429434265	PD1.5	1,161.00	2,379.25	1.65	2.67
6427278741	5017127196	IRRIG	INST		0.00	5017128528	PD1.5	1,154.00	2,364.91	1.64	2.66
1676885000	4932334000	IRRIG	INST	2267624300	0.09	4932334939	PD2	862.00	2,361.64	1.64	2.65
3694095000	5339434000	IRRIG	INST	2710302000	0.00	5339434451	PD2	862.00	2,361.64	1.64	2.65
9123264759	6151434000	AG	AG	2410403100	3.33	6151434491	PD1.5	861.00	2,358.90	1.64	2.65
5029985000	8004434000	IRRIG	INST		0.00	8004434499	PD2	1,147.00	2,350.56	1.63	2.64
5036761935	7181434000	AG	AG	2344112700	0.00	7181434093	PD1	854.00	2,339.73	1.62	2.63
1581095000	6846434000	IRRIG	INST		0.00	6846434671	PD2	852.00	2,334.25	1.62	2.62
1581095000	6846434000	IRRIG	INST			6846434671	PD2	852	2,334	1.62	2.62
4684095000	0429434000	IRRIG	INST		0.00	0429434261	PD1.5	851.00	2,331.51	1.62	2.62
4684095000	429434000	IRRIG	INST			429434261	PD1.5	851	2,332	1.62	2.62
9845985000	2950434000	AG	AG	2402001900	11.71	2950434643	PD1	849.00	2,326.03	1.62	2.61
3571414129	2353751114	IRRIG	INST		0.00	2353751102	PD1.5	1,126.00	2,307.53	1.60	2.59
2894885000	0870334000	IRRIG	INST	2302430100	0.81	0870334575	PD2	842.00	2,306.85	1.60	2.59
5795667694	2275434000	IRRIG	INST	2351005800	0.00	2275434045	PD2	834.00	2,284.93	1.59	2.57
8436885000	8102334000	IRRIG	INST		0.00	8102334187	PD2	832.00	2,279.45	1.58	2.56
8436885000	8102334000	IRRIG	INST			8102334187	PD2	832	2,279	1.58	2.56
7837985000	4722434000	RES_AG	AG	2393304000	1.79	4722434007	PD1	823.00	2,254.79	1.57	2.53
4123975141	4216334000	IRRIG	INST		0.00	4216334555	PD2	1,098.00	2,250.15	1.56	2.53
9080195000	8974534000	IRRIG	LMD		0.00	8974534211	PD1.5	821.00	2,249.32	1.56	2.53
2906985000	1311434000	IRRIG	INST		0.00	1311434721	PD1.5	1,097.00	2,248.10	1.56	2.53
7997885000	9753334000	IRRIG	INST	2293910200	0.00	9753334405	PD2	816.00	2,235.62	1.55	2.51
4980195000	3094534000	IRRIG	LMD	2249814000	0.90	3094534421	PD2	806.00	2,208.22	1.53	2.48
5374844658	0349334000	RES_AG	RES_AG	2391811000	1.38	0349334245	PD1	789.00	2,161.64	1.50	2.43
4123975141	3216334000	IRRIG	INST		0.00	3216334553	PD2	1,052.00	2,155.88	1.50	2.42
8680195000	3784534000	IRRIG	INST		0.00	3784534361	PD1.5	1,051.00	2,153.83	1.50	2.42
0129985000	7104434000	IRRIG	INST		0.00	7104434517	PD2	1,047.00	2,145.63	1.49	2.41

Appendix D
Existing City of Escondido Potable Water Users
Irrigation and Agriculture Potential Conversion

Account_ID	Premise_ID	Premise_Type	Premise_Category	Parcel_Number	Acreage	Service_Point_ID	Meter_Type	KGAL	GPD	GPM	AFY
6451985000	2607334000	IRRIG	INST		0.00	2607334481	PD1.5	777.00	2,128.77	1.48	2.39
6451985000	2607334000	IRRIG	INST			2607334481	PD1.5	777	2,129	1.48	2.39
2439952668	5877758252	IRRIG	INST		0.00	5877786919	PD1	1,029.00	2,108.75	1.46	2.37
2301985000	9946334000	IRRIG	INST	2292103800	0.00	9946334325	PD1.5	769.00	2,106.85	1.46	2.37
6141511603	1395074683	IRRIG	INST	2257612900	0.00	1395062993	PD1	769.00	2,106.85	1.46	2.37
1945618637	8606926443	IRRIG	INST	2258112900	0.00	8606986528	PD1.5	764.00	2,093.15	1.45	2.35
5445095000	2779434000	IRRIG	INST		0.00	2779434341	PD2	764.00	2,093.15	1.45	2.35
5445095000	2779434000	IRRIG	INST			2779434341	PD2	764	2,093	1.45	2.35
2551985000	8607334000	IRRIG	INST	2325420300	2.16	8607334493	PD1	753.00	2,063.01	1.43	2.32
0717985000	7502434000	AG	AG	2371610200	2.00	7502434573	PD1	753.00	2,063.01	1.43	2.32
3161342813	9242261359	IRRIG	INST		0.00	9242261750	PD1.5	1,005.00	2,059.56	1.43	2.32
7660985000	0316334000	IRRIG	INST	2321001100	3.10	0316334567	PD1.5	751.00	2,057.53	1.43	2.31
4840926446	2508434000	AG	AG	2256620200	2.27	2508434829	PD1.5	749.00	2,052.05	1.43	2.31
8396985000	4281434000	AG	AG	2372900900	2.14	4281434107	PD1	749.00	2,052.05	1.43	2.31
5694095000	7339434000	IRRIG	INST	2710302000	0.00	7339434455	PD2	746.00	2,043.84	1.42	2.30
8807095000	2998434000	IRRIG	INST	2711112900	0.00	2998434803	PD2	745.00	2,041.10	1.42	2.29
5055705569	7364182204	IRRIG	INST		0.00	7364182714	PD1.5	993.00	2,034.97	1.41	2.29
7053970455	0969234000	IRRIG	INST	2302411700	0.00	0969234339	PD1.5	738.00	2,021.92	1.40	2.27
5296985000	2181434000	AG	AG	2370907800	1.79	2181434083	PD1	737.00	2,019.18	1.40	2.27
9430756204	0314434000	AG	AG	2382404900	1.28	0314434797	PD1	730.00	2,000.00	1.39	2.25
2933095000	0097434000	IRRIG	INST	2241420800	4.53	0097434513	PD2	729.00	1,997.26	1.39	2.25
7175669475	1782434000	RES_AG	RES_AG	2341206700	0.00	1782434219	PD1	725.00	1,986.30	1.38	2.23
4858643572	7494334000	IRRIG	INST	2364602700	0.17	7494334842	PD3/4	721.00	1,975.34	1.37	2.22
0953802761	4139234000	IRRIG	INST	2294411100	3.09	4139234561	PD2	712.00	1,950.68	1.35	2.19
0475985000	0380434000	AG	AG	2402100600	3.65	0380434119	PD1	702.00	1,923.29	1.34	2.16
8762885000	7468234000	IRRIG	INST		0.00	7468234211	PD1.5	700.00	1,917.81	1.33	2.16
8762885000	7468234000	IRRIG	INST			7468234211	PD1.5	700	1,918	1.33	2.16
3161342813	4508271114	IRRIG	INST		0.00	4508271614	PD1.5	698.00	1,912.33	1.33	2.15
3161342813	4508271114	IRRIG	INST			4508271614	PD1.5	698	1,912	1.33	2.15
1312117773	1791434000	RES_AG	AG	2372901600	2.20	1791434401	PD3/4	691.00	1,893.15	1.31	2.13
9118381615	4030039796	IRRIG	INST	2381522300	0.00	4030060704	PD1.5	690.00	1,890.41	1.31	2.13
5704985000	2929334000	AG	AG	2391801600	1.23	2929334969	PD1	683.00	1,871.23	1.30	2.10
9575985000	3580434000	RES_AG	RES_AG	2340223300	1.03	3580434165	PD2	680.00	1,863.01	1.29	2.09
7932885000	3938234000	IRRIG	INST	2241036500	0.33	3938234703	PD2	679.00	1,860.27	1.29	2.09
4694095000	6339434000	IRRIG	INST	2710302000	0.00	6339434453	PD2	679.00	1,860.27	1.29	2.09
7080195000	6974534000	IRRIG	LMD	2249927700	0.44	6974534207	PD1.5	678.00	1,857.53	1.29	2.09
5715985000	2030434000	IRRIG	INST		0.00	2030434057	PD2	677.00	1,854.79	1.29	2.09
5715985000	2030434000	IRRIG	INST			2030434057	PD2	677	1,855	1.29	2.09
4455095000	8589434000	IRRIG	INST	2256924600	0.39	8589434513	PD5/8	676.00	1,852.05	1.29	2.08

Appendix D
Existing City of Escondido Potable Water Users
Irrigation and Agriculture Potential Conversion

Account_ID	Premise_ID	Premise_Type	Premise_Category	Parcel_Number	Acreage	Service_Point_ID	Meter_Type	KGAL	GPD	GPM	AFY
9436885000	9102334000	IRRIG	INST	2247310717	0.00	9102334189	PD1.5	675.00	1,849.32	1.28	2.08
9380095000	5455434000	IRRIG	INST	2353505100	0.00	5455434663	PD1	675.00	1,849.32	1.28	2.08
8061095000	6526434000	RES_AG	RES_AG	2403901400	1.15	6526434211	PD5/8	673.00	1,843.84	1.28	2.07
1536885000	1202334000	IRRIG	INST	2247310714	0.00	1202334193	PD1.5	669.00	1,832.88	1.27	2.06
7451985000	3607334000	IRRIG	INST	2325420700	3.60	3607334483	PD1.5	669.00	1,832.88	1.27	2.06
8544985000	1569334000	AG	AG	2390300400	1.18	1569334687	PD1	668.00	1,830.14	1.27	2.06
9250783114	1561434000	AG	AG	2411800300	0.00	1561434761	PD1.5	665.00	1,821.92	1.27	2.05
5775985000	6680434000	AG	AG	2340201000	0.00	6680434191	PD1	660.00	1,808.22	1.26	2.03
5582095000	4047434000	AG	AG	2271013500	2.58	4047434507	PD2	659.00	1,805.48	1.25	2.03
3850534949	9626434000	AG	AG	2400103800	3.74	9626434237	PD1	657.00	1,800.00	1.25	2.02
2581095000	7846434000	IRRIG	INST		0.00	7846434673	PD2	649.00	1,778.08	1.23	2.00
2581095000	7846434000	IRRIG	INST			7846434673	PD2	649	1,778	1.23	2.00
2123885000	7995334000	IRRIG	INST	2321312900	0.00	7995334261	PD2	644.00	1,764.38	1.23	1.98
8277955931	2086417808	IRRIG	INST		0.00	2086417409	PD3/4	644.00	1,764.38	1.23	1.98
8277955931	2086417808	IRRIG	INST			2086417409	PD3/4	644	1,764	1.23	1.98
5335822971	5012434000	RES_AG	RES_SFD	2392701800	1.91	5012434669	PD1	643.00	1,761.64	1.22	1.98
6769447247	8359933410	IRRIG	INST	2364500800	0.00	8359933925	PD1.5	635.00	1,739.73	1.21	1.96
2956985000	7351434000	AG	AG	2342604200	2.13	7351434533	PD1	634.00	1,736.99	1.21	1.95
7375985000	7280434000	AG	AG	2402202900	2.36	7280434113	PD1.5	632.00	1,731.51	1.20	1.95
3637541311	4911143965	IRRIG	INST		0.00	4911116328	PD2	630.00	1,726.03	1.20	1.94
3637541311	4911143965	IRRIG	INST			4911116328	PD2	630	1,726	1.20	1.94
2676885000	5932334000	IRRIG	INST	2267616900	0.14	5932334941	PD2	626.00	1,715.07	1.19	1.93
8918513646	3291434000	RES_AG	RES_AG	2370812100	1.46	3291434305	PD1	623.00	1,706.85	1.19	1.92
4868985000	5153434000	IRRIG	INST	2370305800	0.00	5153434513	PD2	616.00	1,687.67	1.17	1.90
3066985000	6451434000	AG	AG	2342606600	1.92	6451434551	PD1.5	616.00	1,687.67	1.17	1.90
7746985000	1441434000	IRRIG	INST	2410404000	1.60	1441434341	PD1	615.00	1,684.93	1.17	1.89
8570195000	5374534000	IRRIG	INST	2291604800	0.00	5374534085	PD1.5	613.00	1,679.45	1.17	1.89
6547985000	5432434000	AG	AG	2371430600	5.91	5432434149	PD1.5	613.00	1,679.45	1.17	1.89
5162095000	2817434000	AG	AG	2276310700	1.31	2817434063	PD1	605.00	1,657.53	1.15	1.86
6336885000	6002334000	IRRIG	INST	2247310474	0.00	6002334163	PD2	601.00	1,646.58	1.14	1.85
2351985000	7407334000	IRRIG	INST		0.00	7407334451	PD1.5	598.00	1,638.36	1.14	1.84
2351985000	7407334000	IRRIG	INST			7407334451	PD1.5	598	1,638	1.14	1.84
3599214622	8338548012	IRRIG	INST		0.00	8338548166	PD1.5	594.00	1,627.40	1.13	1.83
3599214622	8338548012	IRRIG	INST			8338548166	PD1.5	594	1,627	1.13	1.83
4151885000	1957234000	IRRIG	INST	2276014700	0.08	1957234097	PD2	589.00	1,613.70	1.12	1.81
5779985000	5554434000	IRRIG	INST	2385202100	0.88	5554434647	PD1	580.00	1,589.04	1.10	1.79
6596985000	1481434000	RES_AG	RES_AG	2372901300	1.87	1481434141	PD1	579.00	1,586.30	1.10	1.78
1991095000	2166434000	IRRIG	INST	2256922700	0.22	2166434923	PD1	578.00	1,583.56	1.10	1.78
4482095000	4937434000	AG	AG	2274302700	2.03	4937434487	PD1	576.00	1,578.08	1.10	1.77

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Existing City of Escondido Potable Water Users
Irrigation and Agriculture Potential Conversion

Account_ID	Premise_ID	Premise_Type	Premise_Category	Parcel_Number	Acreage	Service_Point_ID	Meter_Type	KGAL	GPD	GPM	AFY
0953095000	3708434000	IRRIG	INST	2280732400	0.00	3708434871	PD1	574.00	1,572.60	1.09	1.77
7272010135	5536887911	AG	AG	2410403300	1.38	5536829611	PD1	574.00	1,572.60	1.09	1.77
6008985000	1782434000	RES_AG	RES_AG	2341206700	0.00	1782434219	PD1	570.00	1,561.64	1.08	1.76
7013366425	0012434000	RES_AG	RES_AG	2392703900	0.00	0012434659	PD2	567.00	1,553.42	1.08	1.75
1121865623	1571434000	AG	AG	2344304900	4.62	1571434961	PD2	565.00	1,547.95	1.07	1.74
1174376453	7060434000	AG	AG	2401903500	1.14	7060434673	PD1	564.00	1,545.21	1.07	1.74
9946985000	6231434000	AG	AG	2344101600	2.90	6231434111	PD1	562.00	1,539.73	1.07	1.73
4336885000	4002334000	IRRIG	INST		0.00	4002334159	PD1.5	562.00	1,539.73	1.07	1.73
4336885000	4002334000	IRRIG	INST			4002334159	PD1.5	562	1,540	1.07	1.73
6196985000	3081434000	RES_AG	RES_AG	2393602300	1.41	3081434065	PD3/4	560.00	1,534.25	1.07	1.72
2506985000	4011434000	IRRIG	INST	2340403800	0.00	4011434667	PD1.5	560.00	1,534.25	1.07	1.72
1572885000	7761434000	AG	AG	2411700600	3.09	7761434813	PD1	556.00	1,523.29	1.06	1.71
7003095000	6457434000	AG	AG	2270106000	2.24	6457434791	PD1	552.00	1,512.33	1.05	1.70
7480195000	9484534000	IRRIG	INST		0.00	9484534313	PD2	550.00	1,506.85	1.05	1.69
7473037792	7829234000	IRRIG	INST	2301333400	0.00	7829234507	PD1	546.00	1,495.89	1.04	1.68
8354613164	3414644504	RES_AG	RES_SFD	2392705600	1.11	3414644096	PD3/4	543.00	1,487.67	1.03	1.67
1275985000	1180434000	RES_AG	RES_AG	2410100300	1.08	1180434081	PD1	537.00	1,471.23	1.02	1.65
3151885000	0957234000	IRRIG	INST	2276013000	0.07	0957234095	PD2	534.00	1,463.01	1.02	1.64
9378985000	0753434000	AG	AG	2370303700	3.31	0753434623	PD1	534.00	1,463.01	1.02	1.64
8469277879	6836820183	IRRIG	INST		0.00	6836820345	PD1	532.00	1,457.53	1.01	1.64
8469277879	6836820183	IRRIG	INST			6836820345	PD1	532	1,458	1.01	1.64
2714510429	3580027680	IRRIG	INST	2241305400	8.11	3580069484	PD1.5	531.00	1,454.79	1.01	1.64
6475985000	8380434000	AG	AG	2411600200	0.00	8380434135	PD1	530.00	1,452.05	1.01	1.63
8696733423	0912434000	AG	AG	2393503800	1.78	0912434839	PD1	528.00	1,446.58	1.00	1.63
2215885000	7090334000	IRRIG	INST	2310923100	0.00	7090334831	PD1.5	527.00	1,443.84	1.00	1.62
1833095000	8887434000	RES_AG	RES_SFD	2273301400	0.77	8887434475	PD3/4	526.00	1,441.10	1.00	1.62
3466825082	5521504674	IRRIG	INST	2257710700	0.00	5521567025	PD1.5	519.00	1,421.92	0.99	1.60
3050724279	4391434000	AG	AG	2370904700	2.47	4391434327	PD1	519.00	1,421.92	0.99	1.60
8091885000	5597234000	IRRIG	INST	2276011100	0.07	5597234827	PD2	518.00	1,419.18	0.99	1.60
1124985000	3249334000	IRRIG	INST		0.00	3249334231	PD1.5	517.00	1,416.44	0.98	1.59
1124985000	3249334000	IRRIG	INST			3249334231	PD1.5	517	1,416	0.98	1.59
8504095000	2058434000	IRRIG	INST			2058434773	PD3/4	515	1,411	0.98	1.59
3100735980	2700509800	IRRIG	INST	2302421400	0.00	2700509427	PD1.5	515.00	1,410.96	0.98	1.59
8504095000	2058434000	IRRIG	INST		0.00	2058434773	PD3/4	515.00	1,410.96	0.98	1.59
4701310993	0519137436	IRRIG	INST	2362240900	0.00	0519137168	PD1	514.00	1,408.22	0.98	1.58
7352557412	4769334000	AG	AG	2390305200	1.17	4769334733	PD1	511.00	1,400.00	0.97	1.57
4175785622	9214434000	IRRIG	INST	2381413800	0.00	9214434795	PD1.5	509.00	1,394.52	0.97	1.57
2408683019	6990334000	IRRIG	INST	2310606200	0.00	6990334035	PD1.5	508.00	1,391.78	0.97	1.56
9958312462	9650434000	RES_AG	RES_AG	2411601400	4.78	9650434597	PD1.5	508.00	1,391.78	0.97	1.56

Appendix D
Existing City of Escondido Potable Water Users
Irrigation and Agriculture Potential Conversion

Account_ID	Premise_ID	Premise_Type	Premise_Category	Parcel_Number	Acreage	Service_Point_ID	Meter_Type	KGAL	GPD	GPM	AFY
5386985000	5371434000	RES_AG	RES_SFD	2344205300	0.91	5371434929	PD5/8	499.00	1,367.12	0.95	1.54
4451095000	8916434000	IRRIG	INST	2241006000	5.22	8916434095	PD1.5	498.00	1,364.38	0.95	1.53
3242656059	916739423	IRRIG	INST			916739923	PD3/4	492	1,348	0.94	1.52
9355095000	4589434000	IRRIG	INST	2256924200	0.00	4589434505	PD1.5	492.00	1,347.95	0.94	1.52
3242656059	0916739423	IRRIG	INST		0.00	0916739923	PD3/4	492.00	1,347.95	0.94	1.52
9429985000	4504434000	AG	AG	2390200700	2.74	4504434593	PD1	490.00	1,342.47	0.93	1.51
4096885000	4252334000	IRRIG	INST	2241630700	0.00	4252334199	PD1.5	480.00	1,315.07	0.91	1.48
5175985000	5080434000	AG	AG	2340221600	2.02	5080434069	PD1	479.00	1,312.33	0.91	1.48
6886985000	4771434000	RES_AG	RES_AG	2344303600	0.85	4771434007	PD1	477.00	1,306.85	0.91	1.47
1285714623	1151434000	AG	AG	2410400100	1.57	1151434481	PD1	473.00	1,295.89	0.90	1.46
5818985000	3403434000	AG	AG	2370305500	1.39	3403434563	PD5/8	472.00	1,293.15	0.90	1.45
5087985000	3862434000	IRRIG	INST		0.00	3862434843	PD1.5	472.00	1,293.15	0.90	1.45
5087985000	3862434000	IRRIG	INST			3862434843	PD1.5	472	1,293	0.90	1.45
6786985000	4671434000	AG	AG	2344202600	1.53	4671434987	PD3/4	471.00	1,290.41	0.90	1.45
8290367388	8560434000	IRRIG	INST	2402002000	4.16	8560434489	PD1	470.00	1,287.67	0.89	1.45
9451985000	5607334000	IRRIG	INST	2325421100	0.00	5607334487	PD1.5	456.00	1,249.32	0.87	1.40
7799469839	4343434000	IRRIG	INST	2371306900	1.22	4343434351	PD1	447.00	1,224.66	0.85	1.38
0251095000	3716434000	AG	AG	2334904200	1.26	3716434045	PD1	445.00	1,219.18	0.85	1.37
2018299191	7749334000	RES_AG	RES_AG	2391303700	1.25	7749334339	PD1	444.00	1,216.44	0.84	1.37
9807640472	6867335628	IRRIG	INST	2262104800	0.87	6867335483	PD3/4	441.00	1,208.22	0.84	1.36
2517985000	0402434000	RES_AG	RES_SFD	2371511900	1.03	0402434539	PD1	431.00	1,180.82	0.82	1.33
3958917829	3280434000	AG	AG	2402203200	1.71	3280434105	PD3/4	427.00	1,169.86	0.81	1.32
4781262688	5431387168	IRRIG	INST	2285800900	0.11	5431387143	PD1	425.00	1,164.38	0.81	1.31
8003095000	7457434000	AG	AG	2270104400	1.90	7457434793	PD1	425.00	1,164.38	0.81	1.31
8077367147	9373334000	IRRIG	INST	2330921600	0.00	9373334725	PD1	425.00	1,164.38	0.81	1.31
1228946935	2449949286	IRRIG	INST	2381522100	0.00	2449913696	PD1	423.00	1,158.90	0.80	1.30
4999051907	8925756047	IRRIG	INST	2301412800	0.00	8925756976	PD1.5	416.00	1,139.73	0.79	1.28
6445095000	3779434000	IRRIG	INST	2249014600	7.63	3779434343	PD2	413.00	1,131.51	0.79	1.27
2694095000	3339434000	IRRIG	INST	2710302000	0.00	3339434447	PD2	406.00	1,112.33	0.77	1.25
7439985000	4514434000	IRRIG	INST		0.00	4514434845	PD2	402.00	1,101.37	0.76	1.24
7439985000	4514434000	IRRIG	INST			4514434845	PD2	402	1,101	0.76	1.24
8738362715	1249334000	RES_AG	RES_AG	2391900300	1.24	1249334227	PD1	400.00	1,095.89	0.76	1.23
3254985000	0179334000	RES_AG	RES_AG	2390920400	0.97	0179334805	PD1	395.00	1,082.19	0.75	1.22
0121733742	6349334000	RES_AG	RES_AG	2391810700	1.64	6349334257	PD3/4	394.00	1,079.45	0.75	1.21
8211985000	9956334000	IRRIG	INST	2292912800	0.00	9956334545	PD1	393.00	1,076.71	0.75	1.21
6945985000	0060434000	AG	AG	2401901000	4.38	0060434659	PD2	389.00	1,065.75	0.74	1.20
3518985000	1103434000	AG	AG	2342318100	0.00	1103434499	PD1.5	388.00	1,063.01	0.74	1.20
4829985000	7804434000	RES_AG	RES_AG	2381424100	0.97	7804434659	PD1	386.00	1,057.53	0.73	1.19
2629985000	7604434000	RES_AG	RES_AG	2381411600	1.31	7604434619	PD1	382.00	1,046.58	0.73	1.18

Appendix D
Existing City of Escondido Potable Water Users
Irrigation and Agriculture Potential Conversion

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8164121270	0265739844	IRRIG	INST	2310503300	2.16	0265739342	PD1	382.00	1,046.58	0.73	1.18
5171368676	9434605417	IRRIG	INST	2410103200	1.40	9434659892	PD1	373.00	1,021.92	0.71	1.15
2846326788	3928635326	IRRIG	INST	2302610300	0.00	3928646694	PD1	371.00	1,016.44	0.71	1.14
4926015531	7318834646	IRRIG	INST		0.00	7318834823	PD3/4	370.00	1,013.70	0.70	1.14
4926015531	7318834646	IRRIG	INST			7318834823	PD3/4	370	1,014	0.70	1.14
3200095000	7874434000	IRRIG	INST	2380735000	0.56	7874434111	PD1	367.00	1,005.48	0.70	1.13
5114985000	2339334000	RES_AG	RES_AG	2391811100	1.42	2339334049	PD1	367.00	1,005.48	0.70	1.13
6825618273	3771434000	RES_AG	RES_AG	2344202500	1.17	3771434005	PD5/8	365.00	1,000.00	0.69	1.12
7088372694	8565434000	IRRIG	INST	2350902800	1.39	8565434915	PD1	361.00	989.04	0.69	1.11
8779985000	8554434000	AG	AG	2382812300	1.27	8554434653	PD1	355.00	972.60	0.68	1.09
1750985000	7706334000	IRRIG	INST	2321503700	0.00	7706334459	PD2	348.00	953.42	0.66	1.07
4382095000	5837434000	AG	AG	2274201100	6.83	5837434469	PD1.5	344.00	942.47	0.65	1.06
6841885000	8657234000	IRRIG	INST	2276012400	0.00	8657234051	PD1.5	343.00	939.73	0.65	1.06
7792095000	7157434000	RES_AG	RES_AG	2241414900	1.12	7157434733	PD5/8	330.00	904.11	0.63	1.02
4244570296	4273434000	RES_AG	RES_AG	2371425300	1.97	4273434931	PD1	329.00	901.37	0.63	1.01
9187178469	8890046915	IRRIG	LMD		0.00	8890046006	PD1.5	329.00	901.37	0.63	1.01
9187178469	8890046915	IRRIG	LMD			8890046006	PD1.5	329	901	0.63	1.01
4792621987	7316434000	IRRIG	LMD	2310306900	0.00	7316434973	PD1	327.00	895.89	0.62	1.01
8223541765	8421125390	IRRIG	INST	2351007100	0.00	8421125369	PD1	322.00	882.19	0.61	0.99
3262478115	4326194215	IRRIG	INST	2410102900	37.55	4326183395	PD1.5	320.00	876.71	0.61	0.99
9611630376	4899437581	IRRIG	INST	2302910100	0.00	4899450698	PD1	318.00	871.23	0.61	0.98
5533907904	4556140094	IRRIG	INST		0.00	4556185031	PD3/4	317.00	868.49	0.60	0.98
5533907904	4556140094	IRRIG	INST			4556185031	PD3/4	317	868	0.60	0.98
3952916030	9772957179	IRRIG	INST	2350720400	0.00	9772944239	PD3/4	315.00	863.01	0.60	0.97
5334985000	9359334000	AG	AG	2363222100	1.34	9359334463	PD1	313.00	857.53	0.60	0.96
3580195000	7937010370	IRRIG	INST	2271234600	0.00	7937067387	PD3/4	311.00	852.05	0.59	0.96
6594095000	8239434000	IRRIG	INST	2710302000	0.00	8239434437	PD2	304.00	832.88	0.58	0.94
9979535607	5403434000	RES_AG	RES_AG	2305206200	0.00	5403434567	PD1	302.00	827.40	0.57	0.93
4315388574	2423434000	RES_AG	AG	2336121300	1.05	2423434961	PD3/4	298.00	816.44	0.57	0.92
3404455630	8237297270	IRRIG	INST	2257620900	0.00	8237275165	PD1	297.00	813.70	0.57	0.91
8892095000	8257434000	RES_AG	RES_AG	2241415000	1.06	8257434755	PD1	296.00	810.96	0.56	0.91
3789457177	7374534000	IRRIG	INST	2710301200	0.00	7374534089	T4	295.00	808.22	0.56	0.91
5647985000	4532434000	AG	AG	2371410100	1.89	4532434167	PD1	291.00	797.26	0.55	0.90
4786885000	5942334000	IRRIG	INST		0.00	5942334141	PD1.5	289.00	791.78	0.55	0.89
4786885000	5942334000	IRRIG	INST			5942334141	PD1.5	289	792	0.55	0.89
7903143984	5526434000	AG	AG	2403901300	1.74	5526434209	PD3/4	286.00	783.56	0.54	0.88
9337985000	8222434000	AG	AG	2393401600	1.82	8222434915	PD1	284.00	778.08	0.54	0.87
2796985000	7581434000	AG	AG	2371612200	2.13	7581434173	PD1	280.00	767.12	0.53	0.86
6737405206	2700509800	IRRIG	INST	2302421400	1.42	2700509427	PD1.5	276.00	756.16	0.53	0.85

Appendix D
Existing City of Escondido Potable Water Users
Irrigation and Agriculture Potential Conversion

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8014985000	5239334000	RES_AG	RES_AG	2381604300	1.04	5239334035	PD3/4	275.00	753.42	0.52	0.85
5451985000	1607334000	IRRIG	INST		0.00	1607334479	PD1.5	271.00	742.47	0.52	0.83
5451985000	1607334000	IRRIG	INST			1607334479	PD1.5	271	742	0.52	0.83
3188985000	4363434000	AG	AG	2371410400	2.15	4363434751	PD1	270.00	739.73	0.51	0.83
1624106463	9418434000	AG	AG	2400202600	1.98	9418434035	PD3/4	269.00	736.99	0.51	0.83
3396985000	9181434000	AG	AG	2344400100	3.89	9181434097	PD1.5	268.00	734.25	0.51	0.83
6217985000	9002434000	AG	AG	2371003100	4.01	9002434477	PD1	268.00	734.25	0.51	0.83
2527985000	3412434000	AG	AG	2392904000	1.44	3412434745	PD1	267.00	731.51	0.51	0.82
3807985000	9691434000	RES_AG	RES_SFD	2371602600	1.76	9691434397	PD1	266.00	728.77	0.51	0.82
9522150519	0073434000	RES_AG	RES_AG	2371412300	0.00	0073434883	PD5/8	264.00	723.29	0.50	0.81
6880195000	2984534000	IRRIG	INST		0.00	2984534399	PD5/8	260.00	712.33	0.49	0.80
6880195000	2984534000	IRRIG	INST			2984534399	PD5/8	260	712	0.49	0.80
9494095000	2239434000	IRRIG	INST	2710302000	0.00	2239434425	PD2	259.00	709.59	0.49	0.80
4643095000	7597434000	IRRIG	INST	2241315200	0.00	7597434627	PD1	255.00	698.63	0.49	0.79
3100735980	2700509800	IRRIG	INST	2302421400	0.00	2700509859	PD1.5	254.00	695.89	0.48	0.78
0604940201	1479609346	IRRIG	INST		0.00	1479609661	PD3/4	253.00	693.15	0.48	0.78
604940201	1479609346	IRRIG	INST			1479609661	PD3/4	253	693	0.48	0.78
2396985000	8181434000	AG	AG	2372901400	2.10	8181434095	PD1	248.00	679.45	0.47	0.76
0806494061	1278434000	IRRIG	INST	2282208100	1.41	1278434324	PD3/4	247.00	676.71	0.47	0.76
8426985000	0621434000	IRRIG	INST	2340403500	2.72	0621434979	PD1	243.00	665.75	0.46	0.75
5555418125	4026434000	IRRIG	INST	1900801500	0.00	4026434107	PD1	240.00	657.53	0.46	0.74
2105095000	9739434000	RES_AG	RES_AG	2727020500	1.40	9739434539	PD1	238.00	652.05	0.45	0.73
8775915186	0013702233	IRRIG	INST	2411400200	0.00	0013769546	PD3/4	238.00	652.05	0.45	0.73
4416501528	1949098442	IRRIG	INST		0.00	1949060209	PD1.5	236.00	646.58	0.45	0.73
4416501528	1949098442	IRRIG	INST			1949060209	PD1.5	236	647	0.45	0.73
8439985000	5514434000	IRRIG	INST		0.00	5514434847	PD2	232.00	635.62	0.44	0.71
8439985000	5514434000	IRRIG	INST			5514434847	PD2	232	636	0.44	0.71
5680195000	0784534000	IRRIG	INST	2364600900	0.71	0784534355	PD5/8	231.00	632.88	0.44	0.71
0070985000	2316334000	IRRIG	INST	2320912900	1.67	2316334571	PD1.5	226.00	619.18	0.43	0.70
0278410232	9101334000	IRRIG	INST	2310607400	0.00	9101334153	PD1.5	226.00	619.18	0.43	0.70
5280195000	7284534000	IRRIG	INST	2321504100	0.73	7284534269	PD1	225.00	616.44	0.43	0.69
5455095000	9589434000	IRRIG	INST	2256924700	0.12	9589434515	PD3/4	222.00	608.22	0.42	0.68
2090195000	3194534000	IRRIG	LMD	2249852100	0.10	3194534441	PD2	221.00	605.48	0.42	0.68
0539985000	7514434000	IRRIG	INST		0.00	7514434851	PD2	221.00	605.48	0.42	0.68
539985000	7514434000	IRRIG	INST			7514434851	PD2	221	605	0.42	0.68
8087985000	6862434000	IRRIG	INST		0.00	6862434849	PD3/4	217.00	594.52	0.41	0.67
8087985000	6862434000	IRRIG	INST			6862434849	PD3/4	217	595	0.41	0.67
8580195000	3684534000	IRRIG	INST		0.00	3684534341	PD2	216.00	591.78	0.41	0.67
3323270022	7659930451	IRRIG	INST		0.00	7659930753	PD3/4	215.00	589.04	0.41	0.66

Appendix D
Existing City of Escondido Potable Water Users
Irrigation and Agriculture Potential Conversion

Account_ID	Premise_ID	Premise_Type	Premise_Category	Parcel_Number	Acreage	Service_Point_ID	Meter_Type	KGAL	GPD	GPM	AFY
3323270022	7659930451	IRRIG	INST			7659930753	PD3/4	215	589	0.41	0.66
8708885000	8763334000	IRRIG	INST	2330421400	0.16	8763334603	PD3/4	214.00	586.30	0.41	0.66
4117985000	7991434000	AG	AG	2370813100	1.95	7991434453	PD1	212.00	580.82	0.40	0.65
5201885000	3417234000	IRRIG	INST	2291604800	0.00	3417234201	PD1.5	211.00	578.08	0.40	0.65
5984885000	9860334000	IRRIG	INST	2262104100	0.00	9860334377	PD1.5	210.00	575.34	0.40	0.65
4224141701	9884334000	IRRIG	INST	2362234000	0.00	9884334033	PD1	206.00	564.38	0.39	0.63
0290195000	6494534000	IRRIG	LMD	2249842400	2.07	6494534507	PD2	205.00	561.64	0.39	0.63
2376038562	8490434000	RES_AG	RES_AG	2340108300	0.95	8490434355	PD1	204.00	558.90	0.39	0.63
0140985000	0685334000	IRRIG	INST	2350710200	4.50	0685334987	PD1.5	203.00	556.16	0.39	0.63
8915885000	6890334000	IRRIG	INST	2310920400	0.00	6890334013	PD1.5	202.00	553.42	0.38	0.62
0186868546	0013702233	IRRIG	INST	2411400200	0.00	0013769546	PD3/4	194.00	531.51	0.37	0.60
4800654498	0073434000	RES_AG	RES_AG	2371412300	0.00	0073434883	PD5/8	191.00	523.29	0.36	0.59
0647985000	9432434000	AG	AG	2371412000	4.14	9432434157	PD3/4	190.00	520.55	0.36	0.59
6666201033	3499766680	IRRIG	INST		0.00	3499766057	PD3/4	188.00	515.07	0.36	0.58
6666201033	3499766680	IRRIG	INST			3499766057	PD3/4	188	515	0.36	0.58
7517985000	5402434000	AG	AG	2371503700	5.21	5402434549	PD1	187.00	512.33	0.36	0.58
8647985000	7532434000	AG	AG	2371421700	1.42	7532434173	PD1	185.00	506.85	0.35	0.57
0573095000	6228434000	IRRIG	INST	2296103800	0.00	6228434189	PD3/4	183.00	501.37	0.35	0.56
8292095764	8381845259	IRRIG	INST	2320602500	0.00	8381883501	PD1	182.00	498.63	0.35	0.56
8186448745	4429434000	IRRIG	INST	2711411400	0.00	4429434269	PD1.5	182.00	498.63	0.35	0.56
1375074843	8011850427	IRRIG	LMD		0.00	8011850061	PD3/4	180.00	493.15	0.34	0.55
0880195000	6884534000	IRRIG	INST		0.00	6884534387	PD1	180.00	493.15	0.34	0.55
4970195000	5774534000	IRRIG	INST		0.00	5774534165	PD2	180.00	493.15	0.34	0.55
1375074843	8011850427	IRRIG	LMD			8011850061	PD3/4	180	493	0.34	0.55
880195000	6884534000	IRRIG	INST			6884534387	PD1	180	493	0.34	0.55
4970195000	5774534000	IRRIG	INST			5774534165	PD2	180	493	0.34	0.55
0242818213	5078676053	IRRIG	INST	2305305500	0.00	5078614590	PD3/4	178.00	487.67	0.34	0.55
7670392105	3149283257	IRRIG	INST		0.00	3149283417	PD3/4	177.00	484.93	0.34	0.55
7670392105	3149283257	IRRIG	INST			3149283417	PD3/4	177	485	0.34	0.55
8751095000	9226434000	IRRIG	INST	2256620400	9.32	9226434157	PD1.5	172.00	471.23	0.33	0.53
2696477201	9064334000	IRRIG	INST	2335803200	0.19	9064334469	PD5/8	171.00	468.49	0.33	0.53
5965710837	6826832220	IRRIG	INST		0.00	6826857628	PD3/4	168.00	460.27	0.32	0.52
1780195000	6784534000	IRRIG	INST		0.00	6784534367	PD2	168.00	460.27	0.32	0.52
5965710837	6826832220	IRRIG	INST			6826857628	PD3/4	168	460	0.32	0.52
7802329124	0346434000	AG	AG	2257102300	13.16	0346434559	PD2	166.00	454.79	0.32	0.51
3806985000	5211434000	AG	AG	2340403900	2.64	5211434709	PD1	161.00	441.10	0.31	0.50
9492885000	5888234000	IRRIG	INST	2302520100	0.00	5888234687	PD1.5	160.00	438.36	0.30	0.49
8354095000	4398434000	IRRIG	INST	2725211300	0.48	4398434649	PD1	159.00	435.62	0.30	0.49
4575985000	8480434000	RES_AG	RES_AG	2410210300	2.49	8480434155	PD1	152.00	416.44	0.29	0.47

Appendix D
Existing City of Escondido Potable Water Users
Irrigation and Agriculture Potential Conversion

Account_ID	Premise_ID	Premise_Type	Premise_Category	Parcel_Number	Acreage	Service_Point_ID	Meter_Type	KGAL	GPD	GPM	AFY
2910822765	1341943387	IRRIG	INST	2290502400	0.00	1341943899	PD1	150.00	410.96	0.29	0.46
7705885000	2680334000	IRRIG	INST	2313323200	0.68	2680334741	PD1	150.00	410.96	0.29	0.46
9405095000	3149434000	IRRIG	INST		0.00	3149434609	PD1.5	150.00	410.96	0.29	0.46
9405095000	3149434000	IRRIG	INST			3149434609	PD1.5	150	411	0.29	0.46
4123095000	0377434000	IRRIG	INST	2256701600	0.23	0377434159	PD3/4	149.00	408.22	0.28	0.46
9788985000	0073434000	RES_AG	RES_AG	2371412300	0.00	0073434883	PD5/8	145.00	397.26	0.28	0.45
7235885000	3011334000	IRRIG	INST	2310921100	0.00	3011334347	PD1.5	145.00	397.26	0.28	0.45
5479985000	6254434000	RES_AG	RES_AG	2384302500	2.92	6254434589	PD1	143.00	391.78	0.27	0.44
3745398532	7898434000	IRRIG	INST	2711213300	0.00	7898434611	PD1.5	142.00	389.04	0.27	0.44
5767516546	1020434000	RES_AG	AG	2401007700	0.98	1020434799	PD1	142.00	389.04	0.27	0.44
9184885000	2160334000	IRRIG	INST	2291211400	0.48	2160334191	PD5/8	139.00	380.82	0.26	0.43
6618985000	1677234000	IRRIG	INST	2305305500	0.00	1677234361	PD3/4	138.00	378.08	0.26	0.43
7733885000	7929234000	IRRIG	INST	2301321400	0.00	7929234527	PD5/8	136.00	372.60	0.26	0.42
4232313804	7091434000	IRRIG	INST	2342612300	0.00	7091434273	T3	136.00	372.60	0.26	0.42
8090195000	0394534000	IRRIG	LMD	2350832000	0.17	0394534475	PD1	134.00	367.12	0.25	0.41
0855589642	5204434000	IRRIG	INST	2363905600	0.00	5204434535	PD2	129.00	353.42	0.25	0.40
0780195000	5784534000	IRRIG	LMD		0.00	5784534365	PD5/8	125.00	342.47	0.24	0.39
780195000	5784534000	IRRIG	LMD			5784534365	PD5/8	125	342	0.24	0.39
7570195000	4374534000	IRRIG	INST	2301410900	1.88	4374534083	PD1	124.00	339.73	0.24	0.38
4653274546	2773914735	IRRIG	INST		0.00	2773958813	PD3/4	124.00	339.73	0.24	0.38
4653274546	2773914735	IRRIG	INST			2773958813	PD3/4	124	340	0.24	0.38
0983309616	1685636337	IRRIG	INST	2282303900	0.00	1685698837	PD1	120.00	328.77	0.23	0.37
2017573663	8363177176	IRRIG	INST		0.00	8363168795	PD1	119.00	326.03	0.23	0.37
2017573663	8363177176	IRRIG	INST			8363168795	PD1	119	326	0.23	0.37
6224985000	4822434000	IRRIG	INST	2393602100	2.77	4822434027	PD1	117.00	320.55	0.22	0.36
3581095000	8846434000	IRRIG	INST		0.00	8846434675	PD1	115.00	315.07	0.22	0.35
3581095000	8846434000	IRRIG	INST			8846434675	PD1	115	315	0.22	0.35
7511985000	3366334000	IRRIG	INST	2291025400	0.00	3366334613	PD2	114.00	312.33	0.22	0.35
4080195000	1974534000	IRRIG	INST	2322602000	0.21	1974534197	PD3/4	110.00	301.37	0.21	0.34
7190195000	9394534000	IRRIG	INST		0.00	9394534493	PD2	109.00	298.63	0.21	0.34
8190195000	2494534000	IRRIG	INST	2363020600	0.27	2494534499	PD1	108.00	295.89	0.21	0.33
5670195000	3474534000	IRRIG	INST	2710301200	0.00	3474534101	PD1	108.00	295.89	0.21	0.33
9770195000	7574534000	IRRIG	INST	2363020400	0.00	7574534129	PD1	105.00	287.67	0.20	0.32
8918885000	2383334000	IRRIG	INST	2331721700	0.75	2383334911	PD3/4	103.00	282.19	0.20	0.32
1870195000	9574534000	IRRIG	INST	2256620400	0.00	9574534133	PD1	101.00	276.71	0.19	0.31
8419319721	5526571554	IRRIG	INST	2311411800	0.00	5526502068	PD1	101.00	276.71	0.19	0.31
1422701099	9954434000	AG	AG	2384203100	2.25	9954434735	PD1	100.00	273.97	0.19	0.31
6077924013	1316434000	IRRIG	LMD		0.00	1316434961	PD3/4	100.00	273.97	0.19	0.31
6077924013	1316434000	IRRIG	LMD			1316434961	PD3/4	100	274	0.19	0.31

Appendix D
Existing City of Escondido Potable Water Users
Irrigation and Agriculture Potential Conversion

Account_ID	Premise_ID	Premise_Type	Premise_Category	Parcel_Number	Acreage	Service_Point_ID	Meter_Type	KGAL	GPD	GPM	AFY
6737405206	2700509800	IRRIG	INST	2302421400	0.00	2700509859	PD1.5	98.00	268.49	0.19	0.30
8760281036	3073334000	IRRIG	INST	2330521400	0.00	3073334653	PD1.5	97.00	265.75	0.18	0.30
9983996601	0750599576	IRRIG	INST		0.00	0750526038	PD1	96.00	263.01	0.18	0.30
9983996601	750599576	IRRIG	INST			750526038	PD1	96	263	0.18	0.30
2678824381	8626434000	AG	AG	2400103900	8.76	8626434235	PD1.5	94.00	257.53	0.18	0.29
9618801393	4673334000	IRRIG	INST	2331621200	0.16	4673334603	PD3/4	92.00	252.05	0.18	0.28
0514050103	9820751998	IRRIG	INST		0.00	9820751664	PD3/4	91.00	249.32	0.17	0.28
514050103	9820751998	IRRIG	INST			9820751664	PD3/4	91	249	0.17	0.28
7376885000	1722434000	AG	AG	2393303100	1.29	1722434001	PD1	87.00	238.36	0.17	0.27
6802885000	6018234000	IRRIG	INST	2241036400	0.65	6018234129	PD2	85.00	232.88	0.16	0.26
4216264603	2700509800	IRRIG	INST	2302421400	0.00	2700509427	PD1.5	84.00	230.14	0.16	0.26
7061095000	5526434000	AG	AG	2403901300	0.00	5526434209	PD3/4	84.00	230.14	0.16	0.26
7997885000	8696334000	IRRIG	INST	2293620400	0.15	8696334723	PD3/4	79.00	216.44	0.15	0.24
8253095000	6108434000	IRRIG	INST	2256346600	0.40	6108434747	PD1	79.00	216.44	0.15	0.24
5544266304	1782434000	RES_AG	RES_AG	2341206700	1.04	1782434219	PD1	78.00	213.70	0.15	0.24
7818985000	5403434000	RES_AG	RES_AG	2305206200	0.90	5403434567	PD1	74.00	202.74	0.14	0.23
6276985000	4461434000	RES_AG	RES_AG	2411801400	2.16	4461434747	PD1	74.00	202.74	0.14	0.23
8760985000	9316334000	IRRIG	INST	2331002100	0.32	9316334585	PD1	73.00	200.00	0.14	0.22
9680195000	4784534000	IRRIG	INST		0.00	4784534363	PD5/8	73.00	200.00	0.14	0.22
9680195000	4784534000	IRRIG	INST			4784534363	PD5/8	73	200	0.14	0.22
0281095000	8546434000	AG	AG	2250201500	0.82	8546434615	PD1.5	72.00	197.26	0.14	0.22
1670195000	9374534000	IRRIG	INST	2721202400	0.00	9374534093	PD3/4	69.00	189.04	0.13	0.21
7952681413	7052384402	IRRIG	INST		0.00	7052339533	PD1.5	67.00	183.56	0.13	0.21
7952681413	7052384402	IRRIG	INST			7052339533	PD1.5	67	184	0.13	0.21
4335947719	0609028261	IRRIG	INST	2282303900	8.32	0609047388	PD1	62.00	169.86	0.12	0.19
5067565937	1677234000	IRRIG	INST	2305305500	0.00	1677234361	PD3/4	62.00	169.86	0.12	0.19
4772197785	5954434000	IRRIG	INST	2384203900	0.00	5954434727	PD2	61.00	167.12	0.12	0.19
8887972598	2740240647	IRRIG	INST		0.00	2740240302	PD5/8	61.00	167.12	0.12	0.19
8887972598	2740240647	IRRIG	INST			2740240302	PD5/8	61	167	0.12	0.19
4706986895	6518434000	IRRIG	INST	2293324300	0.00	6518434642	PD3/4	60.00	164.38	0.11	0.18
9284512723	5922211334	IRRIG	INST	2293041500	0.16	5922211360	PD5/8	60.00	164.38	0.11	0.18
0741985000	8696334000	IRRIG	INST	2293620400	0.00	8696334723	PD3/4	59.00	161.64	0.11	0.18
0217399808	7156109925	IRRIG	INST		0.00	7156109815	PD5/8	58.00	158.90	0.11	0.18
217399808	7156109925	IRRIG	INST			7156109815	PD5/8	58	159	0.11	0.18
0190195000	2394534000	IRRIG	INST		0.00	2394534479	PD3/4	52.00	142.47	0.10	0.16
190195000	2394534000	IRRIG	INST			2394534479	PD3/4	52	142	0.10	0.16
7980195000	6094534000	IRRIG	INST	2710301400	0.00	6094534427	PD3/4	50.00	136.99	0.10	0.15
4670195000	2474534000	IRRIG	INST		0.00	2474534099	PD1	50.00	136.99	0.10	0.15
4670195000	2474534000	IRRIG	INST			2474534099	PD1	50	137	0.10	0.15

Appendix D
Existing City of Escondido Potable Water Users
Irrigation and Agriculture Potential Conversion

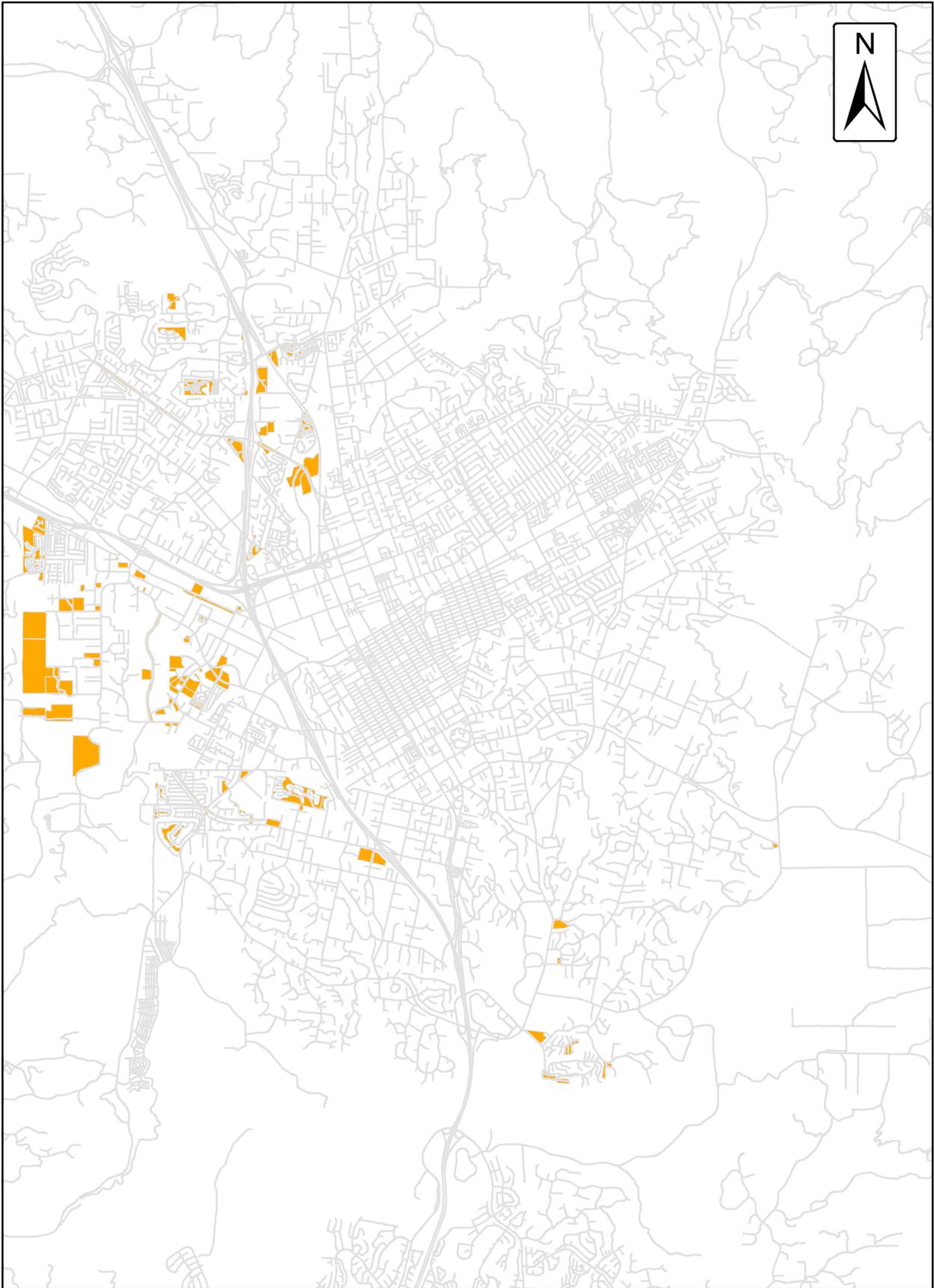
Account_ID	Premise_ID	Premise_Type	Premise_Category	Parcel_Number	Acreage	Service_Point_ID	Meter_Type	KGAL	GPD	GPM	AFY
8607985000	3591434000	AG	AG	2371604200	1.06	3591434365	PD1.5	49.00	134.25	0.09	0.15
5247124518	6142483672	IRRIG	INST			6142444537	PD1	49	134	0.09	0.15
4833885000	3039234000	IRRIG	INST	2301314400	0.33	3039234539	PD3/4	47.00	128.77	0.09	0.14
4216264603	2700509800	IRRIG	INST	2302421400	0.00	2700509859	PD1.5	47.00	128.77	0.09	0.14
2480195000	4484534000	IRRIG	INST	2270800100	0.00	4484534303	PD5/8	46.00	126.03	0.09	0.14
5733885000	5929234000	IRRIG	INST	2301321400	0.12	5929234523	PD5/8	46.00	126.03	0.09	0.14
9597235706	5590334000	IRRIG	INST	2310214700	0.00	5590334937	PD2	45.00	123.29	0.09	0.14
8769985000	1644434000	AG	AG	2381205200	0.00	1644434459	PD2	40.00	109.59	0.08	0.12
7829205487	6039234000	IRRIG	INST	2301312700	0.13	6039234545	PD3/4	39.00	106.85	0.07	0.12
8483885000	0479234000	IRRIG	INST	2302201500	0.62	0479234439	PD1	37.00	101.37	0.07	0.11
4614985000	7739334000	IRRIG	INST	2392014400	0.97	7739334139	PD1.5	36.00	98.63	0.07	0.11
3960985000	8516334000	IRRIG	INST	2320912100	2.70	8516334623	PD3/4	31.00	84.93	0.06	0.10
2580195000	5584534000	IRRIG	INST		0.00	5584534325	PD3/4	27.00	73.97	0.05	0.08
0770195000	8474534000	IRRIG	INST	2710301200	0.00	8474534111	PD1.5	25.00	68.49	0.05	0.08
1196985000	3502434000	IRRIG	INST	2371613000	2.01	3502434402	PD1.5	22.00	60.27	0.04	0.07
8876985000	5961434000	AG	AG	2411700900	0.00	5961434849	PD1.5	22.00	60.27	0.04	0.07
1633926662	0453334000	IRRIG	INST	2294212400	0.23	0453334327	PD3/4	21.00	57.53	0.04	0.06
5300430829	5995217799	IRRIG	INST	2273201900	0.35	5995217444	PD3/4	20.00	54.79	0.04	0.06
7997885000	2696334000	IRRIG	INST	2293610500	0.15	2696334277	PD3/4	19.00	52.05	0.04	0.06
4102095000	1546513222	IRRIG	INST		0.00	1546566264	PD3/4	18.00	49.32	0.03	0.06
4102095000	1546513222	IRRIG	INST			1546566264	PD3/4	18	49	0.03	0.06
7380195000	9384534000	IRRIG	INST	2330721300	0.16	9384534293	PD3/4	17.00	46.58	0.03	0.05
6670195000	4474534000	IRRIG	INST	2710301200	0.00	4474534103	PD1	17.00	46.58	0.03	0.05
5973672654	9436434000	IRRIG	INST	2310304100	2.12	9436434397	PD1	14.00	38.36	0.03	0.04
7670195000	5474534000	IRRIG	INST	2710301200	0.00	5474534105	PD1	13.00	35.62	0.02	0.04
9280985000	5826334000	IRRIG	INST	2331121600	0.00	5826334885	PD1	12.00	32.88	0.02	0.04
0741985000	2696334000	IRRIG	INST	2293610500	0.00	2696334277	PD3/4	11.00	30.14	0.02	0.03
6122025605	2590334000	IRRIG	INST	2310214700	1.84	2590334931	PD1.5	11.00	30.14	0.02	0.03
6580195000	1684534000	IRRIG	INST	2310221100	0.24	1684534337	PD5/8	5.00	13.70	0.01	0.02
9190195000	3494534000	IRRIG	INST	2381521100	0.16	3494534501	PD1	4.00	10.96	0.01	0.01
2670195000	0474534000	IRRIG	INST	2710301200	242.92	0474534095	PD1	4.00	10.96	0.01	0.01
4744464875	3098234000	IRRIG	INST	2302511600	0.47	3098234723	PD3/4	2.00	5.48	0.00	0.01
8980195000	8094534000	IRRIG	INST	2710301400	0.00	8094534431	PD5/8	2.00	5.48	0.00	0.01
8090610763	3969234000	IRRIG	INST	2302302401	0.00	3969234345	PD1.5	-	-	-	-
8770195000	6574534000	IRRIG	INST	2276604200	4.38	6574534127	PD2	-	-	-	-
7933095000	5097434000	IRRIG	INST	2276804700	0.00	5097434523	PD1.5	-	-	-	-
8860985000	1516334000	IRRIG	INST	2321002000	0.00	1516334609	PD1.5	-	-	-	-
4496390350	6857434000	IRRIG	INST	2273202400	0.87	6857434871	PD1	-	-	-	-
9570195000	6374534000	IRRIG	LMD	2249714600	4.68	6374534087	PD1.5	-	-	-	-

Appendix D
Existing City of Escondido Potable Water Users
Irrigation and Agriculture Potential Conversion

Account_ID	Premise_ID	Premise_Type	Premise_Category	Parcel_Number	Acreage	Service_Point_ID	Meter_Type	KGAL	GPD	GPM	AFY
2368137234	5746334000	IRRIG	INST	2292102800	0.00	5746334277	PD1	-	-	-	-
0749050288	7427234000	IRRIG	INST	2291511200	0.19	7427234409	PD5/8	-	-	-	-
2948885000	8904334000	IRRIG	INST	2334100300	0.18	8904334445	PD3/4	-	-	-	-
0809885000	0554334000	IRRIG	INST	2335910900	0.58	0554334582	PD3/4	-	-	-	-
5980195000	4094534000	IRRIG	INST	2710302000	0.00	4094534423	PD2	-	-	-	-
4908985000	4592434000	IRRIG	INST	2344503700	0.62	4592434385	PD5/8	-	-	-	-
8637985000	6522434000	IRRIG	INST	2394100500	0.00	6522434971	PD3/4	-	-	-	-
6080195000	3974534000	IRRIG	INST	2710700101	8.29	3974534201	PD1.5	-	-	-	-
9780195000	4884534000	IRRIG	INST	2312203900	1.21	4884534383	PD1.5	-	-	-	-
1280195000	9184534000	IRRIG	INST	2316602000	0.00	9184534253	PD3/4	-	-	-	-
3571414129								0	-	-	-
9080195000								0	-	-	-
Miscellaneous Parcels (ROW)- hand located											76.48
											3,359.02

APPENDIX E

District Potable Water Users as Potential Recycled Water Users



Appendix E
Rincon Del Diablo MWD Potential Conversions to Recycled Water Use

Account #	Meter Size	Service Address	City	APN	District ID	User Class	Total Use for 2009 (HCF)	Total Use for 2009 (AF)	Use in 2009 (KCPD)
202000	11/2	1508 MISSION ROAD	ESC		1	B	4333	9.97	8.90
212140	2	2071 WINERIDGE PLACE	ESC	232-550-09	1	B	6455	14.85	13.25
212831	2	2069 ALDERGROVE AVENUE	ESC		1	B	5399	12.42	11.09
212846	2	2310 ALDERGROVE AVENUE	ESC		1	B	4446	10.23	9.13
255500	2	MT WHITNEY ROAD	ESC	232-013-05	1	B	13307	30.61	27.32
255600	2	MT WHITNEY ROAD	ESC	232-500-09	1	B	16527	38.01	33.94
255900	2	2075 COUNTRY CLUB DRIVE	ESC	235 031 05	1	B	5710	13.13	11.72
259140	2	1999 CITRACADO PARKWAY	ESC	232-510-100	1	B	15502	35.65	31.83
104500	1	2110 SLEEPY HOLLOW ROAD	ESC	22419040	1	C	3322	7.64	6.82
104700	5/8	2118 SLEEPY HOLLOW ROAD	ESC	22419053	1	C	2885	6.64	5.92
941600	3	EDEN VALLEY LANE	ESC	232-013-02	1	C	6616	15.22	13.58
941400	3	EDEN VALLEY LANE	ESC	232-013-02	1	I	5389	12.39	11.07
030230	1	SHADY BROOK PLACE	ESC		1	L	225	0.52	0.46
030250	2	SHADY BROOK PLACE	ESC		1	L	2319	5.33	4.76
031210	2	PARKSIDE GLEN	ESC		1	L	1268	2.92	2.60
040420	2	222 1/2 EVENINGSIDE GLEN	ESC	224-651	1	L	1601	3.68	3.29
041500	2	400 COUNTRY CLUB LANE	ESC		1	L	2456	5.65	5.04
042360	2	COUNTRY CLUB LANE	ESC		1	L	1300	2.99	2.67
095453	1	AMOROSA GLEN	ESC		1	L	533	1.23	1.09
095467	1	2160 1/2 AMOROSA GLEN	ESC		1	L	572	1.32	1.17
095470	1	DOMINGO GLEN	ESC		1	L	515	1.18	1.06
096460	2	2000 BLDG G MONTEGO AVENUE	ESC		1	L	4105	9.44	8.43
096560	2	2000 BLDG J MONTEGO AVENUE	ESC		1	L	2908	6.69	5.97
110300	2	VAQUERO GLEN	ESC		1	L	950	2.19	1.95
110600	2	ANOCHÉ GLEN	ESC		1	L	1925	4.43	3.95
112200	2	ANOCHÉ GLEN	ESC		1	L	848	1.95	1.74
112480	2	VAQUERO GLEN	ESC		1	L	1369	3.15	2.81
140300	2	LA HABRA GLEN	ESC		1	L	1256	2.89	2.58
140550	2	LA PALOMA AVENUE	ESC		1	L	1364	3.14	2.80
141020	2	LA PALOMA AVENUE	ESC		1	L	1518	3.49	3.12
141120	2	CORTEZ AVENUE	ESC		1	L	2269	5.22	4.66
153326	5/8	2014 VIA ALEXANDRA	ESC	22422031	1	L	931	2.14	1.91
153430	2	EL NORTE PARKWAY	ESC		1	L	1589	3.65	3.26
153514	2	1051 W EL NORTE PARKWAY	ESC		1	L	1331	3.06	2.73
153523	2	1051 W EL NORTE PARKWAY	ESC		1	L	2400	5.52	4.93
164080	1	EL NORTE PARKWAY	ESC		1	L	1738	4.00	3.57
164370	1	EL NORTE PARKWAY	ESC		1	L	2444	5.62	5.02
164420	2	345 W EL NORTE PARKWAY	ESC		1	L	2169	4.99	4.45
164434	11/2	1350 MORNING VIEW DRIVE	ESC		1	L	1449	3.33	2.98
164454	11/2	1345 MORNING VIEW DRIVE	ESC		1	L	2041	4.69	4.19
168400	11/2	1740 SEVEN OAKES ROAD	ESC		1	L	3731	8.58	7.66
170080	2	1725 WINTERGREEN GLEN	ESC		1	L	317	0.73	0.65
170300	2	1820 WINTERGREEN GLEN	ESC	22670054	1	L	550	1.27	1.13
170600	2	451 WINDYRIDGE GLEN	ESC	22670054	1	L	634	1.46	1.30
170740	2	444 WINDYRIDGE GLEN	ESC	22670054	1	L	903	2.08	1.85
171150	2	447 TEAKWOOD GLEN	ESC	22670054	1	L	1873	4.31	3.85
171294	11/2	370 CONIFER GLEN	ESC	22671040	1	L	1073	2.47	2.20
171313	11/2	MAHOGANY GLEN	ESC	22671040	1	L	1060	2.44	2.18
171665	11/2	1222 1/2 HAGEN OAKES COURT	ESC		1	L	2046	4.71	4.20
183830	2	1160 CORRAL GLEN	ESC		1	L	1479	3.40	3.04
184250	11/2	CARROTWOOD GLEN	ESC		1	L	785	1.81	1.61
200200	1	1310 MISSION ROAD	ESC	228-300-33	1	L	28	0.06	0.06
205985	11/2	ADELE LANE	ESC		1	L	1734	3.99	3.56
206034	11/2	799 DAY LILY COURT	SM		1	L	815	1.87	1.67
206049	11/2	ENGLISH HOLLY LANE	ESC		1	L	696	1.60	1.43

Account #	Meter Size	Service Address	City	APN	District ID	User Class	Total Use for 2009 (HCF)	Total Use for 2009 (AF)	Use in 2009 (KGPD)
206094	1	1197 WHISPERING WATER DR	SM		1	L	116	0.27	0.24
206095	11/2	1195 WHISPERING WATER DR	SM		1	L	3036	6.98	6.23
206136	1	936 ROSE ARBOR DRIVE	SM		1	L	1162	2.67	2.39
206175	1	WHISPERING WATER DR	ESC		1	L	574	1.32	1.18
206320	2	800 E LA MOREE RD	SM	22831002	1	L	1563	3.59	3.21
206430	2	915 MIRA LAGO WAY	SM	228-310-02	1	L	2981	6.86	6.12
211410	11/2	1717 AUTO PARK WAY	ESC	232-541-03	1	L	1282	2.95	2.63
211480	11/2	1625 AUTO PARK WAY	ESC		1	L	1024	2.36	2.10
211540	11/2	HOWARD AVENUE	ESC		1	L	824	1.90	1.69
211580	11/2	1700 N AUTO PARK WAY	ESC		1	L	506	1.16	1.04
211679	1	500 S ANDREASEN DRIVE	ESC		1	L	739	1.70	1.52
211701	1	600 S ANDREASEN DRIVE	ESC		1	L	967	2.22	1.99
211740	2	912 S ANDREASEN DRIVE/IRR	ESC		1	L	1007	2.32	2.07
211770	11/2	926 S ANDREASEN DRIVE	ESC		1	L	1835	4.22	3.77
211840	2	976 S ANDREASEN DRIVE	ESC		1	L	1146	2.64	2.35
211859	1	1040 S ANDREASEN DRIVE	ESC		1	L	627	1.44	1.29
211897	5/8	979 S ANDREASEN DRIVE	ESC		1	L	243	0.56	0.50
211990	1	943 S ANDREASEN DRIVE	ESC	232-550-01	1	L	168	0.39	0.34
212150	2	2121 WINERIDGE PLACE	ESC		1	L	1408	3.24	2.89
212280	1	2010 WINERIDGE PLACE	ESC		1	L	556	1.28	1.14
212832	11/2	2069 ALDERGROVE AVENUE	ESC		1	L	527	1.21	1.08
212850	2	ALDERGROVE AVENUE	ESC		1	L	3293	7.57	6.76
213390	1	125 STATE PLACE	ESC	232-530-09	1	L	290	0.67	0.60
220480	1	1535 SIMPSON WAY	ESC		1	L	302	0.69	0.62
223024	1	1503 MISSION ROAD	ESC	228-410-35-0	1	L	773	1.78	1.59
223026	1	1507 MISSION ROAD	ESC	228-410-35-0	1	L	428	0.98	0.88
230065	2	1996 DON LEE PL	ESC	228-381-55	1	L	837	1.93	1.72
230720	5/8	2434 AUTO PARK WAY	ESC	2283811800	1	L	429	0.99	0.88
231675	1	510 CORPORATE DRIVE/IRR	ESC	228-520-20	1	L	621	1.43	1.28
231720	2	PROGRESS PLACE	ESC		1	L	747	1.72	1.53
231792	1	2870 EXECUTIVE PL	ESC		1	L	531	1.22	1.09
232600	11/2	2200 MICRO PLACE	ESC	23-2600-0	1	L	1121	2.58	2.30
232784	11/2	2751 N AUTO PARK WAY	ESC		1	L	168	0.39	0.34
241970	11/2	VINEYARD/ROSS DR	ESC		1	L	8	0.02	0.02
242110	11/2	CNTRY CLUB/CITRACADO	ESC		1	L	5	0.01	0.01
271835	1	PACIFIC OAKS PLACE	ESC	2350404149	1	L	914	2.10	1.88
272440	1	1087 PRINCESS KYRA PLACE	ESC	232-580	1	L	61	0.14	0.13
273985	1	SHADOW GLEN	ESC		1	L	414	0.95	0.85
287600	1	1542 AUTUMN WOODS PLACE	ESC		1	L	159	0.37	0.33
290030	5/8	CITRACADO PARKWAY	ESC		1	L	13	0.03	0.03
290032	1	L/S MEDIAM CITRACADO	ESC		1	L	51	0.12	0.10
296562	1	1806 1/2 GAMBLE LANE	ESC		1	L	815	1.87	1.67
296566	1	CITRACADO/SCENIC TRL	ESC	235-180-12	1	L	109	0.25	0.22
296568	2	1797 CRESCENT KNOLLS GLEN	ESC		1	L	624	1.44	1.28
296602	2	1691 CRESCENT KNOLLS GLEN	ESC		1	L	192	0.44	0.39
296845	1	CITRACADO PARKWAY	ESC	235-190-03	1	L	188	0.43	0.39
300195	11/2	2040 POINTER GLEN	ESC		1	L	1129	2.60	2.32
315600	11/2	LEMON AVENUE	ESC	235-203-03	1	L	1135	2.61	2.33
324090	2	2255 FELICITA ROAD LNDSCP	ESC		1	L	2177	5.01	4.47
336916	2	EMERAUDE GLEN	ESC		1	L	945	2.17	1.94
336922	2	1359 EMERAUDE GLEN	ESC		1	L	284	0.65	0.58
441690	11/2	EUCALYPTUS AVENUE	ESC		1	L	973	2.24	2.00
441825	2	ANDORRE GLEN LOT 65	ESC		1	L	3024	6.96	6.21
441838	2	1607 ANDORRE GLEN	ESC		1	L	2845	6.54	5.84
450490	11/2	2103 2109 EMBERWOOD WAY	ESC		1	L	460	1.06	0.94
450670	2	SINGINGWOOD PLACE	ESC		1	L	817	1.88	1.68
452180	2	VALLEY PARKWAY	ESC	23112011	1	L	1248	2.87	2.56
452200	2	VALLEY PARKWAY	ESC	23112011	1	L	340	0.78	0.70

Account #	Meter Size	Service Address	City	APN	District ID	User Class	Total Use for 2009 (HCF)	Total Use for 2009 (AF)	Use in 2009 (KGPD)
475140	5/8	1912 TECATE GLEN	ESC		1	L	42	0.10	0.09
475355	5/8	GIBRALTAR & ANGELES	ESC		1	L	470	1.08	0.97
475505	5/8	1864 ANGELES GLEN	ESC		1	L	1011	2.33	2.08
483560	5/8	EUCALYPTUS AVE	ESC	224-600-01	1	L	7	0.02	0.01
757100	2	3012 BEAR VALLEY PARKWAY	ESC		A	L	2712	6.24	5.57
760360	1	FOOTHILL STREET	ESC		A	L	311	0.72	0.64
780019	1	3375 VISTA NORTE/LANDSCPE	ESC		A	L	1020	2.35	2.09
792590	2	STONEPOINTE DRIVE	ESC		A	L	1040	2.39	2.14
800160	1	HUCKLEBERRY LANE	ESC		A	L	1580	3.63	3.24
800660	1	HUCKLEBERRY LANE	ESC		A	L	1168	2.69	2.40
801190	1	HUCKLEBERRY LANE	ESC		A	L	1617	3.72	3.32
801920	1	HUCKLEBERRY LANE	ESC		A	L	1974	4.54	4.05
802300	1	HUCKLEBERRY LANE	ESC		A	L	768	1.77	1.58
802790	1	HUCKLEBERRY LANE	ESC		A	L	844	1.94	1.73
803080	1	HUCKLEBERRY LANE	ESC		A	L	652	1.50	1.34
821330	11/2	BEETHOVEN	ESC		A	L	1683	3.87	3.46
822020	11/2	FINO GLEN	ESC		A	L	2368	5.45	4.86
822350	1	MAZE GLEN	ESC		A	L	1887	4.34	3.87
822370	5/8	651 MAZE GLEN	ESC		A	L	154	0.35	0.32
955000	2	CANDLELIGHT GLEN	ESC		1	L	2732	6.28	5.61
955015	2	CANDLELIGHT GLEN	ESC		1	L	634	1.46	1.30
955032	1	1364 BLACKHAWK GLEN	ESC		1	L	18	0.04	0.04
955055	1	1356 1/2 CONDOR GLEN	ESC	23545201	1	L	81	0.19	0.17
956006	1	1612 1/2 CANDLELIGHT GLEN	ESC	23545124	1	L	247	0.57	0.51
956035	5/8	1513 1/2 EAGLE GLEN	ESC	23545120	1	L	17	0.04	0.03
956083	5/8	1312 1/2 EAGLE GLEN	ESC	23545310	1	L	18	0.04	0.04
940540	3	345 1-6 W EL NORTE PARKWAY	ESC		1	M	4885	11.24	10.03
941850	3	1007 HOWARD AVENUE	ESC		1	M	5159	11.87	10.59
								549.4	490.5

APPENDIX F

**Title 22, Division 4, Chapter 3, Water Recycling
Criteria of the California Code of Regulations**

**Title 17, Division 1, Chapter 5, Group 4, Article 1
and 2 of the California Code of Regulations**

**The California Department of Public Health
(CDPH) *Preparation of an Engineering Report
for the Production, Distribution and Use of
Recycled Water***

NOTE: This publication is meant to be an aid to the staff of the CDPH—formerly the Department of Health Services (DHS)—Drinking Water Program and cannot be relied upon by the regulated community as the State of California’s representation of the law. The published codes are the only official representation of the law. Refer to the published codes—in this case, 22 and 17 CCR—whenever specific citations are required.

California Department of Public Health

Regulations Related to Recycled Water

January 2009

TITLE 17 CODE OF REGULATIONS	3
Division 1. State Department of Health Services	3
Chapter 5. Sanitation (Environmental)	3
Group 4. Drinking Water Supplies	3
Article 1. General.....	3
§7583. Definitions.....	3
§7584. Responsibility and scope of program.....	5
§7585. Evaluation of hazard.	5
§7586. User supervisor.	6
Article 2. Protection of Water System.	6
§7601. Approval of backflow preventers.....	6
§7602. Construction of backflow preventers.....	6
§7603. Location of backflow preventers.	7
§7604. Type of protection required.	7
§7605. Testing and maintenance of backflow preventers.....	9
TITLE 22 CODE OF REGULATIONS	10
Division 4. Environmental Health	10
Chapter 1. Introduction	10
Article 1. Definitions	10
§60001. Department.....	10
§60003. Director.	10
Chapter 2. Regulations for the Implementation of the California Environmental Quality.....	10
Article 1. General Requirements and Categorical Exemptions	10
§60100. General requirements.....	10
§60101. Specific activities within categorical exempt classes.	11
Chapter 3. Water Recycling Criteria.....	12
Article 1. Definitions.	12
§60301. Definitions.....	12
§60301.100. Approved laboratory.	12
§60301.160. Coagulated wastewater.	12
§60301.170. Conventional treatment.....	12
§60301.200. Direct beneficial use.	12
§60301.220. Disinfected secondary-2.2 recycled water.	12

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§60301.225. Disinfected secondary-23 recycled water.	12
§60301.230. Disinfected tertiary recycled water.	13
§60301.240. Drift.	13
§60301.245. Drift eliminator.	13
§60301.250. Dual plumbed system.	13
§60301.300. F-Specific bacteriophage MS-2.	14
§60301.310. Facility.	14
§60301.320. Filtered wastewater.	14
§60301.330. Food crops.	14
§60301.400. Hose bibb.	15
§60301.550. Landscape impoundment.	15
§60301.600. Modal contact time.	15
§60301.620. Nonrestricted recreational impoundment.	15
§60301.630. NTU.	15
§60301.650. Oxidized wastewater.	15
§60301.660. Peak dry weather design flow.	15
§60301.700. Recycled water agency.	15
§60301.710. Recycling plant.	16
§60301.740. Regulatory agency.	16
§60301.750. Restricted access golf course.	16
§60301.760. Restricted recreational impoundment.	16
§60301.800. Spray irrigation.	16
§60301.830. Standby unit process.	16
§60301.900. Undisinfected secondary recycled water.	16
§60301.920. Use area.	16
Article 2. Sources of Recycled Water.	17
§60302. Source specifications.	17
Article 3. Uses of Recycled Water.	17
§60303. Exceptions.	17
§60304. Use of recycled water for irrigation.	17
§60305. Use of recycled water for impoundments.	18
§60306. Use of recycled water for cooling.	19
§60307. Use of recycled water for other purposes.	20
Article 4. Use Area Requirements.	20
§60310. Use area requirements.	20
Article 5. Dual Plumbed Recycled Water Systems.	24
§60313. General requirements.	24
§60314. Report submittal.	24
§60315. Design requirements.	25
§60316. Operation requirements.	25
Article 5.1. Groundwater recharge.	26
§60320. Groundwater recharge.	26
Article 5.5. Other Methods of Treatment.	26

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§60320.5. Other methods of treatment.	26
Article 6. Sampling and Analysis.	26
§60321. Sampling and analysis.....	26
Article 7. Engineering Report and Operational Requirements.	27
§60323. Engineering report.	27
§60325. Personnel.....	27
§60327. Maintenance.....	28
§60329. Operating records and reports.....	28
§60331. Bypass.....	28
Article 8. General Requirements of Design.....	28
§60333. Flexibility of design.....	28
§60335. Alarms.....	28
§60337. Power supply.....	29
Article 9. Reliability Requirements for Primary Effluent.....	30
§60339. Primary treatment.....	30
Article 10. Reliability Requirements for Full Treatment.....	30
§60341. Emergency storage or disposal.....	30
§60343. Primary treatment.....	31
§60345. Biological treatment.....	31
§60347. Secondary sedimentation.....	31
§60349. Coagulation.....	32
§60351. Filtration.....	32
§60353. Disinfection.....	33
§60355. Other alternatives to reliability requirements	33

TITLE 17 CODE OF REGULATIONS

Division 1. State Department of Health Services

Chapter 5. Sanitation (Environmental)

Group 4. Drinking Water Supplies

Article 1. General.

§7583. Definitions.

In addition to the definitions in Section 4010.1 of the Health and Safety Code, the following terms are defined for the purpose of this Chapter:

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(a) "Approved Water Supply" is a water supply whose potability is regulated by a State of local health agency.

(b) "Auxiliary Water Supply" is any water supply other than that received from a public water system.

(c) "Air-gap Separation (AG)" is a physical break between the supply line and a receiving vessel.

(d) "AWWA Standard" is an official standard developed and approved by the American Water Works Association (AWWA).

(e) "Cross-Connection" is an unprotected actual or potential connection between a potable water system used to supply water for drinking purposes and any source or system containing unapproved water or a substance that is not or cannot be approved as safe, wholesome, and potable. By-pass arrangements, jumper connections, removable sections, swivel or changeover devices, or other devices through which backflow could occur, shall be considered to be cross-connections.

(f) "Double Check Valve Assembly (DC)" is an assembly of at least two independently acting check valves including tightly closing shut-off valves on each side of the check valve assembly and test cocks available for testing the watertightness of each check valve.

(g) "Health Agency" means the California Department of Health Services, or the local health officer with respect to a small water system.

(h) "Local Health Agency" means the county or city health authority.

(i) "Reclaimed Water" is a wastewater which as a result of treatment is suitable for uses other than potable use.

(j) "Reduced Pressure Principle Backflow Prevention Device (RP)" is a backflow preventer incorporating not less than two check valves, an automatically operated differential relief valve located between the two check valves, a tightly closing shut-off valve on each side of the check valve assembly, and equipped with necessary test cocks for testing.

(k) "User Connection" is the point of connection of a user's piping to the water supplier's facilities.

(l) "Water Supplier" is the person who owns or operates the public water system.

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(m) "Water User" is any person obtaining water from a public water supply.

§7584. Responsibility and scope of program.

The water supplier shall protect the public water supply from contamination by implementation of a cross-connection control program. The program, or any portion thereof, may be implemented directly by the water supplier or by means of a contract with the local health agency, or with another agency approved by the health agency. The water supplier's cross-connection control program shall for the purpose of addressing the requirements of Sections 7585 through 7605 include, but not be limited to, the following elements:

- (a) The adoption of operating rules or ordinances to implement the cross-connection program.
- (b) The conducting of surveys to identify water user premises where cross-connections are likely to occur,
- (c) The provisions of backflow protection by the water user at the user's connection or within the user's premises or both,
- (d) The provision of at least one person trained in cross-connection control to carry out the cross-connection program,
- (e) The establishment of a procedure or system for testing backflow preventers, and
- (f) The maintenance of records of locations, tests, and repairs of backflow preventers.

§7585. Evaluation of hazard.

The water supplier shall evaluate the degree of potential health hazard to the public water supply which may be created as a result of conditions existing on a user's premises. The water supplier, however, shall not be responsible for abatement of cross-connections which may exist within a user's premises. As a minimum, the evaluation should consider: the existence of cross-connections, the nature of materials handled on the property, the probability of a backflow occurring, the degree of piping system complexity and the potential for piping system modification. Special consideration shall be given to the premises of the following types of water users:

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(a) Premises where substances harmful to health are handled under pressure in a manner which could permit their entry into the public water system. This includes chemical or biological process waters and water from public water supplies which have deteriorated in sanitary quality.

(b) Premises having an auxiliary water supply, unless the auxiliary supply is accepted as an additional source by the water supplier and is approved by the health agency.

(c) Premises that have internal cross-connections that are not abated to the satisfaction of the water supplier or the health agency.

(d) Premises where cross-connections are likely to occur and entry is restricted so that cross-connection inspections cannot be made with sufficient frequency or at sufficiently short notice to assure that cross-connections do not exist.

(e) Premises having a repeated history of cross-connections being established or re-established.

§7586. User supervisor.

The health agency and water supplier may, at their discretion, require an industrial water user to designate a user supervisor when the water user's premises has a multipiping system that convey various types of fluids, some of which may be hazardous and where changes in the piping system are frequently made. The user supervisor shall be responsible for the avoidance of cross-connections during the installation, operation and maintenance of the water user's pipelines and equipment.

Article 2. Protection of Water System.

§7601. Approval of backflow preventers.

Backflow preventers required by this Chapter shall have passed laboratory and field evaluation tests performed by a recognized testing organization which has demonstrated their competency to perform such tests to the Department.

§7602. Construction of backflow preventers.

(a) Air-gap Separation. An Air-gap separation (AG) shall be at least double the diameter of the supply pipe, measured vertically from the flood rim of the receiving vessel to the supply pipe; however, in no case shall this separation be less than one inch.

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(b) Double Check Valve Assembly. A required double check valve assembly (DC) shall, as a minimum, conform to the AWWA Standard C506-78 (R83) adopted on January 28, 1978 for Double Check Valve Type Backflow Preventive Devices which is herein incorporated by reference.

(c) Reduced Pressure Principle Backflow Prevention Device. A required reduced pressure principle backflow prevention device (RP) shall, as a minimum, conform to the AWWA Standard C506-78 (R83) adopted on January 28, 1978 for Reduced Pressure Principle Type Backflow Prevention Devices which is herein incorporated by reference.

§7603. Location of backflow preventers.

(a) Air-gap Separation. An air-gap separation shall be located as close as practical to the user's connection and all piping between the user's connection and the receiving tank shall be entirely visible unless otherwise approved in writing by the water supplier and the health agency.

(b) Double Check Valve Assembly. A double check valve assembly shall be located as close as practical to the user's connection and shall be installed above grade, if possible, and in a manner where it is readily accessible for testing and maintenance.

(c) Reduced Pressure Principle Backflow Prevention Device. A reduced pressure principle backflow prevention device shall be located as close as practical to the user's connection and shall be installed a minimum of twelve inches (12") above grade and not more than thirty-six inches (36") above grade measured from the bottom of the device and with a minimum of twelve inches (12") side clearance.

§7604. Type of protection required.

The type of protection that shall be provided to prevent backflow into the public water supply shall be commensurate with the degree of hazard that exists on the consumer's premises. The type of protective device that may be required (listed in an increasing level of protection) includes: Double check Valve Assembly--(DC), Reduced Pressure Principle Backflow Prevention Device--(RP) and an Air gap Separation--(AG). The water user may choose a higher level of protection than required by the water supplier. The minimum types of backflow protection required to protect the public water supply, at the water user's connection to premises with various degrees of hazard, are given in Table 1. Situations not covered in Table 1 shall be evaluated on a case-by-case basis and the appropriate backflow protection shall be determined by the water supplier or health agency.

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**TABLE 1
TYPE OF BACKFLOW PROTECTION REQUIRED**

Degree of Hazard	Minimum Type of Backflow Prevention
(a) Sewage and Hazardous Substances	
(1) Premises where there are waste water pumping and/or treatment plants and there is no interconnection with the potable water system. This does not include a single-family residence that has a sewage lift pump. A RP be provided in lieu of an AG if approved by the health agency and water supplier.	AG
(2) Premises where hazardous substances are handled in any manner in which the substances may enter the potable water system. This does not include a single-family residence that has a sewage lift pump. A RP may be provided in lieu of an AG if approved by the health agency and water supplier.	AG
(3) Premises where there are irrigation systems into which fertilizers, herbicides, or pesticides are, or can be, injected.	RP
(b) Auxiliary Water Supplies	
(1) Premises where there is an unapproved auxiliary water supply which is interconnected with the public water system. A RP or DC may be provided in lieu of an AG if approved by the health agency and water supplier	AG
(2) Premises where there is an unapproved auxiliary RP water supply and there are no interconnections with the public water system. A DC may be provided in lieu of a RP if approved by the health agency and water supplier.	RP
(c) Recycled water	
(1) Premises where the public water system is used to supplement the recycled water supply.	AG
(2) Premises where recycled water is used, other than as allowed in paragraph (3), and there is no interconnection with the potable water system.	RP
(3) Residences using recycled water for landscape irrigation as part of an approved dual plumbed use area established pursuant to sections 60313 through 60316 unless the recycled water supplier obtains approval of the local public water supplier, or the Department if the water	DC

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supplier is also the supplier of the recycled water, to utilize an alternative backflow protection plan that includes an annual inspection and annual shutdown test of the recycled water and potable water systems pursuant to subsection 60316(a).

(d) Fire Protection Systems

(1) Premises where the fire system is directly supplied from the public water system and there is an unapproved auxiliary water supply on or to the premises (not interconnected). DC

(2) Premises where the fire system is supplied from the public water system and interconnected with an unapproved auxiliary water supply. A RP may be provided in lieu of an AG if approved by the health agency and water supplier. AG

(3) Premises where the fire system is supplied from the public water system and where either elevated storage tanks or fire pumps which take suction from private reservoirs or tanks are used. DC

(4) Premises where the fire system is supplied from the public water system and where recycled water is used in a separate piping system within the same building. DC

(e) Dockside Watering Points and Marine Facilities

(1) Pier hydrants for supplying water to vessels for any purpose. RP

(2) Premises where there are marine facilities. RP

(f) Premises where entry is restricted so that inspections for cross-connections cannot be made with sufficient frequency or at sufficiently short notice to assure that do not exist. RP

(g) Premises where there is a repeated history of crossconnections being established or re-established. RP

§7605. Testing and maintenance of backflow preventers.

(a) The water supplier shall assure that adequate maintenance and periodic testing are provided by the water user to ensure their proper operation.

(b) Backflow preventers shall be tested by persons who have demonstrated their competency in testing of these devices to the water supplier or health agency.

(c) Backflow preventers shall be tested at least annually or more frequently if

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determined to be necessary by the health agency or water supplier. When devices are found to be defective, they shall be repaired or replaced in accordance with the provisions of this Chapter.

(d) Backflow preventers shall be tested immediately after they are installed, relocated or repaired and not placed in service unless they are functioning as required.

(e) The water supplier shall notify the water user when testing of backflow preventers is needed. The notice shall contain the date when the test must be completed.

(f) Reports of testing and maintenance shall be maintained by the water supplier for a minimum of three years.

TITLE 22 CODE OF REGULATIONS

Division 4. Environmental Health

Chapter 1. Introduction

Article 1. Definitions

§60001. Department.

Whenever the term "department" is used in this division, it means the State Department of Health Services, unless otherwise specified.

§60003. Director.

Whenever the term "director" is used in this division, it means the Director, State Department of Health Services, unless otherwise specified.

Chapter 2. Regulations for the Implementation of the California Environmental Quality

Article 1. General Requirements and Categorical Exemptions

§60100. General requirements.

The Department of Health Services incorporates by reference the objectives, criteria, and procedures as delineated in Chapters 1, 2, 2.5, 2.6, 3, 4, 5, and 6, Division 13, Public Resources Code, Sections 21000 et seq., and the Guidelines

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for the Implementation of the California Environmental Quality Act, Title 14, Division 6, Chapter 3, California Administrative Code, Sections 15000 et seq.

§60101. Specific activities within categorical exempt classes.

The following specific activities are determined by the Department to fall within the classes of categorical exemptions set forth in Sections 15300 et seq. of Title 14 of the California Administrative Code:

(a) Class 1: Existing Facilities.

(1) Any interior or exterior alteration of water treatment units, water supply systems, and pump station buildings where the alteration involves the addition, deletion, or modification of mechanical, electrical, or hydraulic controls.

(2) Maintenance, repair, replacement, or reconstruction to any water treatment process units, including structures, filters, pumps, and chlorinators.

(b) Class 2: Replacement or Reconstruction.

(1) Repair or replacement of any water service connections, meters, and valves for backflow prevention, air release, pressure regulating, shut-off and blow-off or flushing.

(2) Replacement or reconstruction of any existing water supply distribution lines, storage tanks and reservoirs of substantially the same size.

(3) Replacement or reconstruction of any water wells, pump stations and related appurtenances.

(c) Class 3: New Construction of Small Structures.

(1) Construction of any water supply and distribution lines of less than sixteen inches in diameter, and related appurtenances.

(2) Construction of any water storage tanks and reservoirs of less than 100,000 gallon capacity.

(d) Class 4: Minor Alterations to Land.

(1) Minor alterations to land, water, or vegetation on any officially existing designated wildlife management areas or fish production facilities for the purpose of reducing the environmental potential for nuisances or vector production.

(2) Any minor alterations to highway crossings for water supply and distribution lines.

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Chapter 3. Water Recycling Criteria

Article 1. Definitions.

§60301. Definitions.

§60301.100. Approved laboratory.

"Approved laboratory" means a laboratory that has been certified by the Department to perform microbiological analyses pursuant to section 116390, Health and Safety Code.

§60301.160. Coagulated wastewater.

"Coagulated wastewater" means oxidized wastewater in which colloidal and finely divided suspended matter have been destabilized and agglomerated upstream from a filter by the addition of suitable floc-forming chemicals.

§60301.170. Conventional treatment.

"Conventional treatment" means a treatment chain that utilizes a sedimentation unit process between the coagulation and filtration processes and produces an effluent that meets the definition for disinfected tertiary recycled water.

§60301.200. Direct beneficial use.

"Direct beneficial use" means the use of recycled water that has been transported from the point of treatment or production to the point of use without an intervening discharge to waters of the State.

§60301.220. Disinfected secondary-2.2 recycled water.

"Disinfected secondary-2.2 recycled water" means recycled water that has been oxidized and disinfected so that the median concentration of total coliform bacteria in the disinfected effluent does not exceed a most probable number (MPN) of 2.2 per 100 milliliters utilizing the bacteriological results of the last seven days for which analyses have been completed, and the number of total coliform bacteria does not exceed an MPN of 23 per 100 milliliters in more than one sample in any 30 day period.

§60301.225. Disinfected secondary-23 recycled water.

"Disinfected secondary-23 recycled water" means recycled water that has been oxidized and disinfected so that the median concentration of total coliform bacteria in the disinfected effluent does not exceed a most probable number (MPN) of 23 per 100 milliliters utilizing the bacteriological results of the last seven days for which analyses have been completed, and the number of total coliform

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bacteria does not exceed an MPN of 240 per 100 milliliters in more than one sample in any 30 day period.

§60301.230. Disinfected tertiary recycled water.

"Disinfected tertiary recycled water" means a filtered and subsequently disinfected wastewater that meets the following criteria:

- (a) The filtered wastewater has been disinfected by either:
 - (1) A chlorine disinfection process following filtration that provides a CT (the product of total chlorine residual and modal contact time measured at the same point) value of not less than 450 milligram-minutes per liter at all times with a modal contact time of at least 90 minutes, based on peak dry weather design flow; or
 - (2) A disinfection process that, when combined with the filtration process, has been demonstrated to inactivate and/or remove 99.999 percent of the plaqueforming units of F-specific bacteriophage MS2, or polio virus in the wastewater. A virus that is at least as resistant to disinfection as polio virus may be used for purposes of the demonstration.

- (b) The median concentration of total coliform bacteria measured in the disinfected effluent does not exceed an MPN of 2.2 per 100 milliliters utilizing the bacteriological results of the last seven days for which analyses have been completed and the number of total coliform bacteria does not exceed an MPN of 23 per 100 milliliters in more than one sample in any 30 day period. No sample shall exceed an MPN of 240 total coliform bacteria per 100 milliliters.

§60301.240. Drift.

"Drift" means the water that escapes to the atmosphere as water droplets from a cooling system.

§60301.245. Drift eliminator.

"Drift eliminator" means a feature of a cooling system that reduces to a minimum the generation of drift from the system.

§60301.250. Dual plumbed system.

"Dual plumbed system" or "dual plumbed" means a system that utilizes separate piping systems for recycled water and potable water within a facility and where the recycled water is used for either of the following purposes:

- (a) To serve plumbing outlets (excluding fire suppression systems) within a building or

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(b) Outdoor landscape irrigation at individual residences.

§60301.300. F-Specific bacteriophage MS-2.

"F-specific bacteriophage MS-2" means a strain of a specific type of virus that infects coliform bacteria that is traceable to the American Type Culture Collection (ATCC15597B1) and is grown on lawns of E. coli (ATCC 15597).

§60301.310. Facility.

"Facility" means any type of building or structure, or a defined area of specific use that receives water for domestic use from a public water system as defined in section 116275 of the Health and Safety Code.

§60301.320. Filtered wastewater.

"Filtered wastewater" means an oxidized wastewater that meets the criteria in subsection (a) or (b):

(a) Has been coagulated and passed through natural undisturbed soils or a bed of filter media pursuant to the following:

- (1) At a rate that does not exceed 5 gallons per minute per square foot of surface area in mono, dual or mixed media gravity, upflow or pressure filtration systems, or does not exceed 2 gallons per minute per square foot of surface area in traveling bridge automatic backwash filters; and
- (2) So that the turbidity of the filtered wastewater does not exceed any of the following:
 - (A) An average of 2 NTU within a 24-hour period;
 - (B) 5 NTU more than 5 percent of the time within a 24-hour period; and
 - (C) 10 NTU at any time.

(b) Has been passed through a microfiltration, ultrafiltration, nanofiltration, or reverse osmosis membrane so that the turbidity of the filtered wastewater does not exceed any of the following:

- (1) 0.2 NTU more than 5 percent of the time within a 24-hour period; and
- (2) 0.5 NTU at any time.

§60301.330. Food crops.

"Food crops" means any crops intended for human consumption.

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§60301.400. Hose bibb.

"Hose bibb" means a faucet or similar device to which a common garden hose can be readily attached.

§60301.550. Landscape impoundment.

"Landscape impoundment" means an impoundment in which recycled water is stored or used for aesthetic enjoyment or landscape irrigation, or which otherwise serves a similar function and is not intended to include public contact.

§60301.600. Modal contact time.

"Modal contact time" means the amount of time elapsed between the time that a tracer, such as salt or dye, is injected into the influent at the entrance to a chamber and the time that the highest concentration of the tracer is observed in the effluent from the chamber.

§60301.620. Nonrestricted recreational impoundment.

"Nonrestricted recreational impoundment" means an impoundment of recycled water, in which no limitations are imposed on body-contact water recreational activities.

§60301.630. NTU.

"NTU" (Nephelometric turbidity unit) means a measurement of turbidity as determined by the ratio of the intensity of light scattered by the sample to the intensity of incident light as measured by method 2130 B. in Standard Methods for the Examination of Water and Wastewater, 20th ed.; Eaton, A. D., Clesceri, L. S., and Greenberg, A. E., Eds; American Public Health Association: Washington, DC, 1995; p. 2-8.

§60301.650. Oxidized wastewater.

"Oxidized wastewater" means wastewater in which the organic matter has been stabilized, is nonputrescible, and contains dissolved oxygen.

§60301.660. Peak dry weather design flow.

"Peak Dry Weather Design Flow" means the arithmetic mean of the maximum peak flow rates sustained over some period of time (for example three hours) during the maximum 24-hour dry weather period. Dry weather period is defined as periods of little or no rainfall.

§60301.700. Recycled water agency.

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"Recycled water agency" means the public water system, or a publicly or privately owned or operated recycled water system, that delivers or proposes to deliver recycled water to a facility.

§60301.710. Recycling plant.

"Recycling plant" means an arrangement of devices, structures, equipment, processes and controls which produce recycled water.

§60301.740. Regulatory agency.

"Regulatory agency" means the California Regional Water Quality Control Board(s) that have jurisdiction over the recycling plant and use areas.

§60301.750. Restricted access golf course.

"Restricted access golf course" means a golf course where public access is controlled so that areas irrigated with recycled water cannot be used as if they were part of a park, playground, or school yard and where irrigation is conducted only in areas and during periods when the golf course is not being used by golfers.

§60301.760. Restricted recreational impoundment.

"Restricted recreational impoundment" means an impoundment of recycled water in which recreation is limited to fishing, boating, and other non-body-contact water recreational activities.

§60301.800. Spray irrigation.

"Spray irrigation" means the application of recycled water to crops to maintain vegetation or support growth of vegetation by applying it from sprinklers.

§60301.830. Standby unit process.

"Standby unit process" means an alternate unit process or an equivalent alternative process which is maintained in operable condition and which is capable of providing comparable treatment of the actual flow through the unit for which it is a substitute.

§60301.900. Undisinfected secondary recycled water.

"Undisinfected secondary recycled water" means oxidized wastewater.

§60301.920. Use area.

"Use area" means an area of recycled water use with defined boundaries. A use area may contain one or more facilities.

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Article 2. Sources of Recycled Water.

§60302. Source specifications.

The requirements in this chapter shall only apply to recycled water from sources that contain domestic waste, in whole or in part.

Article 3. Uses of Recycled Water.

§60303. Exceptions.

The requirements set forth in this chapter shall not apply to the use of recycled water onsite at a water recycling plant, or wastewater treatment plant, provided access by the public to the area of onsite recycled water use is restricted.

§60304. Use of recycled water for irrigation.

(a) Recycled water used for the surface irrigation of the following shall be a disinfected tertiary recycled water, except that for filtration pursuant to Section 60301.320(a) coagulation need not be used as part of the treatment process provided that the filter effluent turbidity does not exceed 2 NTU, the turbidity of the influent to the filters is continuously measured, the influent turbidity does not exceed 5 NTU for more than 15 minutes and never exceeds 10 NTU, and that there is the capability to automatically activate chemical addition or divert the wastewater should the filter influent turbidity exceed 5 NTU for more than 15 minutes:

- (1) Food crops, including all edible root crops, where the recycled water comes into contact with the edible portion of the crop,
- (2) Parks and playgrounds,
- (3) School yards,
- (4) Residential landscaping,
- (5) Unrestricted access golf courses, and
- (6) Any other irrigation use not specified in this section and not prohibited by other sections of the California Code of Regulations.

(b) Recycled water used for the surface irrigation of food crops where the edible portion is produced above ground and not contacted by the recycled water shall be at least disinfected secondary-2.2 recycled water.

(c) Recycled water used for the surface irrigation of the following shall be at least disinfected secondary-23 recycled water:

- (1) Cemeteries,
- (2) Freeway landscaping,
- (3) Restricted access golf courses,

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- (4) Ornamental nursery stock and sod farms where access by the general public is not restricted,
- (5) Pasture for animals producing milk for human consumption, and
- (6) Any nonedible vegetation where access is controlled so that the irrigated area cannot be used as if it were part of a park, playground or school yard

(d) Recycled wastewater used for the surface irrigation of the following shall be at least undisinfected secondary recycled water:

- (1) Orchards where the recycled water does not come into contact with the edible portion of the crop,
- (2) Vineyards where the recycled water does not come into contact with the edible portion of the crop,
- (3) Non food-bearing trees (Christmas tree farms are included in this category provided no irrigation with recycled water occurs for a period of 14 days prior to harvesting or allowing access by the general public),
- (4) Fodder and fiber crops and pasture for animals not producing milk for human consumption,
- (5) Seed crops not eaten by humans,
- (6) Food crops that must undergo commercial pathogen-destroying processing before being consumed by humans, and
- (7) Ornamental nursery stock and sod farms provided no irrigation with recycled water occurs for a period of 14 days prior to harvesting, retail sale, or allowing access by the general public.

(e) No recycled water used for irrigation, or soil that has been irrigated with recycled water, shall come into contact with the edible portion of food crops eaten raw by humans unless the recycled water complies with subsection (a).

§60305. Use of recycled water for impoundments.

(a) Except as provided in subsection (b), recycled water used as a source of water supply for nonrestricted recreational impoundments shall be disinfected tertiary recycled water that has been subjected to conventional treatment.

(b) Disinfected tertiary recycled water that has not received conventional treatment may be used for nonrestricted recreational impoundments provided the recycled water is monitored for the presence of pathogenic organisms in accordance with the following:

(1) During the first 12 months of operation and use the recycled water shall be sampled and analyzed monthly for *Giardia*, enteric viruses, and *Cryptosporidium*. Following the first 12 months of use, the recycled water shall be sampled and analyzed quarterly for *Giardia*, enteric viruses, and *Cryptosporidium*. The

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ongoing monitoring may be discontinued after the first two years of operation with the approval of the department. This monitoring shall be in addition to the monitoring set forth in section 60321.

(2) The samples shall be taken at a point following disinfection and prior to the point where the recycled water enters the use impoundment. The samples shall be analyzed by an approved laboratory and the results submitted quarterly to the regulatory agency.

(c) The total coliform bacteria concentrations in recycled water used for nonrestricted recreational impoundments, measured at a point between the disinfection process and the point of entry to the use impoundment, shall comply with the criteria specified in section 60301.230 (b) for disinfected tertiary recycled water.

(d) Recycled water used as a source of supply for restricted recreational impoundments and for any publicly accessible impoundments at fish hatcheries shall be at least disinfected secondary-2.2 recycled water.

(e) Recycled water used as a source of supply for landscape impoundments that do not utilize decorative fountains shall be at least disinfected secondary-23 recycled water.

§60306. Use of recycled water for cooling.

(a) Recycled water used for industrial or commercial cooling or air conditioning that involves the use of a cooling tower, evaporative condenser, spraying or any mechanism that creates a mist shall be a disinfected tertiary recycled water.

(b) Use of recycled water for industrial or commercial cooling or air conditioning that does not involve the use of a cooling tower, evaporative condenser, spraying, or any mechanism that creates a mist shall be at least disinfected secondary-23 recycled water.

(c) Whenever a cooling system, using recycled water in conjunction with an air conditioning facility, utilizes a cooling tower or otherwise creates a mist that could come into contact with employees or members of the public, the cooling system shall comply with the following:

(1) A drift eliminator shall be used whenever the cooling system is in operation.

(2) A chlorine, or other, biocide shall be used to treat the cooling system recirculating water to minimize the growth of *Legionella* and other microorganisms.

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§60307. Use of recycled water for other purposes.

(a) Recycled water used for the following shall be disinfected tertiary recycled water, except that for filtration being provided pursuant to Section 60301.320(a) coagulation need not be used as part of the treatment process provided that the filter effluent turbidity does not exceed 2 NTU, the turbidity of the influent to the filters is continuously measured, the influent turbidity does not exceed 5 NTU for more than 15 minutes and never exceeds 10 NTU, and that there is the capability to automatically activate chemical addition or divert the wastewater should the filter influent turbidity exceed 5 NTU for more than 15 minutes:

- (1) Flushing toilets and urinals,
- (2) Priming drain traps,
- (3) Industrial process water that may come into contact with workers,
- (4) Structural fire fighting,
- (5) Decorative fountains,
- (6) Commercial laundries,
- (7) Consolidation of backfill around potable water pipelines,
- (8) Artificial snow making for commercial outdoor use, and
- (9) Commercial car washes, including hand washes if the recycled water is not heated, where the general public is excluded from the washing process.

(b) Recycled water used for the following uses shall be at least disinfected secondary-23 recycled water:

- (1) Industrial boiler feed,
- (2) Nonstructural fire fighting,
- (3) Backfill consolidation around nonpotable piping,
- (4) Soil compaction,
- (5) Mixing concrete,
- (6) Dust control on roads and streets,
- (7) Cleaning roads, sidewalks and outdoor work areas and
- (8) Industrial process water that will not come into contact with workers.

(c) Recycled water used for flushing sanitary sewers shall be at least undisinfected secondary recycled water.

Article 4. Use Area Requirements.

§60310. Use area requirements.

(a) No irrigation with disinfected tertiary recycled water shall take place within 50 feet of any domestic water supply well unless all of the following conditions have been met:

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- (1) A geological investigation demonstrates that an aquitard exists at the well between the uppermost aquifer being drawn from and the ground surface.
 - (2) The well contains an annular seal that extends from the surface into the aquitard.
 - (3) The well is housed to prevent any recycled water spray from coming into contact with the wellhead facilities.
 - (4) The ground surface immediately around the wellhead is contoured to allow surface water to drain away from the well.
 - (5) The owner of the well approves of the elimination of the buffer zone requirement.
- (b) No impoundment of disinfected tertiary recycled water shall occur within 100 feet of any domestic water supply well.
- (c) No irrigation with, or impoundment of, disinfected secondary-2.2 or disinfected secondary-23 recycled water shall take place within 100 feet of any domestic water supply well.
- (d) No irrigation with, or impoundment of, undisinfected secondary recycled water shall take place within 150 feet of any domestic water supply well.
- (e) Any use of recycled water shall comply with the following:
- (1) Any irrigation runoff shall be confined to the recycled water use area, unless the runoff does not pose a public health threat and is authorized by the regulatory agency.
 - (2) Spray, mist, or runoff shall not enter dwellings, designated outdoor eating areas, or food handling facilities.
 - (3) Drinking water fountains shall be protected against contact with recycled water spray, mist, or runoff.
- (f) No spray irrigation of any recycled water, other than disinfected tertiary recycled water, shall take place within 100 feet of a residence or a place where public exposure could be similar to that of a park, playground, or school yard.
- (g) All use areas where recycled water is used that are accessible to the public shall be posted with signs that are visible to the public, in a size no less than 4 inches high by 8 inches wide, that include the following wording : "RECYCLED WATER - DO NOT DRINK". Each sign shall display an international symbol similar to that shown in figure 60310-A. The Department may accept alternative signage and wording, or an educational program, provided the applicant

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demonstrates to the Department that the alternative approach will assure an equivalent degree of public notification.

(h) Except as allowed under section 7604 of title 17, California Code of Regulations, no physical connection shall be made or allowed to exist between any recycled water system and any separate system conveying potable water.

(i) The portions of the recycled water piping system that are in areas subject to access by the general public shall not include any hose bibbs. Only quick couplers that differ from those used on the potable water system shall be used on the portions of the recycled water piping system in areas subject to public access.

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Water Recycling Criteria
FIGURE 60310-A

Water Recycling Criteria

FIGURE 60310-A

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Article 5. Dual Plumbed Recycled Water Systems.

§60313. General requirements.

(a) No person other than a recycled water agency shall deliver recycled water to a dual plumbed facility.

(b) No recycled water agency shall deliver recycled water for any internal use to any individually-owned residential units including free-standing structures, multiplexes, or condominiums. *(Note: AB 1046, Chapter 537, Statutes of 2007, Water Code 13533, et seq., allows condominiums to be plumbed with recycled water, subject to a number of provisions. This regulation will be changed in future CDPH rulemaking to be consistent with the revised statutory requirements.)*

(c) No recycled water agency shall deliver recycled water for internal use except for fire suppression systems, to any facility that produces or processes food products or beverages. For purposes of this Subsection, cafeterias or snack bars in a facility whose primary function does not involve the production or processing of foods or beverages are not considered facilities that produce or process foods or beverages.

(d) No recycled water agency shall deliver recycled water to a facility using a dual plumbed system unless the report required pursuant to section 13522.5 of the Water Code, and which meets the requirements set forth in section 60314, has been submitted to, and approved by, the regulatory agency.

§60314. Report submittal.

(a) For dual-plumbed recycled water systems, the report submitted pursuant to section 13522.5 of the Water Code shall contain the following information in addition to the information required by section 60323:

(1) A detailed description of the intended use area identifying the following:

(A) The number, location, and type of facilities within the use area proposing to use dual plumbed systems,

(B) The average number of persons estimated to be served by each facility on a daily basis,

(C) The specific boundaries of the proposed use area including a map showing the location of each facility to be served,

(D) The person or persons responsible for operation of the dual plumbed system at each facility, and

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- (E) The specific use to be made of the recycled water at each facility.
- (2) Plans and specifications describing the following:
 - (A) Proposed piping system to be used,
 - (B) Pipe locations of both the recycled and potable systems,
 - (C) Type and location of the outlets and plumbing fixtures that will be accessible to the public, and
 - (D) The methods and devices to be used to prevent backflow of recycled water into the public water system.
- (3) The methods to be used by the recycled water agency to assure that the installation and operation of the dual plumbed system will not result in cross connections between the recycled water piping system and the potable water piping system. This shall include a description of pressure, dye or other test methods to be used to test the system every four years.

(b) A master plan report that covers more than one facility or use site may be submitted provided the report includes the information required by this section. Plans and specifications for individual facilities covered by the report may be submitted at any time prior to the delivery of recycled water to the facility.

§60315. Design requirements.

The public water supply shall not be used as a backup or supplemental source of water for a dual-plumbed recycled water system unless the connection between the two systems is protected by an air gap separation which complies with the requirements of sections 7602 (a) and 7603 (a) of title 17, California Code of Regulations, and the approval of the public water system has been obtained.

§60316. Operation requirements.

(a) Prior to the initial operation of the dual-plumbed recycled water system and annually thereafter, the Recycled Water Agency shall ensure that the dual plumbed system within each facility and use area is inspected for possible cross connections with the potable water system. The recycled water system shall also be tested for possible cross connections at least once every four years. The testing shall be conducted in accordance with the method described in the report submitted pursuant to section 60314. The inspections and the testing shall be performed by a cross connection control specialist certified by the California-Nevada section of the American Water Works Association or an organization with equivalent certification requirements. A written report documenting the result of the inspection or testing for the prior year shall be submitted to the department within 30 days following completion of the inspection or testing.

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(b) The recycled water agency shall notify the department of any incidence of backflow from the dual-plumbed recycled water system into the potable water system within 24 hours of the discovery of the incident.

(c) Any backflow prevention device installed to protect the public water system serving the dual-plumbed recycled water system shall be inspected and maintained in accordance with section 7605 of Title 17, California Code of Regulations.

Article 5.1. Groundwater recharge.

§60320. Groundwater recharge.

(a) Reclaimed water used for groundwater recharge of domestic water supply aquifers by surface spreading shall be at all times of a quality that fully protects public health. The State Department of Health Services’ recommendations to the Regional Water Quality Control Boards for proposed groundwater recharge projects and for expansion of existing projects will be made on an individual case basis where the use of reclaimed water involves a potential risk to public health.

(b) The State Department of Health Services’ recommendations will be based on all relevant aspects of each project, including the following factors: treatment provided; effluent quality and quantity; spreading area operations; soil characteristics; hydrogeology; residence time; and distance to withdrawal.

(c) The State Department of Health Services will hold a public hearing prior to making the final determination regarding the public health aspects of each groundwater recharge project. Final recommendations will be submitted to the Regional Water Quality Control Board in an expeditious manner.

Article 5.5. Other Methods of Treatment.

§60320.5. Other methods of treatment.

Methods of treatment other than those included in this chapter and their reliability features may be accepted if the applicant demonstrates to the satisfaction of the State Department of Health that the methods of treatment and reliability features will assure an equal degree of treatment and reliability.

Article 6. Sampling and Analysis.

§60321. Sampling and analysis.

(a) Disinfected secondary-23, disinfected secondary-2.2, and disinfected tertiary

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recycled water shall be sampled at least once daily for total coliform bacteria. The samples shall be taken from the disinfected effluent and shall be analyzed by an approved laboratory.

(b) Disinfected tertiary recycled water shall be continuously sampled for turbidity using a continuous turbidity meter and recorder following filtration. Compliance with the daily average operating filter effluent turbidity shall be determined by averaging the levels of recorded turbidity taken at four-hour intervals over a 24-hour period. Compliance with turbidity pursuant to section 60301.320 (a)(2)(B) and (b)(1) shall be determined using the levels of recorded turbidity taken at intervals of no more than 1.2-hours over a 24- hour period. Should the continuous turbidity meter and recorder fail, grab sampling at a minimum frequency of 1.2-hours may be substituted for a period of up to 24-hours. The results of the daily average turbidity determinations shall be reported quarterly to the regulatory agency.

(c) The producer or supplier of the recycled water shall conduct the sampling required in subsections (a) and (b).

Article 7. Engineering Report and Operational Requirements.

§60323. Engineering report.

(a) No person shall produce or supply reclaimed water for direct reuse from a proposed water reclamation plant unless he files an engineering report.

(b) The report shall be prepared by a properly qualified engineer registered in California and experienced in the field of wastewater treatment, and shall contain a description of the design of the proposed reclamation system. The report shall clearly indicate the means for compliance with these regulations and any other features specified by the regulatory agency.

(c) The report shall contain a contingency plan which will assure that no untreated or inadequately treated wastewater will be delivered to the use area.

§60325. Personnel.

(a) Each reclamation plant shall be provided with a sufficient number of qualified personnel to operate the facility effectively so as to achieve the required level of treatment at all times.

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(b) Qualified personnel shall be those meeting requirements established pursuant to Chapter 9 (commencing with Section 13625) of the Water Code.

§60327. Maintenance.

A preventive maintenance program shall be provided at each reclamation plant to ensure that all equipment is kept in a reliable operating condition.

§60329. Operating records and reports.

(a) Operating records shall be maintained at the reclamation plant or a central depository within the operating agency. These shall include: all analyses specified in the reclamation criteria; records of operational problems, plant and equipment breakdowns, and diversions to emergency storage or disposal; all corrective or preventive action taken.

(b) Process or equipment failures triggering an alarm shall be recorded and maintained as a separate record file. The recorded information shall include the time and cause of failure and corrective action taken.

(c) A monthly summary of operating records as specified under (a) of this section shall be filed monthly with the regulatory agency.

(d) Any discharge of untreated or partially treated wastewater to the use area, and the cessation of same, shall be reported immediately by telephone to the regulatory agency, the State Department of Health, and the local health officer.

§60331. Bypass.

There shall be no bypassing of untreated or partially treated wastewater from the reclamation plant or any intermediate unit processes to the point of use.

Article 8. General Requirements of Design.

§60333. Flexibility of design.

The design of process piping, equipment arrangement, and unit structures in the reclamation plant must allow for efficiency and convenience in operation and maintenance and provide flexibility of operation to permit the highest possible degree of treatment to be obtained under varying circumstances.

§60335. Alarms.

(a) Alarm devices required for various unit processes as specified in other sections of these regulations shall be installed to provide warning of:

- (1) Loss of power from the normal power supply.
- (2) Failure of a biological treatment process.

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- (3) Failure of a disinfection process.
- (4) Failure of a coagulation process.
- (5) Failure of a filtration process.
- (6) Any other specific process failure for which warning is required by the regulatory agency.

(b) All required alarm devices shall be independent of the normal power supply of the reclamation plant.

(c) The person to be warned shall be the plant operator, superintendent, or any other responsible person designated by the management of the reclamation plant and capable of taking prompt corrective action.

(d) Individual alarm devices may be connected to a master alarm to sound at a location where it can be conveniently observed by the attendant. In case the reclamation plant is not attended full time, the alarm(s) shall be connected to sound at a police station, fire station or other full time service unit with which arrangements have been made to alert the person in charge at times that the reclamation plant is unattended.

§60337. Power supply.

The power supply shall be provided with one of the following reliability features:

- (a) Alarm and standby power source.
- (b) Alarm and automatically actuated short-term retention or disposal provisions as specified in Section 60341.
- (c) Automatically actuated long-term storage or disposal provisions as specified in Section 60341.

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Article 9. Reliability Requirements for Primary Effluent.

§60339. Primary treatment.

Reclamation plants producing reclaimed water exclusively for uses for which primary effluent is permitted shall be provided with one of the following reliability features:

- (a) Multiple primary treatment units capable of producing primary effluent with one unit not in operation.
- (b) Long-term storage or disposal provisions as specified in Section 60341.

Note: Use of primary effluent for recycled water is no longer allowed. [repeal of Section 60309, effective December 2000]

Article 10. Reliability Requirements for Full Treatment.

§60341. Emergency storage or disposal.

(a) Where short-term retention or disposal provisions are used as a reliability feature, these shall consist of facilities reserved for the purpose of storing or disposing of untreated or partially treated wastewater for at least a 24-hour period. The facilities shall include all the necessary diversion devices, provisions for odor control, conduits, and pumping and pump back equipment. All of the equipment other than the pump back equipment shall be either independent of the normal power supply or provided with a standby power source.

(b) Where long-term storage or disposal provisions are used as a reliability feature, these shall consist of ponds, reservoirs, percolation areas, downstream sewers leading to other treatment or disposal facilities or any other facilities reserved for the purpose of emergency storage or disposal of untreated or partially treated wastewater. These facilities shall be of sufficient capacity to provide disposal or storage of wastewater for at least 20 days, and shall include all the necessary diversion works, provisions for odor and nuisance control, conduits, and pumping and pump back equipment. All of the equipment other than the pump back equipment shall be either independent of the normal power supply or provided with a standby power source.

(c) Diversion to a less demanding reuse is an acceptable alternative to emergency disposal of partially treated wastewater provided that the quality of the partially treated wastewater is suitable for the less demanding reuse.

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(d) Subject to prior approval by the regulatory agency, diversion to a discharge point which requires lesser quality of wastewater is an acceptable alternative to emergency disposal of partially treated wastewater.

(e) Automatically actuated short-term retention or disposal provisions and automatically actuated long-term storage or disposal provisions shall include, in addition to provisions of (a), (b), (c), or (d) of this section, all the necessary sensors, instruments, valves and other devices to enable fully automatic diversion of untreated or partially treated wastewater to approved emergency storage or disposal in the event of failure of a treatment process and a manual reset to prevent automatic restart until the failure is corrected.

§60343. Primary treatment.

All primary treatment unit processes shall be provided with one of the following reliability features:

- (a) Multiple primary treatment units capable of producing primary effluent with one unit not in operation.
- (b) Standby primary treatment unit process.
- (c) Long-term storage or disposal provisions.

§60345. Biological treatment.

All biological treatment unit processes shall be provided with one of the following reliability features:

- (a) Alarm and multiple biological treatment units capable of producing oxidized wastewater with one unit not in operation.
- (b) Alarm, short-term retention or disposal provisions, and standby replacement equipment.
- (c) Alarm and long-term storage or disposal provisions.
- (d) Automatically actuated long-term storage or disposal provisions.

§60347. Secondary sedimentation.

All secondary sedimentation unit processes shall be provided with one of the following reliability features:

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(a) Multiple sedimentation units capable of treating the entire flow with one unit not in operation.

(b) Standby sedimentation unit process.

(c) Long-term storage or disposal provisions.

§60349. Coagulation.

(a) All coagulation unit processes shall be provided with the following mandatory features for uninterrupted coagulant feed:

- (1) Standby feeders,
- (2) Adequate chemical stowage and conveyance facilities,
- (3) Adequate reserve chemical supply, and
- (4) Automatic dosage control.

(b) All coagulation unit processes shall be provided with one of the following reliability features:

- (1) Alarm and multiple coagulation units capable of treating the entire flow with one unit not in operation;
- (2) Alarm, short-term retention or disposal provisions, and standby replacement equipment;
- (3) Alarm and long-term storage or disposal provisions;
- (4) Automatically actuated long-term storage or disposal provisions, or
- (5) Alarm and standby coagulation process.

§60351. Filtration.

All filtration unit processes shall be provided with one of the following reliability features:

(a) Alarm and multiple filter units capable of treating the entire flow with one unit not in operation.

(b) Alarm, short-term retention or disposal provisions and standby replacement equipment.

(c) Alarm and long-term storage or disposal provisions.

(d) Automatically actuated long-term storage or disposal provisions.

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(e) Alarm and standby filtration unit process.

§60353. Disinfection.

(a) All disinfection unit processes where chlorine is used as the disinfectant shall be provided with the following features for uninterrupted chlorine feed:

- (1) Standby chlorine supply,
- (2) Manifold systems to connect chlorine cylinders,
- (3) Chlorine scales, and
- (4) Automatic devices for switching to full chlorine cylinders. Automatic residual control of chlorine dosage, automatic measuring and recording of chlorine residual, and hydraulic performance studies may also be required.

(b) All disinfection unit processes where chlorine is used as the disinfectant shall be provided with one of the following reliability features:

- (1) Alarm and standby chlorinator;
- (2) Alarm, short-term retention or disposal provisions, and standby replacement equipment;
- (3) Alarm and long-term storage or disposal provisions;
- (4) Automatically actuated long-term storage or disposal provisions; or
- (5) Alarm and multiple point chlorination, each with independent power source, separate chlorinator, and separate chlorine supply.

§60355. Other alternatives to reliability requirements

Other alternatives to reliability requirements set forth in Articles 8 to 10 may be accepted if the applicant demonstrates to the satisfaction of the State Department of Health that the proposed alternative will assure an equal degree of reliability.

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**GUIDELINES FOR THE
PREPARATION OF AN ENGINEERING REPORT
FOR THE PRODUCTION, DISTRIBUTION AND USE OF RECYCLED WATER**

March 2001

(Replaces September 1997 Version)

1.0 INTRODUCTION

The current State of California Water Recycling Criteria (adopted in December 2000) require the submission of an engineering report to the California Regional Water Quality Control Board (RWQCB) and the Department of Health Services (DHS) before recycled water projects are implemented. These reports must also be amended prior to any modification to existing projects. The purpose of an engineering report is to describe the manner by which a project will comply with the Water Recycling Criteria. The Water Recycling Criteria are contained in Sections 60301 through 60355, inclusive, of the California Code of Regulations, Title 22. The Criteria prescribe:

- * Recycled water quality and wastewater treatment requirements for the various types of allowed uses,
- * Use area requirements pertaining to the actual location of use of the recycled water (including dual plumbed facilities), and
- * Reliability features required in the treatment facilities to ensure safe performance.

Section 60323 of the Water Recycling Criteria specifies that the engineering report be prepared by a properly qualified engineer, registered in California and experienced in the field of wastewater treatment.

Recycled water projects vary in complexity. Therefore, reports will vary in content, and the detail presented will depend on the scope of the proposed project and the number and nature of the agencies involved in the production, distribution, and use of the recycled water. The report should contain sufficient information

to assure the regulatory agencies that the degree and reliability of treatment is commensurate with the requirements for the proposed use, and that the distribution and use of the recycled water will not create a health hazard or nuisance.

The intent of these guidelines is to provide a framework to assist in developing a comprehensive report which addresses all necessary elements of a proposed or modified project. Such a report is necessary to allow for the required regulatory review and approval of a recycled water project.

References which may assist in addressing various project elements include:

- State of California Water Recycling Criteria (December 2000)
- State of California Regulations Relating to Cross-Connections
- California Waterworks Standards
- California Water Code
- Guidelines for the Distribution of Non-potable Water, (California-Nevada Section-AWWA, 1992)
- Guidelines For The On-Site Retrofit of Facilities Using Disinfected Tertiary Recycled Water (California-Nevada Section-AWWA, 1997)
- Manual of Cross-Connection Control/Procedures and Practices (DOHS)
- Ultraviolet Disinfection - Guidelines for Drinking Water and Water Reuse (NWRI/AWWARF, December 2000)

2.0 RECYCLED WATER PROJECT

The following sections discuss the type of information that should be presented and described in the engineering report. Some sections may be applicable only to certain types of uses.

2.1 General

The report shall identify all agencies or entities that will be involved in the design, treatment, distribution, construction, operation and maintenance of the recycled facilities, including a description of any legal arrangements outlining authorities and responsibilities between the

agencies with respect to treatment, distribution and use of recycled water. In areas where more than one agency/entity is involved in the reuse project, a description of arrangements for coordinating all reuse-related activities (e.g. line construction/repairs) shall be provided. An organizational chart may be useful.

2.2 Rules and Regulations

The procedures, restrictions, and other requirements that will be imposed by the distributor and/or user should be described. In multiple projects covered under a Master Permit issued by the Regional Boards where the reuse oversight responsibility is delegated to the distributor and/or user, the requirements and restrictions should be codified into a set of enforceable rules and regulations. The rules and regulations should include a compliance program to be used to protect the public health and prevent cross connections. Describe in the report the adoption of enforceable rules and regulations that cover all of the design and construction, operation and maintenance of the distribution systems and use areas, as well as use area control measures. Provide a description of the organization of the agency or agencies who has the authority to implement and enforce the rules and regulations, and the responsibilities of pertinent personnel involved in the reuse program. Reference to any ordinances, rules of service, contractual arrangements, etc. should be provided.

2.3 Producer - Distributor - User

The producer is the public or private entity that will treat and/or distribute the recycled water used in the project. Where more than one entity is involved in the treatment or distribution of the recycled water, the roles and responsibilities of each entity (i.e. producer, distributor, user) should be described.

2.4 Raw Wastewater

Describe the chemical quality, including ranges with median and 95th percentile values;

Describe the source of the wastewater to be used and the proportion and types of industrial waste, and

Describe all source control programs.

2.5 Treatment Processes

Provide a schematic of the treatment train;

Describe the treatment processes including loading rates and contact times;

All filtration design criteria should be provided (filtration and backwash rates, filter depth and media specifications, etc.). The expected turbidities of the filter influent (prior to the addition of chemicals) and the filter effluent should be stated;

State the chemicals that will be used, the method of mixing, the degree of mixing, the point of application, and the dosages. Also describe the chemical storage and handling facilities, and

Describe the operation and maintenance manuals available.

2.6 Plant Reliability Features

The plant reliability features proposed to comply with Sections 60333 - 60355 of the Water Recycling Criteria should be described in detail. The discussion of each reliability feature should state under what conditions it will be actuated. When alarms are used to indicate system failure, the report should state where the alarm will be received, how the location is staffed, and who will be notified. The report should also state the hours that the plant will be staffed.

2.7 Supplemental Water Supply

The report should describe all supplemental water supplies. The description should include:

- * Purpose
- * Source
- * Quality
- * Quantity available
- * Cross-connection control and backflow prevention measures

2.8 Monitoring and Reporting

The report should describe the planned monitoring and reporting program, including all monitoring required by the Water Recycling Criteria, and include the frequency and location of sampling. Where continuous analysis and recording equipment is used, the method and frequency of calibration

should be stated. All analyses shall be performed by a laboratory approved by the State Department of Health Services.

2.9 Contingency Plan

Section 60323 (c) of the Water Recycling Criteria requires that the engineering report contain a contingency plan designed to prevent inadequately treated wastewater from being delivered to the user. The contingency plan should include:

- * A list of conditions which would require an immediate diversion to take place;
- * A description of the diversion procedures;
- * A description of the diversion area including capacity, holding time and return capabilities;
- * A description of plans for activation of supplemental supplies (if applicable);
- * A plan for the disposal or treatment of any inadequately treated effluent;
- * A description of fail safe features in the event of a power failure, and

A plan (including methods) for notifying the recycled water user(s), the regional board, the state and local health departments, and other agencies as appropriate, of any treatment failures that could result in the delivery of inadequately treated recycled water to the use area.

3.0 TRANSMISSION AND DISTRIBUTION SYSTEMS

Maps and/or plans showing the location of the transmission facilities and the distribution system layout should be provided. The plans should include the ownership and location of all potable water lines, recycled water lines and sewer lines within the recycled water service area and use area(s).

4.0 USE AREAS

The description of each use area should include:

- * The type of land uses;
- * The specific type of reuse proposed;

- * The party(s) responsible for the distribution and use of the recycled water at the site;
- * Identification of other governmental entities which may have regulatory jurisdiction over the re-use site such as the US Department of Agriculture, State Department of Health Services, Food and Drug Branch, the State Department of Health Services, Licensing and Certification Section, etc. These agencies should also be provided with a copy of the Title 22 Engineering Report for review and comment.
- * Use area containment measures;
- * A map showing:
 - Specific areas of use
 - Areas of public access
 - Surrounding land uses
 - The location and construction details of wells in or within 1000 feet of the use area
 - Location and type of signage
- * The degree of potential access by employees or the public;
- * For use areas where both potable and recycled water lines exist, a description of the cross-connection control procedures which will be used.

In addition to the general information described above, the following should be provided for the following specific proposed uses:

4.1 Irrigation

- Detailed plans showing all piping networks within the use area including recycled, potable, sewage and others as applicable.
- Description of what will be irrigated (e.g. landscape, specific food crop, etc.);
- Method of irrigation (e.g. spray, flood, or drip);
- The location of domestic water supply facilities in or adjacent to the use area;

- Site containment measures;
- Measures to be taken to minimize ponding;
- The direction of drainage and a description of the area to which the drainage will flow;
- A map and/or description of how the setback distances of Section 60310 will be maintained;
- Protection measures of drinking water fountains and designated outdoor eating areas, if applicable;
- Location and wording of public warning signs,
- The proposed irrigation schedule (if public access is included), and
- Measures to be taken to exclude or minimize public contact.

4.2 Impoundments

- The type of use or activity to be allowed on the impoundment;
- Description of the degree of public access;
- The conditions under which the impoundment can be expected to overflow and the expected frequency, and
- The direction of drainage and a description of the area to which the drainage will flow.

4.3 Cooling

- Type of cooling system (e.g. cooling tower, spray, condenser, etc.);
- Type of biocide to be used, if applicable;
- Type of drift eliminator to be used, if applicable, and
- Potential for employee or public exposure, and mitigative measures to be employed.

4.4 Groundwater Recharge

An assessment of potential impacts the proposal will have on underlying groundwater aquifers. The appropriate information

shall be determined through consultation with the Department on a case by case basis.

4.5 Dual Plumbed Use Areas

In accordance with Sections 60313 through 60316 of the Water Recycling Criteria.

4.6 Other Industrial Uses

The appropriate information shall be determined on a case by case basis.

4.7 Use Area Design

The report should discuss how domestic water distribution system shall be protected from the recycled water in accordance with the Regulations Relating to Cross-Connections and the California Waterworks Standards, and how the facilities will be designed to minimize the chance of recycled water leaving the designated use area. Any proposed deviation from the Water Recycling Criteria and necessity therefore, should be discussed in the report.

4.8 Use Area Inspections and Monitoring

The report should describe the use area inspection program. It should identify the locations at the use area where problems are most likely to occur (e.g. ponding, runoff, overspray, cross-connections, etc.) and the personnel in charge of the monitoring and reporting of use area problems.

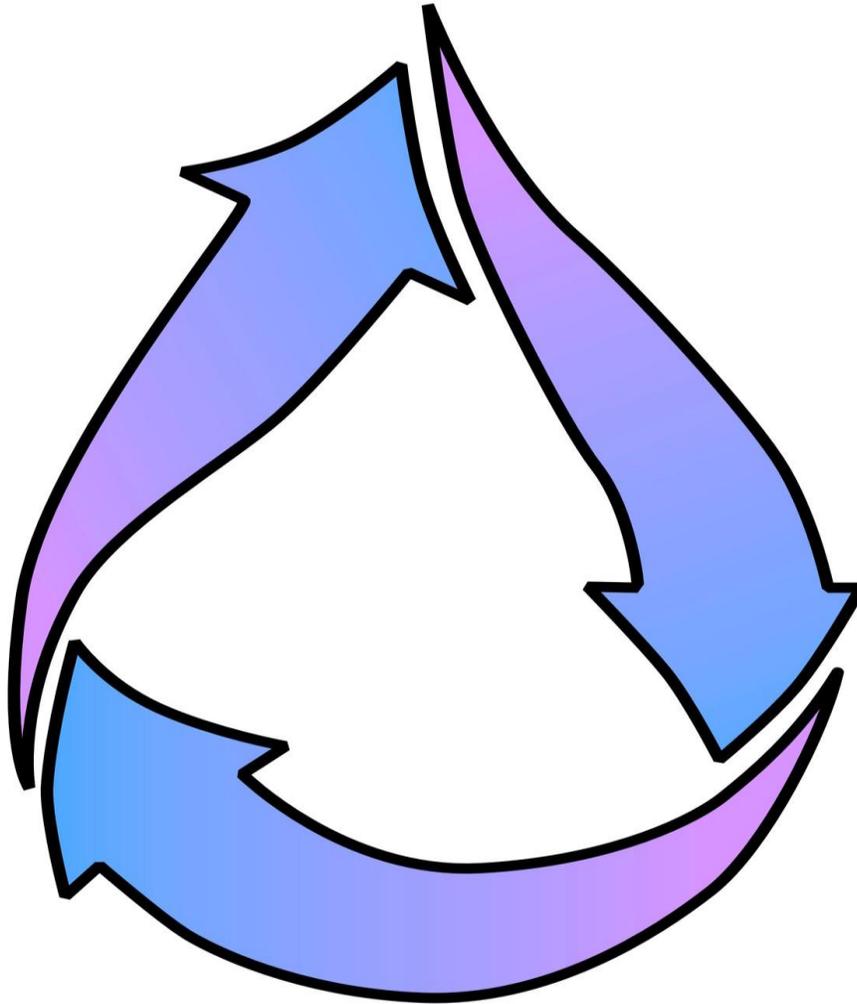
4.9 Employee Training

The report should describe the training which use area employees will receive to ensure compliance with the Recycled Water Criteria, and identify the entity that will provide the training and its' frequency. The report should also identify any written manuals of practice to be made available to employees.

APPENDIX G

Escondido Recycled Water Rules and Regulations

Recycled Water Service
Rules & Regulations, Project Guidelines



City of Escondido

- Public Works Department
- Parks & Recreation Department
- Planning and Building Department

Updated: February 24, 2005

TABLE OF CONTENTS

	Page
I. GENERAL REQUIREMENTS AND CONDITIONS	
1. Introduction	
A. Purpose	1
B. Goals	1
C. Policy	2
D. Priority.....	2
2. Severability.....	2
3. Service Area.....	2
4. Determination of recycled water use area	2
5. Authorized uses	3
6. Conditions for service	3
7. Other applicable Codes, Rules and Regulations	4
II. ADMINISTRATIVE REQUIREMENTS	
1. Permit application process.....	7
2. Permits.....	8
3. Contracts/agreements.....	9
4. Rates, fees, and charges	9
III. TECHNICAL REQUIREMENTS	
1. Size, location and installation of service line.....	11
2. Service connection limitations.....	11
3. Relocation of recycled water service lines	12
4. Protective measures	12
A. Where protection is required	13
B. Other measures.....	13
C. Service termination	14
5. Type of protection	14
6. Inspection and maintenance of protective devices	17
7. Facilities design	
A. General.....	17
B. Off-site facilities	18
C. On-site facilities	18
D. Interim service	18

8.	Construction	
	A. New.....	19
	B. Conversion to recycled water systems	20
	C. Conversions from recycled water systems	20
9.	Emergency connection from recycled water system	
	to potable water system	20
IV.	FACILITIES OPERATION	
	1. Off-site	23
	2. On-site	23
	3. Monitoring and inspection	26
	4. Maintenance responsibility.....	26
V.	SUPPLEMENTS	
	A. Construction Specifications.....	29
	B. Retrofitting of Existing Systems	37
	FIGURE V.1.....	41
	Products available for recycled water systems.....	42
	Specific rules/guidelines for agricultural operations.....	43
	Specific rules/guidelines for landscape irrigation.....	46
	Specific rules/guidelines for commercial/industrial uses.....	50
	Specific rules/guidelines for construction uses.....	51
	Specific rules/guidelines for recreational uses.....	52

EXHIBITS

REFERENCES

APPENDICES

- 1 Definitions**
- 2 Checklist/Action Request Form for Obtaining Recycled Water Service**
- 3 Application for Recycled Water Service**
- 4 Status of Application for Recycled Water Service**
- 5 Permit for Recycled Water Service**
- 6 Approved Manufacturers of Irrigation Equipment**
- 7 Recycled Water Notes**

SECTION I

GENERAL REQUIREMENTS AND CONDITIONS

I.1 INTRODUCTION

The City of Escondido (City) is primarily dependent on imported water for domestic, agricultural and industrial uses. This imported supply is considered limited and its future reliability uncertain. In addition, transport of this water requires tremendous energy input which contributes a considerable portion of the total cost to the end user. It is in the best interest of the City to promote and implement innovative water management strategies to conserve water and energy resources while still satisfying water needs of the City customers.

The City plans to operate and maintain a recycled water distribution network throughout its service area, enabling it to provide tertiary treated recycled water for a variety of beneficial uses. This alternate supply allows additional quantities of higher quality potable water to be made available for domestic use.

The use of water recycled from domestic sewage is regulated by the California Regional Water Quality Control Board (RWQCB). California Water Code Section 13551 establishes a state policy to encourage the use of recycled water. Permission to use recycled water is based on the ability to adequately treat domestic wastewater to the point that the recycled water (effluent) meets the requirements of existing Title 22, chapter 3 regulations of the California Administrative Code. Title 22 was promulgated by the State Department of Health Service to ensure proper health protection and specify the treatment degree to match the intended applications.

In accordance with waste discharge requirements for water reclamation projects, the RWQCB requires that Rules and Regulations for facilities using recycled water be established.

A. PURPOSE

The purpose of these Rules and Regulations is to establish procedures, specifications and limitations for the safe and orderly development and operation of recycled water facilities and systems in the City service area.

B. GOALS

- (1) Achieve conservation of potable water supplies by using recycled water for current and future demands. Recycled water uses shall be for the maximum public benefit and may include:
 - agricultural irrigation
 - commercial uses (including flushing toilets and urinals)
 - construction use
 - groundwater recharge
 - industrial processes (including cooling towers)
 - landscape irrigation
 - landscape and/or recreational impoundments
 - wildlife habitat
- (2) Maintain recycled water quality through a stringent pre-treatment program for commercial and industrial wastes and by restricting brine discharges from water softeners, evaporative coolers, and other sources.

- (3) Prevent direct human consumption of recycled water through:
 - (a) Adherence to all applicable rules and regulations
 - (b) Posting of warning signs by the user
 - (c) Cross-connection/backflow prevention program
 - (d) Education of the public
- (4) Minimize run-off of recycled water through monitoring of the installation and operation of all recycled water facilities and use areas.
- (5) Monitor recycled water quality.

C. POLICY

It is the policy of the City that recycled water be used for any purposes approved for recycled water use, when it is economically, financially, and technically feasible, as mandated by Ordinance 91-3. Use of potable water for nondomestic uses (where recycled water is available) shall be contrary to City policy, shall not be considered the most beneficial use of a natural resource and shall be avoided to the maximum extent possible.

D. PRIORITY

Recycled water shall be provided on a first-come, first-served basis, as long as recycled water is available. However, agriculture will be given priority over other recycled water uses.

I.2 SEVERABILITY

If any section, subsection, sentence, clause or phrase of these Rules and Regulations is for any reason found to be invalid or unconstitutional, such decision shall not affect the remaining portions of these Rules and Regulations. The Escondido City Council declares that it would have approved these Rules and Regulations by section, subsection, sentence, clause, or phrase irrespective of the fact that any one or more of the sections, subsections, sentences, clauses or phrases be declared invalid or unconstitutional.

I.3 SERVICE AREA

These Rules and Regulations pertain to recycled water service to lands and/or improvements lying within the legal boundaries of the City unless otherwise stated. The City shall provide recycled water service in accordance with these Rules and Regulations to areas identified in the City Wastewater Master Plan, including all subsequent revisions for the use of recycled water. Recycled water service shall be provided to the service area when related distribution facilities are completed and service becomes available.

I.4 DETERMINATION OF RECYCLED WATER USE AREA

A. General

- (1) The City has adopted a Wastewater Master Plan (Master Plan) designating current and potential areas for recycled water use. Additional reports have been compiled also in this regard. These reports shall be in accordance with all regulatory agencies and encourage recycled water use. The Master Plan may be reviewed and updated as needed.

- (2) The City may review its Master Plan (and accompanying reports) and recommend where water service should be made with recycled water in place of potable water. Where it is determined recycled water is, or will be available within five years, the City may request modifications to existing on-site water facilities and require construction of recycled water systems in new developments. (See Section V, Supplement B, Retrofitting of Existing Systems)
- (3) The City may enter into agreements with cities and/or other water agencies to determine recycled water use areas within the service area/jurisdiction of those entities.

B. Existing potable water service

- (1) Upon adoption of these Rules and Regulations, and each update of the Master Plan and reports, the City (Utilities Administration Division of Public Works) may make determinations of areas where existing water use should be retrofitted with recycled water.
- (2) A notice of the determination to use recycled water shall be sent to the current owner, explaining the City of Escondido's reasons for use and resultant procedures needed to facilitate recycled water use.

C. New recycled water service

Upon submittal by applicant of a tentative map, land use permit, or request for recycled water service, the City (Utilities Administration Division of Public Works) shall review the Master Plan and make preliminary determinations if recycled water service should be provided to the area of question.

I.5 AUTHORIZED USES

In accordance with the goals of the City, as stated in these Rules and Regulations, the uses of recycled water include only those uses approved by the California State Department of Health Services and for which Title 22 of the California Administrative Code provides treatment requirements. Each such use will be considered for approval on a case-by-case basis. Prior to approval and at its discretion, the City may set forth specific requirements as conditions to providing service and/or require specific prior approval from the appropriate regulatory agencies.

I.6 CONDITIONS OF SERVICE

The City shall provide recycled water service only if a permit for such service is obtained in the manner provided in these Rules and Regulations. Recycled water service shall be available, provided, and used in accordance with other codes, rules, and regulations as listed in Section I.7.

If any of the following conditions of service are not satisfied at all times, a Permit for Recycled Water Service may be revoked by the City after which all recycled water service shall cease in the manner described in the potable water rules and regulations. Connection to a potable water system will not be allowed.

A. Financial

Conditions relating to service fees and billing shall be the same as established for the potable water system. Rates for recycled water service shall be decided by the City of Escondido and are available from the Utility Billing Division of the Finance Department.

B. Operational

(1) Liability:

The City shall not be liable for any damage by water or resulting from:

- defective plumbing
- broken or faulty services or recycled water mains
- on-site facilities failure
- high or low pressure conditions
- interruptions of service

(2) Service Basis:

All recycled water will be provided to the user in the conditions and quantity specified in the Permit for Recycled Water Service. Recycled water use will not be subject to the same restrictions as potable water during drought conditions.

C. Regulatory

(1) Recycled water service may be terminated whenever the quality of the recycled water does not comply with the requirements of the regulatory agencies or at any time these Rules and Regulations for Recycled Water Service are violated.

(2) The RWQCB may initiate enforcement action which may result in the termination of the recycled water supply against any user who discharges recycled water in violation of prohibitions prescribed in these Rules and Regulations or in a manner that creates or threatens to create conditions of pollution, contamination, or nuisance, as defined in Water Code Section 13050.

I.7 OTHER APPLICABLE CODES, RULES AND REGULATIONS

A. For regulations that are the same between potable and recycled water, use applicable regulation sections of already adopted for potable water systems by the City of Escondido. Refer to the division/department shown for current regulation(s).

ITEM/ISSUE	CONTACT
Amendments	Utilities Division (Administration)
As-built drawings	Engineering Division (Office Section)
Backflow prevention	Utilities Division (System Maintenance)
Billing and payments	Finance Department (Utility Billing)
Contracts and agreements	Utilities Division (Utility Billing)
Deposits	Finance Department (Utility Billing)
Enforcement: Under construction Existing	Engineering Division (Field Office) Utilities Division (Administration)
Establishment of rates, fees, charges	Utilities Division (Administration)
Fines/Penalties	Utilities Division (Administration)
Inspection	Engineering Division (Field Office) Utilities Division (Administration)

Materials	Utilities Division (Administration); Utilities Division (System Maintenance)
Metering	Utilities Division (System Maintenance)
Meter Reading	Finance Department (Utility Billing)
Meter Testing	Utilities Division (System Maintenance)
Notices	Engineering Division (Field Office); Utilities Division (Administration)
Out-of-District service	Utilities Division (Administration)
On-site system testing	Utilities Division (System Maintenance)
Off-site system testing: Under construction Existing	Engineering Division (Field Office) Utilities Division (System Maintenance)
Permit revocation	Utilities Division (Administration)
Plan submittal	Engineering Division (Office Section)
Service area	Utilities Division (Administration)
Service start-up	Finance Department (Utility Billing)
Service termination	Finance Department (Utility Billing)
Temporary service connections	Utilities Division (Administration)
Turn-ons/offers	Finance Department (Utility Billing)

LOCATION

PHONE

- Public Works Department

- Engineering Division (Office Section) City Hall 839-4651
- Engineering Division (Field Office) City Hall 839-4664
- Utilities Division (Administration) HARRF 839-6299
- Utilities Division (System Maintenance) P.W. Yard 839-4668

- Finance Department

- Utility Billing City Hall 839-4676

- B. Other applicable guidelines, rules and regulations, ordinances, specifications that govern the use of recycled water within the City include (see "References" for specific contacts):

DOCUMENT TITLE	DOCUMENT NO.	AGENCY/ORGANIZATION
Wastewater Reclamation Criteria	Title 22 Division 4	California Dept. of Health Services
Regulations Relating to Cross-Connections	Title 17	California Dept. of Health Services
Guidelines for Use of Recycled Water	-	California Dept. of Health Services
Guidelines for the Use of Recycled Water for Construction Purposes	-	California Dept. of Health Services
Guidelines for Worker Protection at Water Reclamation Use Areas	-	California Dept. of Health Services
Guidelines for Use of Recycled Water for Irrigation and Impoundments	-	California Dept. of Health Services
Criteria for the Separation of Water Mains from Sanitary Sewers and Pipes Carrying Recycled Water	-	California Dept. of Health Services
Guideline for the Preparation of an Engineering Report on the Production, Distribution, and Use of Recycled Water	-	California Dept. of Health Services
Criteria for Mosquito Prevention on Wastewater Reclamation or Disposal Projects	-	California Dept. of Health Services
Guidelines for Distribution of Nonpotable Water	-	California-Nevada Section American Water Works Association
Manual of Cross-Connection Control	-	Foundation for Cross-Connection Control and Hydraulic Research, School of Engineering, University of Southern California
Uniform Plumbing Code	-	International Association of Plumbing and Mechanical Officials
Ordinances and Reports	-	City of Escondido
Recycled Water Plan Check and Inspection Manual	-	County of San Diego, Department of Environmental Health

SECTION II

ADMINISTRATIVE REQUIREMENTS

II.1 PERMIT APPLICATION PROCESS

A completed application for recycled water service must be submitted to the City by the owner, or authorized representative of the property which is intended to be served with recycled water. The City issuing a Permit for Recycled Water Service shall indicate approval for service. This permit shall be in addition to permits and conditions required by all other regulatory agencies.

The steps for obtaining recycled water service are listed in Appendix 2.

The City shall furnish the application form upon request by prospective users. A sample application form is included as Appendix 3 of this document.

The applicant shall supply information concerning:

- Applicant's interest in the subject property as legal owner, tenant, or lessee
- Description of recycled water use on the property
- Legal description of property
- Technical information (listed on the application form)
- Total irrigated acres
- Special conditions (other items that could be of concern when using recycled water)
- A drawing of the property on one, 8-1/2 x 11 paper sheet. Include/show:
 - Location of service connection, recycled and potable water main lines
 - Size of service connection
 - Use area location
- Areas to be served with recycled water and areas excluded from recycled water service
- A brief description of all special construction requirements
- Expected minimum and maximum demands, both present and future
- Operating pressure of irrigation system

The applicant shall state by signature on the application form that he agrees to comply with these rules and regulations and any and all other applicable governing documents.

The following items are to be included in an application package:

- Completed application form
- Required drawing(s)
- Required fees and deposits

Upon receipt of a completed application package, the City shall review the material and respond within 45 calendar days of receipt of the application package. The City may research additional information it deems necessary. The City shall determine if the property to be served is in a suitable area for recycled water use, and if the necessary quantity and quality of recycled water can be made available to the applicant. The City may prescribe specific requirements for service, which may concern:

- Additional facilities to be constructed
- Manner of construction
- Financial responsibility
- Use of recycled water

Upon successful completion of its review, the City shall submit the application package to the San Diego Regional Water Quality Control Board (RWQCB), the San Diego County Department of Environmental Health (DEH), and the State Department of Health Services for their review and/or approval.

Upon review and/or approval of the application package by the RWQCB and the San Diego County Department of Environmental Health (DEH), the applicant will be requested to submit detailed construction plans (blueprints), the construction schedule and pay required fees to the City.

The City will issue a Permit for Recycled Water Service upon completion of the steps listed in Appendix 2. The permit shall be the binding agreement between the City and the user. Final (as-built) drawings will be submitted to the City upon project completion.

A new application must be submitted to reinstate a permit that has been cancelled.

II.2 PERMITS

A City of Escondido Permit for Recycled Water Service must be obtained by the user to receive recycled water on any property.

Permits to receive recycled water service or any connection for service made as provided in the permit issued under these Rules and Regulations pursuant to receipt of an application for such service shall be subject to the following conditions:

- A. The applicant shall adhere to requirements prescribed by these rules and regulations and to all additional requirements prescribed by all governing agencies pertaining to recycled water service.
- B. The applicant shall pay specified connection fees, service line charges and other charges prior to issuance of the permit. The amounts of these charges are available from the Utility Billing Division of the Finance Department.
- C. In order to maintain acceptable working conditions throughout the recycled water system, the City may schedule recycled water use. Such scheduling may involve programming deliveries to different users and/or to various portions of a single user's on-site system. Any scheduling shall consider applicable constraints of all involved regulatory agencies, these Rules and Regulations, and the operating constraints of the affected users.
- D. The City may temporarily terminate recycled water service when: (1) at any time recycled water at the terminal point of the City reclamation does not meet the requirements of the regulatory agencies; (2) maintenance of the system is required; (3) an emergency exists. Recycled water service would, in such case, be restored when the recycled water meets the governing requirements at the terminal point of the treatment plant. The City may provide recycled water service from other approved sources. In addition, approved air gap separations may be used to provide potable water to the recycled water system to ensure water service.
- E. The City may apply for and process all applicable regulatory agency permits. The cost and preparation of any study or report necessary to comply with California Environmental Quality Act (CEQA) or other regulatory requirements shall be the responsibility of the applicant. Please see the figure titled "Project Flow Chart" at the end of Section IV.
- F. The use permit shall come into force after the project has been completely constructed, tested and been approved by the involved agencies.

- G. A copy of the current permit must be available for review at all times, clearly visible at the use site, and on file at the user's office.
- H. The use permit shall include the following:
- (1) Name and address of owner and user.
 - (2) A statement that no changes in the proposed system will be undertaken without applying for an amended City of Escondido permit.
 - (3) A statement that the applicant recognizes potential penalties for violation of the rules and regulations of the City and any regulatory agencies.
 - (4) Specific quantity of recycled water to be used. The following must be identified:
 - Average annual AF used
 - Maximum GPM needed at the POC as shown on the plans
 - (5) Permitted/ approved uses.
 - (6) Rate(s) charged for recycled water.
 - (7) Property location and estimated irrigated acres.
- I. The use permit shall stay in effect indefinitely, but shall be cancelled if:
- (1) A change of ownership occurs.
 - (2) A change of user occurs.
 - (3) A change of recycled water use occurs.
 - (4) A violation of these rules and regulations occurs and results in a system turn-off.
- J. A new application must be submitted to reinstate a permit that has been cancelled.

II.3 CONTRACTS/AGREEMENTS

All contracts for recycled water shall be subject to these Rules and Regulations. No applicant shall be entitled to a contract unless authorized by the City. The terms and conditions of contracts authorized by the City shall be established by the City, in its sole discretion. Each contract must be in writing and be approved by the City to be valid. The City is not obligated by these rules and regulations to approve any contract.

II.4 RATES, FEES, CHARGES, DEPOSITS

A. General

All rates and fees regarding recycled water service and their administrative costs shall be fixed and established by the City Council. The most current rate and fee schedule is available from the Utility Billing Division of the Finance Department. Any changes in fee schedules shall be automatically adopted into these Rules and Regulations for Recycled Water Service.

Applicants for recycled water service shall pay their fair share for the construction of facilities needed to deliver recycled water to the applicant's property. All fees and estimated construction costs shall be paid prior to construction; however, the City may reimburse the applicant for a portion of the cost of such facilities as set in Section II.4.E.

B. Change of Rates or Charges

The City reserves the right to change the schedule of recycled water rates, service charges and any other charges, deposits, or fees at any time. These changes are subject to the terms of any existing recycled water service permits (and/or agreements) and will be made by appropriate action of the City.

C. Temporary Service

The charges for recycled water sold through temporary meters shall be billed and paid as specified by the Utility Billing Division of the Finance Department.

D. Automatic Rate Adjustment

Effective January 1 of each year, all recycled water rates and charges shall be automatically adjusted by the Consumer Price Index increase, if any, for the previous four quarters ending September 30, unless the City chooses to adopt an alternative rate schedule.

E. Financial Participation By City

Under certain circumstances, the City may contribute to the cost of constructing the facilities needed to deliver recycled water to an applicant's property. Subject to the availability of funds, the City may:

- (1) Reimburse an applicant for costs incurred to install oversized facilities.
- (2) Elect to participate in or construct trunk lines, main lines, reservoirs, pumping stations or other facilities, as it determines necessary, and/or as funds are available.

SECTION III

TECHNICAL REQUIREMENTS

III.1 SIZE, LOCATION AND INSTALLATION OF SERVICE LINE

The City reserves the right to determine the size and location and/or type of:

- recycled water service lines
- service connections
- meters
- backflow protection devices and any/all other appurtenances included to the service area.

The recycled water service lines shall be extended to a curb line or property line of the customer's property abutting upon a public street, highway, road or City easement in which is installed recycled water mains.

III.2 SERVICE CONNECTION LIMITATIONS

Permits for Recycled Water Service shall be issued under the following conditions:

- A. The City reserves the right to limit the area of land under one ownership or homeowner's association to be supplied by one recycled water service connection and one recycled water meter.
- B. A recycled water service connection and its corresponding meter shall not be used to supply adjoining property of a different owner.
- C. A service connection shall not be used to supply adjoining property of a different owner, or to supply property of the same owner across a road, street or other public right-of-way. When a property provided with a recycled water connection and corresponding meter is subdivided, such connection and meter shall be considered as serving the lot or parcel of land on which the meter is located. Additional recycled water mains and/or recycled water service lines will be required for all subdivided areas in accordance with these rules and regulations.
- D. Irrigation systems in homeowner's associations and other developments where landscaping around homes and in common areas are served with one meter, shall be allowed to cross roads, streets, or other right-of ways within the association's property.
- E. All recycled water used on any property where a meter is installed must pass through the meter. Customers shall be held responsible and charged for all recycled water passing through their meters.
- F. Every recycled water service line installed by the City shall be equipped with a curb stop or wheel valve on the inlet side of the meter. The valve or curb stop is to be used only by City personnel to control the recycled water supply through the water service line. If the wheel valve or curb stop is damaged by the customer or his/her use of recycled water to an extent requiring replacement, then the customer shall bear full financial responsibility.

G. Service Pressure:

When a reasonable service pressure would not be available to on-site facilities not previously served from the potable water system, the user shall be responsible for correcting this situation. If available service pressure is too high, the user shall utilize pressure regulator(s) downstream of the meter to obtain the correct pressure. If available pressure is too low, the user shall provide booster pumping to increase the pressure.

When a reasonable service pressure would not be available to on-site facilities previously served from the potable water system, correcting this situation upon conversion to the recycled system shall be handled as follows:

- (1) If user-provided booster pumping or pressure regulation was required for on-site facilities when service was provided from the potable system, then any booster pumping or pressure regulation required for recycled water service shall be provided by the user. If on-site booster pumping is required, a reduced pressure backflow preventer must be installed at the recycled water POC to eliminate the possibility of backflow into the City system.
- (2) If reasonable service pressure was available for the on-site facilities when service was provided from the potable system, then any action needed to provide recycled water service shall be considered on a case-by-case basis in conjunction with the City.

H. Service is commenced after issuance of a Permit for Recycled Water Service by the City.

III.3 RELOCATION OF RECYCLED WATER SERVICE LINES

Should a recycled water service line installed according to the directions of the applicant, owner, or customer (user) be of the wrong size, or installed at a wrong location or depth, the cost of relocation or removal shall be paid for by the user where the error was that of the user or the user's representative. All services provided prior to final street improvements shall be considered temporary and the costs for any repairs or changes to on-site facilities required to be performed by the City shall be paid by the user.

III.4 PROTECTIVE MEASURES

The following provisions are to protect the City potable water supplies against actual, undiscovered, unauthorized, or potential cross-connections to the user's recycled water system. These provisions are in addition to, not in lieu of, the controls and requirements of other regulatory agencies. These provisions are in accordance with Title 17 (Public Health) of the California Administrative Code. These regulations are intended to protect the City potable water supplies and are not intended to provide regulatory measures for protection of users from the hazards of cross-connections within their own property.

Approved reduced pressure backflow prevention devices on the City potable water services to the property, as required in these provisions, shall be provided, installed, tested and maintained by the user at user expense. The user shall be responsible for testing the devices and providing test certifications to the City prior to putting the devices into service and at least once every 12 months thereafter. These devices shall be located on the property served immediately downstream of the meter and shall not be on the City facilities. All devices shall be readily accessible for testing and maintenance and no device shall be submerged at any time.

When water service is initiated, the applicant must provide sufficient information, including plumbing and building plans, to enable the City to determine the level of backflow protection required. The proper backflow protection, as determined by the City pursuant to Title 17 CCR regulations, shall then be installed and inspected before water service is provided.

Each time there is a change of customer (either owner or tenant) on any commercial or industrial premise, the owner or customer shall notify the City immediately. The City will then reassess the level of protection required. Also, any alterations to existing on-site facilities that may affect required protection level must be reported immediately to the City.

At their discretion, representatives of any health agency having jurisdiction and the City may conduct surveys of any property where the City provides water service. These surveys are to determine if any actual or potential cross-connections exist. The applicant, owner, or customer shall provide full cooperation in facilitating these surveys.

A. Where protection is required:

Approved reduced pressure backflow protection for potable water supplies shall be provided as follows:

- (1) Each City water service connection that supplies potable water to a premises having an auxiliary water supply that is not accepted as a potable source by the City and/or is approved for such use by the San Diego County Department of Environmental Health (DEH) shall be protected against backflow from the premises into the City water systems.
- (2) Each City water service connection for supplying potable water to premises on which any substance is handled in such a fashion as to permit entry into the City water system from the premises shall be protected against backflow of the water from the premises into the City water system. This shall include, but not be limited to, the handling of process waters, waters originating from any of the City water systems that have been subject to deterioration in quality and agricultural use.
- (3) Reduced pressure backflow devices shall be installed where premises have intricate plumbing and piping arrangements or where not all portions of the premises are readily accessible for inspection.
- (4) Reduced pressure backflow protection may be required at premises where there has been a history of cross-connections being reestablished.

B. Other Measures

- (1) Water meters used for recycled water service shall be tagged or color-coded with City approved purple paint. (See Section V, Supplement A, Construction Specifications for Irrigation Systems Using Recycled Water). These meters shall not be interchanged or used for potable water service after repairs and/or meter testing have been performed.
- (2) Periodic inspection of the recycled water facilities will determine if all identifying items are still clearly discernible. If not, they should be replaced, repaired or refurbished as needed. These items include:
 - Warning tags
 - Painted surfaces
 - Warning tape
 - Identification tape
 - Covers, caps, signs
 - Other items that indicate recycled water is being used
- (3) Shut down testing of the recycled water system by the City shall meet Title 22 CCR and Regional Water Control Board requirements and shall occur when needed, to determine the existence of any cross-connections or backflow conditions into the potable water system.

- (4) In the event of contamination or pollution of a City potable water system due to a cross-connection or other failure, the State Department of Health Services, San Diego County Department of Environmental Health (DEH) and the City shall be promptly notified, so that appropriate measures will be taken to correct the problem.
- (5) The State and County Health Departments and the City shall be kept informed by written document of the identity of the person responsible for the user's recycled water system on all premises concerned with these rules and regulations. At each authorized use area, an "On-site Recycled Water Supervisor" shall be designated. The supervisor shall complete the County Water Authority Recycled Water Site Supervisor training class. This supervisor shall be responsible for:
 - a. The installation and use of all components of the on-site recycled water system(s)
 - b. Prevention of cross-connections and other potential hazards
 - c. Change in use of recycled water
 - d. Enforcement of recycled water user rules and regulations
 - e. Maintenance of recycled water system plan in "as built" form
- (6) The user shall be responsible for providing, installing and maintaining all backflow devices that protect the City recycled water distribution system, if the City deems such devices necessary.

C. Water Service Termination

When the City determines that recycled water uses or conditions encountered by the City represent a clear and immediate hazard to the City potable and/or recycled water supply that cannot be immediately removed or corrected, the City shall begin the procedure for terminating recycled water use. Conditions or uses that create a basis for termination include, but are not limited to:

- (1) Refusal to install a required backflow prevention device.
- (2) Refusal to test a backflow prevention device.
- (3) Refusal to repair or replace a faulty backflow prevention device.
- (4) Direct or indirect connection between the City potable and recycled water systems.
- (5) Direct or indirect connection between the City recycled water system and a system or equipment containing contaminants.
- (6) A situation which presents an immediate health hazard to the City potable and/or recycled water system, as determined by the City or other regulatory agency.

III.5 TYPE OF PROTECTION

The level of protection required is related to the degree of hazard that exists on the premises served. Listed in increasing levels of protection, the following protective devices may be required: Double Check Valve (DC), Reduced Pressure Principle Backflow Prevention Device (RPPD), and an Air Gap Separation (AG). The user may choose a higher level of protection than required by the City. Minimum types required, relative to various situations, are listed below. Situations not listed shall be evaluated on a case-by-case basis and the appropriate level of protection required shall be determined by the City and San Diego County Department of Health Services. These shall include situations where on-site conditions could impact the recycled water quality.

<u>DEGREE OF HAZARD</u>	<u>REQUIRED MINIMUM BACKFLOW PREVENTION</u>
A. Sewage and Hazardous Substances	
Premises where the City potable water system is used to supplement the recycled water supply	AG
Premises where there are wastewater pumping and/or treatment plants and there is no interconnection with the potable water system. This does not include a single-family residence that has a sewage lift pump. A RPPD may be provided in lieu of an AG if approved by the health agency and the City.	AG
Premises where hazardous substances are handled in any manner in which the substance may enter the potable water system. This does not include a single-family residence that has a sewage lift pump. A RPPD may be provided in lieu of an AG if approved by the San Diego County Department of Environmental Health (DEH) and the City.	AG
Premises where there are irrigation systems into which fertilizers, herbicides, or pesticides are, or can be, injected.	RPPD
B. Premises where entry is restricted so that cross-connection inspections cannot be made with sufficient frequency or at short notice to assure that cross-connections do not exist.	RPPD
C. Premises where there is a repeated history of cross-connections being established or reestablished.	RPPD
D. Auxiliary Water Supplies	
Premises where an approved auxiliary water supply is interconnected with the public water system. A RPPD or DC may be substituted for an AG if approved by the San Diego County Department of Environmental Health (DEH).	AG
Premises with an approved auxiliary water supply and there are no interconnections with the City water system. A DC may be substituted for a RPPD if approved by the San Diego County Department of Environmental Health (DEH).	RPPD
E. Fire Protection Systems	
Premises where the fire system is supplied from the City water system and there is an unapproved auxiliary water supply on or next to the premises (<u>not interconnected</u>).	DC
Premises where the fire system is supplied from the City water system and interconnected with an unapproved auxiliary water supply. A RPPD may be substituted for an AG if approved by the San Diego County Department of Environmental Health (DEH).	AG
Premises where the fire system is supplied from the City water system and where either elevated storage tanks or fire pumps that take suction from private reservoirs or tanks are used.	DC

III.6 INSPECTION AND MAINTENANCE OF PROTECTIVE DEVICES

The user is responsible for inspection and testing of all backflow prevention devices at least once a year, or more often in those instances where successive inspections indicate repeated failure. All inspections shall be performed at the user's expense by a tester certified by the State or County Health Department. These devices shall be repaired, overhauled and/or replaced at the expense of the user whenever they are found to be defective. These devices shall also be tested immediately after they are installed, relocated or repaired. The user shall maintain records of all such tests, repairs and overhauls. These records shall be made available to the State and County Health Departments upon request and sent to the City annually. In the event that the user does not present the required records and certifications to the City as prescribed above, the City shall have the right to perform all testing and charge the user for all costs associated with performing such services.

III.7 FACILITIES DESIGN

The design of off-site facilities, including the preparation of plans and construction specifications shall be under the responsibility of an engineer registered in the State of California. The design of customer (on-site) facilities that will use recycled water (including preparation of plans and construction specifications) shall be under the responsibility of an engineer currently registered with the State of California. **Please refer to Appendix 7 for notes and miscellaneous items to be included on the plans and/or specifications.**

Before the City grants final acceptance of any system using recycled water, as-built drawings shall be provided as specified in Section II.1. The installed system shall be tested in accordance with the City Standard Specifications to ensure that the system is in full compliance with these rules and regulations. Refer to Construction Specifications for Recycled Water Service, section 12 for details on hydrostatic testing.

A. General

- (1) All off-site and on-site recycled water facilities shall be designed and constructed according to the requirements, conditions, standards, provisions and prohibitions as adopted in the City Standard Specifications, these Rules and Regulations, requirements specified in the California Code of Regulations, Title 22, and waste discharge permit issued to the City by the California Water Quality Control Board, San Diego Region. Recycled water systems, both on-site and off-site, shall be separate and independent of any potable water systems.
- (2) Where the premises contain dual or multiple water systems, the exposed portions of pipelines shall be identified at sufficient intervals to distinguish clearly, which water is safe for drinking purposes and which is not safe. All outlets intended for drinking purposes shall be clearly marked to indicate this fact.
- (3) Areas irrigated with recycled water must be kept completely separated from domestic water wells and reservoirs. Recycled water shall not be applied or allowed to migrate to within 500 feet of any well used for domestic supply or within 100 feet of any irrigation well unless it can be demonstrated that special circumstances justify lesser distances to be acceptable.
- (4) Adequate means of notification should be provided to inform the public, employees and others that recycled water is being used. Conspicuous signs with appropriate wording that can be clearly read should be placed at adequate intervals around the authorized use area.

- a. Golf courses should print messages on score cards in a different color indicating recycled water is being used. Water hazards containing recycled water should be posted with appropriate signs.
- b. Spanish in addition to English should be used on signs where appropriate.
- c. Refer to Section V, Supplement A, Construction Specifications, Item 16, "Warning Signs," for further details.

B. Off-site facilities

Any off-site recycled water distribution facilities, to the extent determined by the City, required to serve within developments of the property within the City shall be provided by the applicant, owner, or customer at their expense, unless the City determines it is a City benefit to construct these capital facilities.

Plans and specifications for all recycled water distribution facilities shall be submitted to and approved by the City, County DEH or State DOHS in advance of construction.

The City will assume responsibility for providing recycled water service to the point of connection of such development upon transfer to the City of title to all off-site recycled water systems and any necessary easements. All easements shall be in a form acceptable to the City and not subject to outstanding obligations to relocate such facilities or any deeds of trust, except in instances where such is determined by the City to be in the best interest of the City.

The property owner, proponent, or developer may request that the City enter into a reimbursement agreement for the portions of a system which are required to be oversized with capacity to supply more recycled water than the property owner, proponent or developer requires. The decision to enter into a reimbursement agreement shall be made by the City.

C. On-site facilities

Any on-site recycled water facility shall be provided by the applicant, owner, or customer at his expense. The applicant, owner or customer shall retain title to all on-site facilities.

When the City Rules and Regulations for Recycled Water Service and/or Standard Specifications require a higher quality material, equipment, design or construction method than that required by other governing codes, rules and regulations, the Standard Specifications shall take precedence.

On-site recycled water facilities shall conform to local governing codes, rules and regulations as indicated in Section I.7.B. Facilities shall be designed to minimize the potential for windblown spray, surface runoff, or ponding.

D. Interim Service

In areas where recycled water is not immediately available when the use area is ready for construction, and if the City has determined that recycled water will be supplied in the future, on-site facilities shall be designed to use recycled water. Provisions shall be made and these Rules and Regulations followed to allow for connection to the City off-site recycled water facilities when available. In the interim, potable or other suitable water may be supplied to the on-site facilities through an "interim service connection" that meets State DOHS requirements.

- (1) Conditions of interim service are:
 - a. The City anticipates recycled water will be available to the site within five years of the time interim service is initiated.
 - b. The applicant must obtain a Permit for Recycled Water Service.
 - c. The applicant must agree to perform all work necessary to make connections to the permanent recycled water system once installed by the City.
- (2) An approved backflow prevention device is required on the interim service as long as the on-site facilities are using an alternate source of water. The backflow preventer shall be at the POC with the interim supply system and a part of the on-site recycled water facilities. The City will remove the interim connection at the user's expense and will make the connection to the on-site facilities when recycled water becomes available.
- (3) Future recycled water customers will pay for the following:
 - a. Cost of constructing and abandoning the interim service
 - b. Applicable recycled water fees at the time service becomes available
 - c. Applicable interim water rates for the type of water delivered through the interim service.
 - d. All costs associated with converting the existing on-site system from the current service to recycled water.
- (4) When recycled water is available to the site, an inspection of the on-site facilities will be conducted by the City, and depending upon the time interval between initial site approval and recycled water delivery, County DEH or State DOHS to verify that the facilities have been adequately maintained are still in compliance with the recycled water use permit. Recycled water service shall be provided upon verification of compliance. If the facilities are not in compliance, the City shall notify the user to correct the situation.

III.8 CONSTRUCTION

A. New

Specifications for construction of all new recycled water systems, both on-site and off-site, are included as Supplement A to this document. Construction of all recycled water facilities will follow the Standard Specifications for Public Works Construction (currently adopted edition) unless the Construction Specifications for Recycled Water Service direct differently. It is the responsibility of the inspector to verify compliance with all specifications. County DEH or State DOHS should be included in new recycled water plan review.

B. Conversion to recycled water use

Where it is planned that an existing nonrecycled water system be converted to a recycled water system, detailed investigations of the facilities shall be paid by the user. On a case-by-case basis, the City shall review the as-built drawings, prepare required reports for the user, and determine the measures necessary to bring the system into full compliance with these rules and regulations. The San Diego County Department of Environmental Health (DEH) shall also review and approve all conversions. No existing potable water facilities shall be connected to or incorporated into the recycled water system without City and other regulatory agency testing and approval.

C. Conversion from recycled water use

If, due to on-site failure of the recycled water system or use violations, the City determines it necessary to convert on-site facilities from a recycled water supply to a potable or other water supply, it shall be the responsibility of the user to pay all costs for such conversion, unless determined otherwise by the City. Conversion costs shall include the following:

- (1) Isolation of the recycled water supply. Service shall be removed and plugged by the City at the City main or abandoned in a manner approved by the City Engineer.
- (2) Installation of approved backflow prevention devices. The user shall install approved backflow devices on all potable, or other water meter connections.
- (3) Removal of any/all special recycled water quick couplers. The user shall be responsible for replacement with quick couplers approved for potable water systems.
- (4) Notification to all on-site personnel involved.
- (5) Removal of all warning labels/signs.
- (6) Installation of all potable waterlines and facilities and any capacity fees due, as provided for in the City "Rules and Regulations for Water Service."

III.9 EMERGENCY CONNECTION FROM RECYCLED WATER SYSTEM TO POTABLE WATER SYSTEM

If the City determines an emergency exists where all or parts of the recycled water system are unable to provide recycled water, the City may approve a temporary connection to the potable water system. Before such temporary connection is made, the portion without recycled water shall be isolated by an air gap separation from the remainder of the recycled water system. This isolation shall occur at either individual services or on the off-site system, as determined by the City. An approved backflow prevention device or other devices as directed by Section III.4-5 shall be installed on the potable water lines in accordance with these rules and regulations and all other applicable regulations of the governing agencies. The emergency connection shall be removed before connection is reestablished to the remainder of the recycled water system. The emergency connection called out in this section must be approved by State DOHS. A swivel-ell type connection has been approved for emergency uses, provided criteria specified by the State DOHS is strictly adhered to and written approval is obtained from the potable water purveyor, recycled water purveyor, and/or local and state health agencies.

Reestablishment of recycled water service must be inspected and approved by the City inspector prior to resuming delivery of recycled water.

Supplemental emergency supplies will be delivered at the rate then in effect for the type of alternate water used.

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SECTION IV

FACILITIES OPERATION

IV.1 OFF-SITE FACILITIES

Operation, maintenance and surveillance of all City off-site recycled water systems including, but not limited to, recycled water pipelines, valves, connections, storage facilities and other related equipment and property up to and including the meter, shall be under the management and control of the City. No other persons except authorized representatives of the City shall have the right to enter upon any of the City off-site facilities. Only City personnel and their representatives shall operate, adjust, change, alter, move or relocate any portion of the off-site recycled water system.

IV.2 ON-SITE FACILITIES

A. General:

The operations, surveillance, repair, and maintenance of all customer recycled water facilities is the responsibility of the user. The user's designated "On-site Recycled Water Supervisor" shall bear this responsibility.

B. The user shall have the following responsibilities pertaining to operation of on-site facilities:

- (1) To ensure that all operations personnel are trained and familiarized with the use of recycled water.
- (2) To furnish their operations personnel with maintenance instructions, irrigation schedules, controller charts and as-built drawings to ensure proper operation in accordance with the on-site facilities design and these rules and regulations.
- (3) To prepare and submit to the City one reproducible set of as-built drawings.
- (4) To notify the City in writing and in a timely manner of all updates or proposed changes, modifications, or additions to the on-site facilities. All updates and proposed changes shall be approved by the City prior to construction in accordance with City procedures. All updates and proposed changes shall comply with these rules and regulations and governing documents of all other regulatory agencies.
- (5) To ensure that the operation and maintenance of all recycled water facilities remain in accordance with these rules and regulations and other documents governing recycled water systems within the City.
- (6) To operate and control the system in order to prevent direct human consumption of recycled water and to use best management practices to control and limit surface runoff, windblown spray, and ponding. The applicant, owner, or customer shall be responsible for any and all subsequent uses of the recycled water. Operation and control measures to be utilized in this regard shall include where appropriate, but not limited to the following management control measures:
 - a. On-site recycled water facilities shall be operated to prevent or minimize discharge onto areas not under control of the customer so as to minimize public

contact. Full circle sprinklers shall not be used adjacent to sidewalks, roadways and property lines in order to confine the discharge to the use area.

- b. The operation of the on-site recycled water facilities shall be during periods of minimal human use of the service area, i.e., 10:00 p.m. to 5:00 a.m. Consideration shall be given to allow a maximum dry-out time before the irrigated area will be used by the public. For agricultural operations, the soil moisture reservoir shall be depleted (dried) by at least 30% before harvest.
- c. Adequate first aid kits should be available on the premises. All cuts and abrasions should be promptly treated to prevent infection. If infection is likely, a physician should be consulted.
- d. Recycled water should be applied at a rate that does not exceed the infiltration rate of the soil. Where varying soil types are present, the design and operation of the recycled water facilities shall be compatible with the lowest infiltration rate of the soils present.
- e. When the application rate exceeds the soil infiltration rate, automatic controller systems shall be utilized to eliminate ponding and run-off of recycled water. Total sprinkler runtimes shall not be greater than the time needed to supply the landscape's water requirement. If run-off occurs before the landscape's water requirements are met, the automatic controllers shall be reprogrammed with additional watering cycles of shorter duration to meet the requirements. This method of operation is intended to control and eliminate run-off.
- f. The user shall report to the City any/all failures in the recycled water system that causes an unauthorized discharge of recycled water.
- g. If manipulation of sprinkler application rates and duration is unable to limit surface runoff, the City may (1) require the installation of physical facilities (i.e., runoff control berms) or (2) may revoke the user's recycled water permit.
- h. All drinking fountains and designated eating areas located within the approved use area, designated by the user permit, shall be protected by location and/or a structure from contact with recycled water to the maximum extent possible. Windblown spray, direct application through irrigation or other approved uses are considered sources of recycled water. Protection shall be by design, construction practice, or system operation.
- i. Facilities that may be used by the public including, but not limited to, eating surfaces and playground equipment and located within the approved use areas designated by the user permit, shall be protected by siting and/or structure from contact with recycled water to the maximum extent possible. Windblown spray, direct contact by irrigation application, or other approved uses are considered sources of recycled water. Protection shall be by design, construction practice, or system operation.

C. The user shall enforce the following prohibitions:

- (1) Cross-connections

Cross-connections as defined by the California Administrative Code, Title 17, resulting from the use of recycled water or from the physical presence of a recycled water service, whether by design, construction practice, or system operation, are prohibited.

(2) Disposal in unapproved areas

Disposal of recycled water for any purposes, including approved uses, in areas other than those specifically approved in the currently effective user permit issued by the City, and without the prior knowledge and approval of the governing regulatory agencies, is prohibited.

(3) Fire hydrants

Use of installation of fire hydrants on any customer water system that presently operates or is designed to operate with recycled water, regardless of the fire hydrant construction or identification, is prohibited.

(4) Hose bibs

Use or installation of permanent hose bibs on any customer water system that presently operates or is designed to operate with recycled water, regardless of the hose bib construction or identification, is prohibited. Hose bibs may be used on quick couplers. See Section V, Supplement A, Construction Specifications, section 14 for details.

(5) Ponding

Conditions that directly or indirectly cause recycled water to pond either within or outside of the approved use area, whether by design, construction practice, or system operation are prohibited.

(6) Run-off

Conditions that directly or indirectly cause run-off of recycled water onto areas outside of approved use areas, whether by design, construction practice or system operation is prohibited.

(7) Unapproved uses

Use of recycled water for any purposes other than those specifically approved in the currently effective user permit issued by the City, and without the prior knowledge and approval of the governing regulatory agencies, is prohibited.

(8) Windblown spray

Conditions that directly or indirectly permit windblown spray to pass outside of the approved use area, whether by design, construction practice, or system operation are prohibited.

IV.3 MONITORING AND INSPECTION

The authorized representatives of the City shall monitor and inspect the entire recycled distribution facility, including both off-site and on-site facilities. Monitoring and inspection will be in accordance with Title 22 CCR and the Regional Board discharge permit requirements. The City shall conduct monitoring programs, maintain records as deemed necessary, inspect on-site facilities for compliance with these rules and regulations, and provide reports as requested by the regulating agencies. The City shall target providing comprehensive inspections on at least a semiannual basis for all reuse sites which report the annual use of more than 50 AF of recycled water, and on an

annual basis for facilities which use less than 50 AF of water. In addition to the comprehensive inspections, which are to include a detailed review of the operations of all on-site facilities, the City shall conduct more frequent compliance inspections for purposes of insuring that recycled water users are employing best management practices to eliminate ponding, windblown spray, surface runoff, or other undesirable irrigation practices. The City is to provide more frequent inspections of facilities for which:

- The City has received complaints of runoff, odors, or other nuisances; or
- City inspections or self-monitoring reports show instances of violations within the City's reuse ordinance or state

For these purposes, the manager or authorized representatives of the City shall have the right to enter upon the customer's premises during reasonable hours to inspect on-site recycled water facilities and approved use areas. Reasonable hours shall include hours when irrigation is occurring. The City, RWQCB, and San Diego County Department of Environmental Health (DEH) shall have the right to enter upon the customer's premises during reasonable hours, from time to time, to verify that the customer's irrigation practices conform with these rules and regulations. Where necessary, keys and/or lock combinations shall be issued to the City to provide such access upon a request during normal business hours of operation.

IV.4 MAINTENANCE RESPONSIBILITY

A. Recycled water system

The applicant, owner, or customer is responsible for maintaining all on-site facilities that are under the ownership of parties other than the City.

B. Obstruction in meter boxes

No person shall place, dispose, deposit or permit the placement, disposal, deposit of oil, toxic, hazardous or contaminated liquid or waste, trash, soil, building materials or other substances, objects, or obstructions in, on, or around meter boxes or other City facilities. No person shall allow or permit meter boxes or other City facilities from becoming obstructed or obscured by trees, shrubs, plants, or in any other manner so as to impede their use or access to them to make their use or access to them or make their location difficult to determine. If such substances, objects, or obstructions are not cleaned and removed or are permitted to obscure or impede use or access to such facilities, the City may accomplish the cleaning and removal at the user's expense. The City must provide reasonable notice to the user before assessing the charge.

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SECTION V

SUPPLEMENT A

**CONSTRUCTION SPECIFICATIONS FOR
IRRIGATION SYSTEMS USING RECYCLED WATER**

1. Work is to begin only after the contractor, installer, or user has obtained approval for recycled water use from the following regulatory agencies:

Required Permits and Approval

- (1) City of Escondido Utilities Division (permit)
 - (2) San Diego County Health Department (approval)
 - (3) City of Escondido Building Department (approval)
 - (4) City of Escondido Public Works Department (approval)
2. The step-by-step process for obtaining recycled water service is listed in Appendix 2 of the City of Escondido Rules and Regulations for Recycled Water Service.
3. Guidelines, ordinances, etc., from other regulatory agencies that govern the use of recycled water are listed in Section I.7.A-B of the City of Escondido Rules and Regulations for Recycled Water Service. Design and construction procedures shall be governed by the following currently adopted standards:
 - (1) The Standard Specifications for Public Works Construction (City Clerk)
 - (2) The City of Escondido Design Standards (Engineering Division)
 - (3) The City of Escondido Standard Drawings (Engineering Division)
 - (4) The San Diego Regional Standard Drawings (Engineering Division)

APPURTENANCE/REQUIREMENT	REFERENCE				
	STANDARD SPECIFICATIONS	CITY DESIGN STANDARDS	CITY STANDARD DRAWINGS	REGIONAL STANDARD DRAWINGS	OTHER
Air/vacuum valves:		X	X	X	
Backflow prevention:			X	X	*
Blow-off assemblies:		X	X	X	
Concrete:	X				
Concrete-cement pipe:	X	X			
Controllers (time clocks):				X	*
Copper pipe & fittings:	X				
Depth	(On-site):				**
	(Off-site):		X		

APPURTENANCE/REQUIREMENT	REFERENCE				
	STANDARD SPECIFICATIONS	CITY DESIGN STANDARDS	CITY STANDARD DRAWINGS	REGIONAL STANDARD DRAWINGS	OTHER
Ductile-iron & gray-iron pipe & fittings:	X				
Earth work:	X				
Fencing:	X				
Fittings and couplings:	X				**
Gaskets:	X				**
Hydrostatic testing:	X				
Installation:	X				
Meters:			X	X	
Micro-irrigation (drip emitters and mini-sprinklers):					*
Painting and coating:	X	X			*****
Pressure requirements:					***
Pumps:		X			
PVC material:		X			
PVC pipe sizing:					***
Quick couplers:					*
Separations:					****
Sprinkler heads:					*
Surge protection:		X			
Thrust blocks:	X	X			
Trenching/backfill/compaction:			X		
Valve boxes:				X	*
Valves:	automatic:				*
	manual:				*
Wiring:				X	***

- * City Parks & Recreation Department
- ** Plumbing Code (current edition)
- *** Rainbird Landscape/Irrigation Design Manual
- **** County Health Department Separation Standards (current edition) and State DOHS
- ***** City approved purple color

ADDITIONAL or UNIQUE specifications for recycled water systems are as follows:

1. Pressure

- a. The minimum pressure required to operate the recycled water system shall be maintained at the meter during peak use.
- b. Pressure regulating devices shall be installed where appropriate to prevent operating pressures from exceeding system designed pressure levels.
- c. Low-head drainage shall be minimized by the appropriate use of low-head drainage devices and/or sprinklers with built-in check valves.

2. Depth

Minimum depth from finished grade to top of buried pipe shall be as follows:

- a. Off-site: 36" (in the public right-of-way)
- b. On-site: Constant pressure pipe 3" and larger: 30"
Constant pressure pipe 2-1/2" and smaller: 18"

If these conditions cannot be met, refer to special construction requirements.

3. Separation

Horizontal - On new systems, potable water, recycled water, and sewer lines should be placed a minimum of four feet apart, or as directed by the project engineer, and/or regulatory agencies. **Measurements shall be between facing surfaces**, not pipe centerlines.

Vertical - On new systems, potable water, recycled water and sewer lines should be located from the ground surface in order of descending quality. Potable water shall be above recycled water which should be above sewer. Minimum vertical separation should be one foot **between top and bottom surfaces** of pipes. Exceptions to this general rule are as follows:

- a. On irrigation systems where intermittently pressurized recycled water lines (laterals) serve sprinkler heads, the potable water line(s) may be placed under the recycled water laterals. No special construction requirements are necessary provided that one-foot vertical separation is maintained.
- b. On sites using pressurized irrigation laterals with valve-in-head sprinklers, the potable water line(s) may be placed under the recycled water laterals if additional protection is provided for the potable line. Common practices include sleeving or automatic flow control/shut-off devices installed and functioning properly on each lateral that crosses a potable line. No additional special construction requirements are necessary provided that one-foot vertical separation is maintained.

4. Pipe Identification (mutually exclusive choices)

- a. All new buried PVC pressure pipe for recycled water shall be purple in color and marked on opposite sides to read "CAUTION - RECYCLED WATER - DO NOT DRINK" in intervals not to exceed 5' with 3/8" high letters. The recycled water PVC piping shall be installed with detectable tape.

- b. All new buried recycled water pipe that is not PVC shall be installed with warning tape. The plastic warning tape shall be an inert plastic film specifically formulated for prolonged underground use and shall be prepared with black printing on a purple field having the words "CAUTION: RECYCLED WATER" in 1" high letters. The minimum thickness shall be 4 mils and the overall width of the tape shall be 12".

Warning tape shall be installed directly on the top of the pipe longitudinally and shall be centered. The warning tape shall be installed continuously for the entire length of the pipe and shall be fastened to each pipe length by plastic adhesive tape banded around the pipe and warning tape at no more than 5' intervals. Taping attached to the sections of pipe before laying in the trench shall have 5' minimum overlap for continuous coverage.

- c. All exposed recycled water piping which is above ground or in vaults shall be painted with City approved purple paint, (See Section V, Supplement A), and shall be marked with tagging, warning tape or painted letters stating "CAUTION: RECYCLED WATER - DO NOT DRINK." Ultra-violet protection of PVC pipe must be provided.

If materials and warning tape are not available, other methods of identification may be approved by the City of Escondido upon approval from the San Diego County Department of Health Services.

5. Sprinklers and Other Water Application Devices

- a. New systems - All new recycled water application devices shall be identified as using recycled water. The devices shall have an identifying inscription cast/stamped on the most visible surface. This surface must be visible at all times. The identifying inscription shall inform the viewer that the device uses recycled water that is unfit to drink.
- b. Converted systems - The existing application devices may be used on a converted system, even though they do not comply with the above specifications (#5a). However, through attrition, all existing devices or components that do not comply with #5a shall be retrofitted with the proper equipment to maintain full compliance.

Where these specifications cannot be met, refer to Section III, Technical Requirements for details.

6. Valves, Check Valves, Flush-Out Valves, Pressure Regulators and Other Related Components

- a. All new recycled water equipment shall be painted with City approved purple paint.

OR

- b. All existing equipment shall be identified with tags or other devices that state "CAUTION: RECYCLED WATER - DO NOT DRINK." The tag must permanently attach to each component.

7. Magnetic Warning/Locating Tape

This tape is to be placed longitudinally and centered above all buried pressurized PVC recycled water pipe, approximately 24" directly above the top edge of the pipe. The fastening tape shall be wrapped/tied tightly around the pipe and loosely around the magnetic tape. Other means of attaching the tape to the pipe during backfill of trench may be used if suitable for the job as determined by the agency of the inspector.

- a. Minimum tape width: 3"
- b. The tape must be printed with the following words: "CAUTION: RECYCLED WATER - DO NOT DRINK."

8. Valve Boxes

Valve covers should be purple in color with required recycled water verbiage and symbol as part of the cover.

9. Quick Couplers and Risers

Quick cover couplers should be purple with the recycled water verbiage and symbol, and be of a locking type.

All new quick coupler valves used for recycled water shall be of a design that prevents the quick coupler (spike) from being used in potable water quick couplers. There are no quick coupler valves and spikes that are for exclusive use with recycled water.

On existing systems being converted to use recycled water, the quick coupler (spike) shall be colored purple.

All risers shall be considered an above ground new pipe. This includes existing risers on systems to be converted to recycled water use. They shall be identified in the same manner as outlined in specification 4a, 4b or 4c.

10. Conversion of Existing Potable Systems to Recycled Water

The San Diego County Health Department shall review the as-built drawings of the existing potable water system. The user shall accurately locate all pipelines and related equipment in the field. Additionally, a detailed report will be prepared by the user for the San Diego County Health Department, listing the measures determined necessary by the City of Escondido to bring the system into compliance with these specifications. Each system shall be considered, examined, converted, and approved on an individual basis.

All residents, landowners, etc., whose property is next to the converted system shall be notified of the intent and subsequent use of recycled water by the user prior to system operation. See Supplement B for specific details.

If the adjacent property or properties are not converted to recycled water use within six months of the conversion of the subject property, than separation between the recycled and potable use sites shall be in accordance with Appendix 7, note 25.

11. Controllers

All new controllers and/or controller boxes that utilize recycled water shall be colored purple to differentiate from those controllers that utilize potable water. Labels are to be placed inside and out signifying recycled water is being used. In addition, any important constraints or peculiarities of the system operation shall be posted on the inside cover of each time clock. All existing controllers and/or controller boxes shall be identified by painting purple, tagging or installing stickers that identify them as recycled water. Controller charts for each use site are to be maintained in the on site controller and by the City.

12. Hydrostatic Testing

All new and converted recycled water lines shall be tested with potable water as described in the governing specification. The City of Escondido will not permit recycled water into the system until all tests have passed and the system is ready for acceptance. If potable water is unavailable, non-potable water may be used for testing with approval from the regulatory agencies.

13. Backflow Prevention

Backflow prevention devices are not normally required on recycled water systems. If on-site conditions could impact the quality of the recycled water supply, a backflow prevention device shall be installed. Refer to Section III, Technical Requirements for this determination.

There shall be no physical connection between potable and recycled water systems. If potable water is required to supplement a recycled water supply, the potable water supply must be protected by an approved air gap.

14. Hose Bibs

Hard-lined (permanent) hose bibs are prohibited on recycled water systems.

Temporary hose bibs for spot watering or other approved uses may be used on quick couplers only. The hose bib/quick coupler assembly shall be colored purple. Use of the hose bib must be supervised at all times by the on-site manager or other responsible person. It is recommended to post temporary signs or barricades informing the public that recycled water is being used.

15. Strainers

It is recommended to install a straining device to protect the meter and other related equipment. Approved devices shall be a Y strainer, basket strainer or filter strainer, located immediately upstream of the meter. The type of strainer shall be called out on the plans.

Minimum mesh size is 30.

These devices shall also comply with specification #6 (identification).

16. Signs (recycled water use)

The recycled water sign must comply with the requirements of Title 22. Signs stating the use of recycled water for irrigation are required at any on-site field office or maintenance building established by the user. Signs shall be posted at other locations within the approved site at the discretion of the regulatory agencies on a case-by-case basis. The following locations and facilities may require signs:

- Storage facilities (temporary and permanent)
- Site entrances
- Information boards and kiosks
- Pump stations
- Public parks and recreation facilities
- Landscaped roadways

Signs are to convey a message stating that recycled water is being used at the site as part of the water conservation efforts of the local water purveyor. They should have a positive, promotional theme/ tone. Where appropriate, signs should explain that the irrigation components are colored purple to inform people that recycled water is not fit to drink.

The signs should have black or dark blue letters at least 2" tall on a purple background.

The signs shall be written in English and Spanish. See Figure V.1 in Supplement B of this section.

17. Drinking Fountains and Designated Eating Areas

New systems - Drinking fountains, picnic tables and benches, etc., shall be placed out of the irrigation area where recycled water is used to the extent possible. Or, the facilities should be placed so as to prevent being sprayed with recycled water. It is recommended that these facilities be constructed so that if they are to get sprayed by recycled water, they will drain and dry rapidly. **Drinking fountains and designated eating areas shall be protected from spray if they are located in the use area. The method of protection of public drinking fountains and other public facilities from recycled overspray shall be called out on the plans.**

Existing systems - On those areas where existing systems are converted to recycled water, drinking fountains, picnic tables and benches, etc., shall be moved or protected from direct spray of recycled water to the extent possible as determined by the regulating agencies on a case-by-case basis.

18. Construction

a. Uses

Recycled water may be used for soil compaction during grading operation, dust control, consolidation and compaction of backfill in trenches for:

1. Recycled water pipelines
2. Sanitary sewer pipelines
3. Storm drain channels and pipes
4. Gas and electric lines

Recycled water MAY NOT be used for water jetting or consolidation and compaction of backfill in potable water pipeline trenches.

b. Equipment

Water trucks, hoses, drop tanks, etc., shall be identified as containing recycled water which is not fit to drink.

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SECTION V

SUPPLEMENT B

RETROFITTING OF EXISTING SYSTEMS

INTRODUCTION

Recycled water is needed today to help supply the increasing need for potable water in the San Diego area. Depending on the quality, it can be used for many purposes. The state of California's Department of Health Services has defined and governs the use of recycled water in Title 22 of the California Water Code. As defined, recycled water is "Water that as a result of treatment of domestic wastewater, is suitable for a direct beneficial use or a controlled use that would not otherwise occur." Due to the source of this water, precautions must be taken that minimize the exposure of immediate users to any health risks. These precautions vary depending on the application and the level of water treatment. For this reason, recycled water systems are different from potable systems. Although using recycled water may appear to require considerable extra effort, the advantages soon prove otherwise. In the event a drought condition occurs, users of recycled water will have an uninterrupted source, that is, there will be no shortage of recycled water. For irrigation uses, recycled water has nutrient value, which is beneficial to growing healthy plants.

These guidelines are for the highest quality product that will be offered, disinfected tertiary recycled water. Most recycled water produced and used in San Diego County will be of this quality; however, there will be occasional opportunities where disinfected secondary recycled water will be sufficient for the application. In all situations, decisions for use will be made on a case-by-case basis.

This document is based on current Title 22 Regulations. At the time this is written, changes to Title 22 are being considered that would allow additional uses for recycled water. As this document and other governing regulations change, this guide will be updated to coincide with the current regulations.

GENERAL GUIDELINES/RULES

There are several rules to follow when converting any existing potable water system to recycled water. These rules apply anytime recycled water is used. Other more specific rules/guidelines are listed in the following sections:

- Agricultural operations
- Landscape irrigation
- Commercial/industrial uses
- Construction
- Recreation

Currently, the reclamation industry in California is promoting uniformity in various aspects of identification. Most signs have common messages; manufacturers are offering similarly identified products such as tags, tapes, etc. The common element linking these items is the color. Purple has been accepted by almost all reclamation agencies and is being promoted by the industry. This guide reflects these efforts and is written to promote this color.

1. **No cross-connections allowed.**

Cross-connections between potable and recycled water lines must be removed. The systems must be tested and approved by the inspector that none exist. The inspector must be an AWWA or equivalent certified Cross-Connection Control Specialist, certified by the San Diego County Department of Health Services.

2. **Most existing equipment can be used.**

It is intended that the use of recycled water be compatible with existing equipment. In most cases, existing equipment can be used, however, on a case-by-case basis, each project will be reviewed for required equipment alterations. This will occur most in landscape irrigation systems due to the extent of public exposure.

3. **Backflow Prevention Devices may be required.**

These devices will be required on the potable water system if recycled water is used on-site. If the City determines that on-site conditions could affect the recycled water quality, then backflow devices will be required on the recycled water service line.

4. **Each Point of Connection (POC) must be identified as using recycled water.**

Generally, the main valve, meter and valve box shall be identified as using recycled water. Identification of these components shall be consistent with the local agency specifications. The valve box or vault may be identified usually by any of the following methods:

A. The top/cover of the box should be painted purple

OR

B. Stenciling the words "Recycled Water - Do Not Drink" on the most visible surface of the box

OR

C. Have the words "CAUTION: RECYCLED WATER - DO NOT DRINK" cast or stamped on the most visible surface

Identification of the main valve and meter may be usually accomplished by any of the following methods:

A. Paint the meter and valve purple

OR

B. Permanently attach an identification tag to the meter and valve

5. **Completion of Retrofit Report shall be required.**

Each user shall submit a Retrofit Report to the City of Escondido Utilities Division and San Diego County Department of Health Services as part of the application package for receiving a permit for recycled water service. The report is a checklist that identifies items that need to be changed or added to comply with retrofitting an existing potable water system to recycled water. A sample Retrofit Report is included in this guide as Exhibit 1 at the end of this section.

6. Minimum separations between buried pipes are required.

Generally, the rules governing new installations shall also pertain to retrofits (refer to Supplement A, Construction Specifications, Item #3). Determination of minimum separations can be made from as-built drawings or field inspections by the regulatory agencies on a case-by-case basis.

7. Minimum distance from wells must be maintained.

If a functional fresh water well is located in the use area, then recycled water may not be applied within the distances specified under Section 111.7, Facilities Design, Part A (3).

8. Appointment of Reclamation Supervisor is required.

A person possessing knowledge of water reclamation processes, systems and governing regulations shall be appointed by the user to be responsible for the safe use of recycled water at the approved site. Required by law, under Section 7586 of Title 17 of the California Water Code, this person shall complete the County Water Authority Recycled Water Site Supervisor training class and be referred to as the Water Reclamation Supervisor. He/she will be responsible for educating all workers/users on the safe use of recycled water. He/she will be responsible for keeping all persons involved with the project or premises aware that recycled water is being used. See Section IV.2, On-site Facilities for specific information.

9. Inspections are required.

Inspections by the San Diego County Department of Health Services and/or City are required to verify that the converted system is operating correctly and is in compliance with the regulatory agencies. Often called coverage tests in irrigation applications, systems are checked to make sure ponding and run-off is minimized. Tests also verify that no cross-connections exist. Inspections must be conducted a minimum of once every 12 months by an AWWA or equivalent certified Cross-Connection Control Specialist certified by the San Diego County Department of Health Services.

10. Drinking water shall be made available.

At all use areas, drinking water shall be made available to the users, workers and/or the public. Drinking fountains, portable water containers (thermos, coolers, etc.) are sufficient, provided they are properly maintained and protected from recycled water contact. Drinking devices must be protected from direct contact with recycled water by revising the irrigation system to eliminate direct spray, relocating the drinking device to a protected area, or protecting the device with a shelter or cover.

11. Appropriate signs are required.

Signs informing users and/or the public that recycled water is used shall be posted in appropriate locations. These signs should state that recycled water is being used and that it is not for drinking. Generally, public signs should be readable from 20 feet, whether indoors or outdoors. They should portray a positive message and should be in English and Spanish. They should be located in widely seen areas. Listed below are examples of appropriate locations and facilities:

- Site entrances
- Irrigation related storage and work facilities
- Information boards and kiosks
- Pump stations
- Decorative fountains
- Impoundments

- On fences surrounding use areas

The following example shown as Figure 1 is an approved international sign. Since each project is different, consult the City Planning Department for specific guidelines concerning message, size and locations of the required signs.

FIGURE V.1

RECYCLED WATER SIGN



PRODUCTS AVAILABLE FOR RECYCLED WATER SYSTEMS

Depending on the application and quality of recycled water used, various equipment may be required. In addition, users may want to install these products for aesthetics, public information and/or continuity with other components. Be sure to consult with the City Utilities Division to make sure that the product you purchase satisfies all regulatory requirements. The following list describes the majority of products available for use in recycled water systems. They can be purchased directly from many irrigation supplies stores.

- Quick Couplers:** Manufacturers are now offering tops/covers for the quick coupler valves that state recycled water is used and/or is colored purple. These are strongly recommended and may be required. The spike used for recycled water should be painted purple. Some manufacturers are offering a special quick coupler that cannot be interchanged with most potable water systems. These have acme threads and may also be required. For most older retrofits, standard threads (60 degree) will still be used.
- Purple pipe:** Used mainly for irrigation systems, this PVC pipe is manufactured in most common sizes and is used to alert people that recycled water is being used. It is colored purple to differentiate between potable and recycled water.
- Sprinklers:** Many manufacturers are promoting recycled water use by offering products that have easily seen colored surfaces. Purple colored tops are the most common method of identification. Often, a warning statement is cast on the top along with a "no drinking" symbol. Some manufacturers sell a purple colored top separately to replace the existing top.
- Stickers:** Available with different messages, they can be placed on irrigation controllers and/or boxes to inform the operator that recycled water is being used. With appropriate message, they can be used as signs in public areas.
- Tags:** These durable plastic devices are generally purple colored and are attached to most above ground appurtenances. They are attached with wire or special plastic ties and usually have a warning statement in English and Spanish.
- Valve boxes:** These items are exactly like potable water models, except they are now offered in the purple color.
- Warning tape:** This item is generally placed 6-12 inches above the top surface of a buried pipe. It lets backhoe operators know when they are getting very close to a recycled water pipe. It is used on pressured pipe, not really needed for intermittent pressure (also called nonpressure or lateral) pipes. Various manufacturers also offer a magnetic tape and have sizes ranging from 2-8 inches in width. This tape can also be wrapped continuously around a pipe or large appurtenance to identify recycled water is being used.

SPECIFIC RULES/GUIDELINES FOR: AGRICULTURAL OPERATIONS

In addition to the rules listed in the general section, the following rules/guidelines are required for agricultural irrigation systems uses. Typical operations/applications where conversion to recycled water is appropriate include.

Nurseries	Avocado/citrus groves
Washdown of holding pens	Pasture irrigation
Row crop irrigation	Drinking water for nondairy livestock
Sod farms	Vineyard
Christmas tree farms	Fish hatcheries/ponds

Agricultural operations are generally some distance away from highly populated areas. Usually, nurseries, feedlots, groves, fields, etc., are fenced to minimize public access. Usually, only those persons associated with the operation have contact with the irrigation equipment. They should be educated on the use of recycled water. For these reasons, identification and guidelines/rules tend to be less restrictive for agricultural operations than for landscape irrigation applications. However, each conversion must still be approved on an individual basis.

1. Use existing buried pipes.

It is not necessary to dig up pipes that are currently being used, provided they function properly. Through attrition, upgrade, or system alteration, pipes will generally be replaced with purple colored pipe, or otherwise identified differently from potable water pipes in accordance with local agency regulations. It may be necessary when eliminating cross-connections that some excavation will occur. Provided that the recycled pipes are functioning properly, capping the connection to the potable use will be the only required change.

2. Existing appurtenances downstream from the POC may be used without modification.

Provided that existing valves, pressure regulators and other related components are functioning properly, then there will generally be no need to change this equipment. There needs to be adequate signage on any recycled water use site. Workers must be given proper training on recycled water use. Refer to the duties of the Recycled Water Supervisor, listed under Section IV.2, On-Site Facilities. Buried items associated with the lateral components do not need to be identified differently. Since some agricultural operations inject chemicals into the irrigation system, backflow protection will be required at the recycled water POC to protect the City's distribution system.

3. Hose bibs may be used.

Hard-lined (permanently installed) hose bibs are not permitted on recycled water systems. They may be plumbed directly to a quick coupler spike or attached to a permanent above ground riser. They must be identified as using recycled water.

4. Irrigation controllers should be properly identified.

Where used, it will be necessary to identify controllers as using recycled water. They shall be properly identified as follows:

- A. The controller box should be painted purple
- OR
- B. Stenciling the words "Recycled Water - Do Not Drink" on the most visible surface of the box
- OR
- C. One or more appropriate stickers placed on the controller box (see Figure 1)

5. **Existing quick couplers may be used.**

Provided that existing quick coupler valves and covers are functioning properly, there will be no need to change this equipment.

- A. Through attrition, upgrade, or other alteration, the cover must indicate to the user that recycled water is being used. This may be accomplished by one or both of the following means:
 - (1) Being purple colored
 - (2) Have the words "CAUTION: RECYCLED WATER - DO NOT DRINK" cast or stamped on the most visible surface
- B. The quick coupler spike must be identified as being used for recycled water. This can be accomplished by either of the following methods:
 - (1) Paint the riser purple
 - (2) Permanently attach an identification tag to the riser

6. **Permanent risers shall be identified as using recycled water.**

Permanent risers, such as those found in shrub beds or used in nurseries, shall be considered new pipe. They shall be identified as being part of the recycled water system. Identification shall be consistent with Supplement A, Construction Specifications, Item 4 and usually may be accomplished by any of the following methods:

- A. Paint the riser purple
- B. Permanently attach an identification tag to the spike
- C. Wrap the riser with purple warning tape

7. **Existing sprinkler heads may be used.**

Provided that existing sprinklers are functioning properly and are appropriate for the application (correct pattern, GPM, psi and proper maintenance), then there will generally be no need to change this equipment. Since the amount of public exposure is minimal, the possibility of someone drinking from these devices is quite low. Therefore, it is appropriate to use standard sprinklers for recycled water systems.

8. Existing micro-irrigation devices may be used.

Provided that existing micro-irrigation devices are functioning properly and are appropriate for the application (correct pattern, GPM, psi and proper maintenance), then there will generally be no need to change this equipment. Since the amount of public exposure is minimal, the possibility of someone drinking from these devices is quite low. Therefore, it is appropriate to use standard emitters for recycled water systems. Collectively called drip irrigation, these devices actually include:

Minisprinklers	Microsprayers
T-tape	"Leaky" or Porous pipe
Drip emitters	Spaghetti tubing

9. Valve boxes do not have to be changed.

Existing valve boxes may be used provided they are functional. When used, valve boxes are usually located on private property, where public exposure is minimized. For this reason, valve boxes shall be considered the same as valves. Existing recycled and potable water valve boxes shall be identified as such. Methods used shall consist of one of the following: tagging, painting, or permanently marking the covers.

10. Warning/locating tape is not needed for existing pipes.

This tape is placed 6-12 inches above the top surface of the recycled water pipeline to prevent accidental damage by excavation equipment. All new piping installed shall be identified as recycled water using warning tape or purple colored pipe.

11. Public facilities should be protected from direct application.

Though not common in agricultural operations, public facilities such as drinking fountains, picnic tables, benches, and snack bars shall be moved or protected from direct spray of recycled water to the extent possible as determined by the City and San Diego County Department of Health Services on a case-by-case basis.

12. Hand-move systems do not need to be modified.

At the discretion of the user, some form of identification should be provided at the main valves where the hand-move system is plumbed. This can be a large sign or a tag on the valve. Again, workers must be properly educated on the use of recycled water.

13. Other associated components do not need to be altered.

Most other components of the existing irrigation system not specifically addressed above will operate as originally designed with potable water.

14. Other notes:

- A. Pumps should be sized according to anticipated range of demands. This means that pressure and flow capabilities of the pumping system should match the demand of the operation.
- B. Adequate filters are essential when using micro-irrigation systems. Proper sized filters will minimize clogging problems and assist irrigation uniformity.

SPECIFIC RULES/GUIDELINES FOR: LANDSCAPE IRRIGATION

In addition to the rules listed in the general section, the following rules/guidelines are required for landscape irrigation systems. Typical systems/applications that can be converted to recycled water include:

Golf courses	Parks
Schools and playgrounds	Cemeteries
Street/freeway medians	Homeowner association greenbelt and common areas
Right-of-ways	Decorative fountains

1. Use existing buried pipes.

It is not necessary to dig up pipes that are currently being used, provided they function properly. Through attrition, upgrade, or system alteration, pipes will generally be replaced with purple colored pipe, or otherwise identified differently from potable water pipes in accordance with local agency regulations. It may be necessary when eliminating cross-connections that some excavation will occur. Provided that the recycled pipes are functioning properly, capping the connection to the potable use will be the only required change.

2. Existing appurtenances downstream from the POC may be used.

Provided that existing valves, check valves, flush-out valves, pressure regulators and other related components are functioning properly, then there will generally be no need to change this equipment. If fertilizer injection is to be performed through the irrigation system, a backflow device shall be installed at the recycled water POC. Above ground, recycled water appurtenances shall be painted purple. Buried items associated with the lateral components do not need to be identified differently.

3. Hose bibs may be used on quick couplers only.

Hard-lined (permanently installed) hose bibs are not allowed because of the possibility of a person accidentally drinking from it. Hose bibs are a useful item for spot watering small dry turf areas, individual plants or other very small areas. They may be plumbed directly to a quick coupler spike. They should be painted purple and used at the discretion of the recycled water supervisor.

4. Irrigation controllers should be properly identified.

In most cases, it will be necessary to identify the controller as one using recycled water. These controllers should be identified as follows:

A. The controller box should be painted purple

OR

B. Stenciling the words "Recycled Water - Do Not Drink" on the most visible surface of the box

OR

C. One or more appropriate stickers placed on the controller door.

5. Quick couplers may be used.

Existing quick couplers may be used for recycled water after the following changes:

- A. All covers must be in place and functioning properly. They must indicate to the user that recycled water is being used. This may be accomplished by one or more of the following means:
 - (1) Being purple colored
 - OR
 - (2) Have the words "CAUTION: RECYCLED WATER - DO NOT DRINK" cast or stamped on the most visible surface
 - AND
 - (3) Be a locking type
- B. The quick coupler spike must be identified as being used for recycled water. This can be accomplished by any of the following methods:
 - (1) Paint the riser purple
 - (2) Permanently attach an identification tag to the spike
 - (3) Wrap the riser with purple warning tape

6. Permanent risers shall be identified as using recycled water.

Permanent risers, such as those found in shrub beds shall be considered new pipe. They shall be identified as being part of the recycled water system. Identification shall be consistent with Supplement A, Construction Specifications, Item 4, and usually may be accomplished by any of the following methods:

- A. Paint the riser purple
- B. Permanently attach an identification tag to the riser
- C. Wrap the riser with purple warning tape

7. Existing sprinkler heads may be used.

Provided that existing sprinklers are functioning properly and are appropriate for the application (correct pattern, GPM, psi), then there will generally be no need to change this equipment. Through attrition, upgrade or any other alteration, these sprinkler heads must be identified as using recycled water. Identification can be accomplished by:

- A. The most visible component/surface (usually the cap, lid, or top) should be colored purple. After installation, this component/surface must be visible at all times.
- OR
- B. The sprinklers shall have an identifying inscription cast/stamped on the most visible surface. This surface must be visible at all times. The inscription shall inform the viewer that the device uses recycled water, which is unfit to drink.

8. Existing micro-irrigation devices may be used.

Provided the existing micro-irrigation devices are functioning properly and are appropriate for the application (correct pattern, GPM, psi and proper maintenance), there will generally be no need to change this equipment. Since these devices will be operated at night, the amount of public exposure is minimal; therefore the possibility of someone drinking from these devices is quite low. For these reasons, it is appropriate to use standard emitters for recycled water systems. Collectively called drip irrigation, these devices actually include:

Minisprinklers	Microsprayers
T-tape	"Leaky" or Porous pipe
Drip emitters	Spaghetti tubing

9. Valve boxes or at least the lids shall be the color purple, either cast in or painted.

A. Painting the cover purple

OR

B. Identifying words painted on the cover

OR

C. Covers shall be of a noninterchangeable shape with the potable water covers and have an identifying inscription cast or painted on the surface

OR

D. Be a locking box with identifying words painted on or cast in the most visible surface.

10. Warning/locating tape is not needed for existing pipes.

This tape is placed 6-12 inches above the top surface of the recycled water pipeline to prevent accidental damage by excavation equipment. It is not necessary to excavate existing backfill to install this tape. On new installations, City requires warning tape as an added measure of protection.

11. Drinking fountains and designated eating areas shall be protected from direct application of recycled water.

Public facilities such as drinking fountains, picnic tables, benches, and snack bars shall be moved or protected from direct spray of recycled water to the extent possible as determined by the City on a case-by-case basis.

- Drinking fountains can be removed from irrigated areas or covered with a protective shield. The shield can be removable in the morning or permanently attached with a door-like mechanism to allow access to the fountain. Portable 5-gallon water dispensers could be set out on golf courses daily and be refilled as needed.
- Picnic benches can be removed from the use area or covered nightly to protect from overnight irrigation. They also could be modified so that if sprayed, they would drain and dry rapidly.

12. **Minimum distances must be maintained when using disinfected secondary recycled water.**

Where permanent housing or other similar facilities exist, and disinfected secondary recycled water is used for irrigation, a minimum distance of 100 feet must be maintained between the closest wetted area and any structure. If this distance cannot be achieved, the irrigator must demonstrate to the San Diego County Health Department that careful, selective scheduling (late night/very early morning) and exceptional equipment maintenance minimize public exposure. Additional public notification of this use is required.

13. **Other associated components do not need to be altered.**

Most other components of the existing irrigation system not specifically addressed above will operate as originally designed with potable water. In most instances, the recycled water system pressure will be higher than the existing potable water system pressure. If the existing irrigation system is not capable of operating at the new pressures or if existing pressure regulators are not able to reduce pressure sufficiently, a new pressure-reducing valve may need to be installed.

14. **Runtimes shall be scheduled for night.**

Irrigation on these areas will usually occur in the evening rather than during the day. This will reduce the possibility of users having contact with the recycled water. In many cases, this requirement will have no affect on the existing schedules, since irrigation already takes place in this time frame.

SPECIFIC RULES/GUIDELINES FOR: COMMERCIAL/INDUSTRIAL USES

In addition to the rules listed in the general section, the following rules/guidelines are required for commercial/industrial uses. Typical operations and applications where conversion to recycled water is appropriate include:

Street cleaning	Flushing/rinsing processes
Car washes	Industrial cooling
Sewer flushing	Manufacturing processes

1. Publicly accessible hose bibs are not allowed.

Permanent hose bibs are not allowed on recycled water systems. Where workers must use water for work processes, they must be appropriately identified with signs and/or tags. This generally occurs inside buildings or within private property enclosed by walls or fences.

2. Appropriate signs at workstations shall be posted.

Signs shall be posted informing workers that recycled water is being used.

3. Existing equipment may be used.

Existing equipment in most cases may be used for recycled water. Since these types of uses can be quite diversified, each conversion will be approved on a case-by-case basis. If any substance is being injected into the process piping, or if the process water is being pumped, the recycled water service must be equipped with a suitable backflow device at the POC. If the existing potable water service is not currently equipped with an RPPD, one shall be added when the system is converted to recycled water.

SPECIFIC RULES/GUIDELINES FOR: CONSTRUCTION USES

In addition to the rules listed in the general section, the following rules/guidelines are required for construction uses. Typical operations and applications where conversion to recycled water is appropriate include:

Dust control	Wash water for materials
Compaction	Water jetting
Concrete making	

1. Signs should be posted on tanks.

Drop tanks, tank trucks, pressure tank, storage tanks are examples of items that should be posted with signs clearly indicating that recycled water is being used.

2. Existing pipes and related components may be used.

Existing supply pipes and related valves, check valves, etc., shall be identified as recycled water by painting or tagging if they are above ground and accessible to personnel.

SPECIFIC RULES/GUIDELINES FOR: RECREATIONAL USES

In addition to the rules listed in the general section, the following rules/guidelines are required for recreational uses. Typical operations and applications where conversion to recycled water is appropriate include:

- Fishing ponds
- Water slides
- Boating

1. Publicly accessible hose bibs are not allowed.

Permanent hose bibs are not allowed on recycled water systems. Where workers must use water for work processes, they must be appropriately identified with signs and/or tags. This generally occurs inside buildings or within private property enclosed by walls or fences.

2. Appropriate signs at workstations shall be posted.

Signs shall be posted informing workers that recycled water is being used.

3. Existing equipment may be used.

Existing equipment in most cases may be used for recycled water. Since these types of uses can be quite diversified, each conversion will be approved on a case-by-case basis. All above ground recycled water-piping, valves and appurtenances shall be identified by painting or tagging if they are accessible to personnel or the general public.

EXHIBITS

RETROFIT REPORT

(REFER TO DOCUMENT NO. EX\134 FOR SAMPLE FORM TO INSERT HERE)

REFERENCES

1. Title 22, California Department of Health Services, "Wastewater Reclamation Criteria"
2. Title 17, California Department of Health Services, "Regulations Relating to Cross-Connections"
3. San Diego County Department of Health Services
4. City of Escondido Rules and Regulations, Project Guidelines
5. APWA and AGCC Standard Specifications for Public Works Construction
6. San Diego County Water Authority Reclamation Department
7. DEH Recycled Water Plan Check and Inspection Manual

Contacts/Locations

State of California Department of Health Services

Drinking Water Field Operations Branch and Environmental Management
Address: 1350 Front Street, Room 2050
San Diego, CA 92101
Phone: (619) 525-4580

San Diego County Department of Environmental Health

Water Quality Division
Address: 5201 Ruffin Road, Suite C
San Diego, CA 92123
Attention: Water Reclamation
Phone: (619) 694-2548

San Diego County Department of Health Services

Environmental Health Services, Land Use Division
Mailings: P.O. Box 85261
San Diego, CA 92186-5261
Address: 1255 Imperial Avenue (4th Floor)
San Diego, CA 92101
Attention: Cross-Connection Control/Water Reclamation
Phone: (619) 338-2260

San Diego County Water Authority

4677 Overland Avenue
San Diego, CA 92123-1233
Attention: Water Reclamation Department
Phone: (858) 522-6740

City of Escondido

Utilities Division
201 North Broadway Escondido, CA 92025 Attention: Water Reclamation
Phone: (760) 839-6299

APPENDICES

DEFINITIONS

<u>AFY</u>	Acre-Feet per Year
<u>Agricultural use</u>	Water used for the production of crops and/or livestock and the preparation of these products for market.
<u>Air-Gap Separation</u>	A physical break between a supply pipe and a receiving vessel. The air gap shall be at least double the diameter of the supply pipe, measured vertically above the top rim of the vessel, and in no case less than one inch.
<u>ANSI</u>	American National Standards Institute.
<u>Applicant</u>	Any persons, firm, corporation, association, or agency that applies for recycled water service.
<u>Application rate</u>	The rate, at which irrigation water is applied to a design or use area, expressed in inches per hour.
<u>Approved check valve</u>	A check valve that seats readily and completely. It must be carefully machined to have free moving parts and assure water tightness. The face of the closure element and valve seat must be bronze or other noncorrodible material that will seat tightly under all prevailing conditions of field use. Pins and bushings shall be of bronze or other noncorrodible, nonsticking material. The closure element (e.g., clapper) shall be internally weighted or otherwise internally equipped to promote rapid and positive closure in all sizes where this feature is obtainable. *
<u>Approved double check valve assembly</u>	An assembly of as least two independently acting approved check valves including tightly closing shut-off valves on each side of the check valve assembly and suitable leak-detector drains plus connections available for testing the water tightness of each check valve. *
<u>Approved reduced pressure principle backflow prevention device</u>	A device incorporating two or more check valves and an automatically operating differential relief valve located between the two checks, two shut off valves, and equipped with necessary appurtenances for testing. The device shall operate to maintain the pressure in the zone between two check valves less than the pressure on the City water supply side of the device. At cessation of normal flow, the pressure between the check valves shall be less than the supply pressure. In case of leakage of either check valve, the differential relief valve shall operate to maintain this reduced pressure by discharging to the atmosphere. When the inlet pressure is 2 psi or less, the relief valve shall be open to the atmosphere thereby providing an air gap in the device. To be approved, these devices must be readily accessible for maintenance and testing and installed in a location where no part of the valve will be submerged. *
<u>Approved use</u>	An application of recycled water in a manner, and for a purpose, designated in a user permit issued by the City and in compliance with all applicable regulatory agency requirements.

**APPENDIX 1
(Continued)**

<u>Approved use area</u>	A site with well-defined boundaries designated in a Permit for Recycled Water Service issued by the City to receive recycled water for an approved use and acknowledged by all applicable regulatory agencies.
<u>As-built drawings</u>	Record drawings that show the completed facilities as constructed or modified.
<u>ASTM</u>	American Society for Testing Materials.
<u>Automatic system</u>	Controllers, valves, and associated equipment used to program and operate irrigation systems for the efficient application of recycled water.
<u>Auxiliary water supply</u>	Any water supply on or available to the premises other than the City potable water or recycled water supplies.
<u>AWWA</u>	The American Water Works Association
<u>City Council</u>	See Council
<u>Commercial/Industrial use</u>	Water used for toilets, urinals, decorative fountains; industrial process such as rinsing, washing, cooling, flushing, circulation, or construction; and other related uses.
<u>Commodity charge</u>	A charge imposed by the City for all recycled water used, whether such water use is estimated or actually metered.
<u>Connection fee</u>	A fee imposed by the City for obtaining recycled water service from the City by means of its recycled water facilities. Connection fees are listed in Appendix 2.
<u>Contractor</u>	A person, persons or firm entering into a legal agreement with the agency or applicant for the performance of work on any portion of facilities subject to these guidelines.
<u>Council</u>	The City of Escondido City Council, including the Mayor.
<u>Cross-connection</u>	Any unapproved and/or unprotected connection between any part of a potable water system and any source or system containing water or other substances not approved as safe and potable for human consumption.
<u>Customer</u>	Any person, group, firm, partnership, corporation, association, or agency that legally receives recycled water service from the City.
<u>DEH</u>	San Diego County Department of Environmental Health
<u>Design area</u>	A site with well-defined boundaries, proposed to receive recycled water for an approved use, as delineated in the Application for Recycled Water Service.
<u>Direct beneficial use</u>	The use of recycled water, which has been transported from the point of production to the point of use without an intervening discharge to waters of the state.

<u>Discharge</u>	Any release or distribution of recycled water to a use area or disposal site/mechanism (outfall, Live Stream Discharge, municipal sewage system). All discharges of recycled water must be approved by the regulatory agencies.
<u>District</u>	The City of Escondido, as incorporated by its Water District boundary.
<u>Greenbelt areas</u>	Areas including, but not limited to, parkways, parks, right-of-ways and landscaping within and/or surrounding a community.
<u>HCF</u>	Hundred Cubic Feet. A common unit of water volume measurement.
<u>Industrial process water</u>	Water used in industrial facilities for rinsing, washing, cooling, circulation, or construction.
<u>Infiltration rate</u>	The rate at which water penetrates the soil surfaces and enters the soil profile.
<u>Landscape impoundment</u>	A body of water that is used for aesthetic or irrigation purposes and which is not intended for public contact or ingestion.
<u>Landscape irrigation/use</u>	Recycled water used for the propagation and maintenance of trees, shrubs, ground cover and turf. This plant material is intended for erosion control and aesthetic value, not for resale/profit purposes.
<u>Nonpotable water</u>	Water that has not been treated for, or is not acceptable for, human consumption in conformance with federal, state and local water standards. Nonpotable water includes recycled water.
<u>Off-site facilities</u>	Existing or proposed facilities under the control of the City, from the source of supply to the point of connection with the customer's on-site facilities, normally up to and including the City's meter and meter box.
<u>On-site facilities</u>	Existing or proposed facilities within property under the control of the customer, normally downstream of the City's meter.
<u>On-site recycled water supervisor</u>	A qualified person designated by a recycled water user and approved by the City to be responsible for the safe and efficient operation of the user's recycled water system. This person shall be knowledgeable in the construction and operation of irrigation systems and in the application of federal, state, and local guidelines, criteria, standards and rules and regulations governing the use of recycled water.
<u>Open space</u>	Land that has been designated to remain undeveloped. These areas may receive recycled water service for landscape irrigation.
<u>Permit</u>	A processed and approved application package to, and agreement with, the City for recycled water service.
<u>POC</u>	Point of connection.

<u>Ponding</u>	Retention of piped water on the surface of the ground or man-made surface for a period of time following the cessation of an approved recycled water use activity such that potential hazard to the public health may result.
<u>Potable water</u>	Water which conforms to the latest federal, state, and local drinking water standards.
<u>PSI</u>	Pounds per square inch. The most common unit of pressure measurement.
<u>Purveyor</u>	The City of Escondido
<u>Recycled water</u>	As defined in Title 22, Division 4, of the California Administrative Code, water that, as a result of treatment of wastewater, is suitable for direct beneficial use or a controlled use that otherwise would not occur. The treatment of wastewater is accomplished in accordance with the criteria set forth in the code.
<u>Recycled water facilities</u>	Systems, structures, etc. used in the treatment, storage, pumping, transmission and distribution of recycled water.
<u>Recreational impoundment</u>	A body of recycled water used for recreational activities including, but not limited to, fishing, boating, and/or swimming. Allowable uses will depend on treatment level of the recycled water.
<u>Regulatory agency</u>	Those public entities legally constituted by federal, state and local statutes to protect health and water quality.
<u>RPPD</u>	Reduced Pressure Principle Device. A backflow preventer incorporating not less than two check valves, an automatically operated differential relief valve located between the two check valves, a tightly closing shut-off valve on each side of the check valve assembly, and equipped with necessary test cocks for testing.
<u>Run-off</u>	Unintentional flow of water along either natural or manmade surfaces of the ground off of the designated use area.
<u>RWQCB</u>	Regional Water Quality Control Board
<u>Secondary effluent</u>	Wastewater which has been treated by gravity sedimentation to remove settleable solids remaining after the primary biological treatment process.
<u>Service</u>	The delivery of recycled water to a user.
<u>Service connection</u>	The City facilities between the City recycled water distribution system and the customer's recycled water service valve, including, but not limited to, the meter, meter box, valves, and piping equipment.
<u>Standard Specifications</u>	Standard Specifications for Public Works Construction (current edition), written by the APWA and the AGCC.
<u>Tertiary effluent</u>	Secondary effluent which has been disinfected and filtered. Full body contact is not allowed unless certain requirements are fully met.

<u>Unauthorized discharge</u>	Any release of recycled water that violates these Rules and Regulations or any applicable federal, state, or local statutes, regulations, ordinances, contracts, or other requirements.
<u>Use area</u>	The specific area designated to be served with recycled water through on-site recycled water facilities.
<u>User</u>	Any person, group, firm, partnership, corporation, association or agency accepting recycled water from the City recycled water facilities for use in accordance with these Rules and Regulations. Applicant, owner, or customers are terms that are to be considered as users.
<u>Water Application Devices</u>	Any mechanism or device that applies water at a predetermined rate onto a receiving area. Devices include, but are not limited to: <ul style="list-style-type: none">• Impact sprinklers• Pop-up sprinklers• Rotor sprinklers• Drip emitters• Mini/micro-sprayers• Bubblers• Spinners• Portables
<u>Windblown spray</u>	Dispersed, airborne particles of water capable of being transmitted through the air to a location other than that for which the direct application of recycled water is approved.

*The devices used shall be listed on the State DOHS list of approved devices.

CHECKLIST/ACTION REQUEST FORM FOR OBTAINING RECYCLED WATER SERVICE

(REFER TO DOCUMENT NO. EX135 FOR SAMPLE FORM TO INSERT HERE)

APPLICATION FOR RECYCLED WATER SERVICE

(REFER TO DOCUMENT NO. EX\324 FOR SAMPLE FORM TO INSERT HERE)

RESPONSE LETTER
City Of Escondido
STATUS OF APPLICATION FOR RECYCLED WATER SERVICE

TO: _____

DATE: _____

We received your application for recycled water service for the project(s) listed below. The application has been reviewed by our engineers in accordance with the City Rules and Regulations for Recycled Water Service and the ability of our system to supply you with the quantity of recycled water you have requested. If you have any questions, please contact _____ (*review engineer*) at _____ (*phone number*).

Project name: _____

Application reviewed on: _____

- STATUS:
- Your application has been approved by the City
 - Your application has been sent to the RWQCB and San Diego Co. Department of Health Services for further review.
 - Your application is incomplete and we request additional information. (See comments.)
 - We require payment of fees before review can be completed.
 - Your application has been returned. (See comments)
 - Your application for recycled water service has been denied. (See comments)

COMMENTS: _____

PERMIT FOR RECYCLED WATER SERVICE

(REFER TO DOCUMENT NO. EX\209 FOR SAMPLE FORM TO INSERT HERE)

**MANUFACTURERS OF IRRIGATION EQUIPMENT APPROVED BY
THE CITY OF ESCONDIDO**

Backflow Prevention	Febco, Cla-Val, Watts, Wilkens
Check Valves	Mueller, Clow
Controllers	To be determined by user
Drip Emitters	To be determined by user
Filters	To be determined by user
Identification Tape	Reef Industries
Pumps	To be determined by user
Pressure Regulators	Watts, Cla-Val
PVC Pipe	Pacific Western Extruded Plastics Company
Remote Control Valves	Griswold, Rainbird
Quick Coupler Valves	Nelson, Rainbird
Valves	Resilient Wedge - American Darling Butterfly - Henry Pratt Company Tapping - Mueller
Warning/Magnetic Tape	Tom Christy

The above list indicates certain equipment and the manufacturers that the City has previously approved. Because of continued changes in regulations and in the manufactured equipment itself, this list does not necessarily represent the City's approval. Manufacturers of equipment which is "equal" in all respects will also be considered.

RECYCLED WATER STANDARD PLAN NOTES

Updated April 1998 (R. Carlson; DEH)

1. All work shall be done in accordance with the CITY OF ESCONDIDO's Rules and Regulations.
2. Drinking water fountains and designated outdoor eating areas shall be protected against contact with recycled water spray, mist, or runoff.
3. Best management practices shall be used to eliminate or control to the best extent possible ponding, runoff, overspray and misting.
4. Hose bibs are strictly prohibited.
5. Cross-connections between recycled water lines and potable water lines are strictly prohibited.
6. No substitution of pipe materials will be allowed without prior approval of the CITY OF ESCONDIDO.
7. All mainline pipes shall have warning tape per CITY OF ESCONDIDO's Rules and Regulations.
8. Hours of irrigation with recycled water are from 10:00 p.m. to 6:00 a.m. The hours for irrigation with disinfected tertiary recycled water may be modified by local authority. Irrigation during public use periods with disinfected tertiary recycled water shall be under the supervision of the designated user supervisor. Irrigation with water of a lesser quality than disinfected tertiary recycled water shall be between the hours of 10:00 p.m. and 6:00 a.m.
9. Burial of all wiring and piping shall meet CITY OF ESCONDIDO's Rules and Regulations.
10. Non-designated use areas shall be protected from contact with recycled water, whether by windblown spray or by direct application through irrigation or other use. Lack of protection, whether by design, construction practice or system operation, is strictly prohibited.
11. Irrigation heads shall be relocated or adjusted to minimize or eliminate overspraying on sidewalks, streets and non-designated use areas.
12. Recycled water quick coupling valves shall be of a type designed for the use on recycled water distribution systems per CITY OF ESCONDIDO's Rules and Regulations.
13. On recycled water systems, all appurtenances (sprinkler heads, valve boxes, etc.) shall be color coded purple per AWWA guidelines and Section 116815 of the California Health and Safety Code.
14. All irrigation pipes shall be stenciled with the warning, "NON-POTABLE or RECYCLED WATER", color coded (purple) and laid with warning tape and stenciling oriented toward the top of the trench per the CITY OF ESCONDIDO's Rules and Regulations.
15. On new on-site systems (post-meter), potable water, constant pressure recycled water, and sewer lines should be placed a minimum of four (4) feet apart, or as directed by the project engineer, and/or regulatory agency. Measurements shall be between facing surfaces, not pipe centerlines.
16. Constant pressure recycled water lines shall cross at least twelve inches below potable water lines and maintain at least twelve inches crossing separation between other utilities.
17. If a constant pressure recycled water line must be installed above a potable water line or less than twelve inches below a potable water line, then the recycled water line shall be installed with an approved protective sleeve as per the CITY OF ESCONDIDO's Rules and Regulations.

18. Developer/contractor shall conduct a cross-connection test and coverage test as directed by the CITY OF ESCONDIDO and/or the San Diego County Department of Environmental Health prior to any use of recycled water.
19. The required cross-connection inspection shall be done by either the CITY OF ESCONDIDO and/or the San Diego County Department of Environmental Health. Copies of inspection reports will be forwarded to the non-inspecting party.
20. The design and locations proposed for recycled water "Do Not Drink" signs shall be called out on the plans.
21. When recycled water becomes available, an on-site user supervisor shall be designated in writing. This individual shall be familiar with plumbing systems within the property, with the basic concepts of backflow/cross-connection protection, the recycled purveyor's rules and regulations, and the specific requirements of a recycled water system. Copies of the designation, with contact phone numbers shall be provided to the CITY OF ESCONDIDO and/or the San Diego County Department of Environmental Health.

In case of emergency contact _____ at _____
Name Phone No.

Or after hours contact _____ at _____
Name Phone No.

22. All public and private potable water mains including fire mains and any water wells and water courses within the recycled water project shall be shown on the plans.
23. Call out on the plans if there are or are not drinking fountains and/or designated outdoor eating areas on this site.
24. Educate all maintenance personnel on a continuous basis of the presence of recycled water. Personnel must be informed that recycled water is meant for irrigation purposes only, and is not approved for drinking purposes, hand washing, cleaning of tools, etc. Given the high turnover rate of employees in the landscape industry it is important this information be disseminated on an almost daily basis.
25. A physical separation shall be provided between adjacent areas irrigated with recycled water and potable water. Separation shall be provided by distance, concrete mow strips or other approved methods.

DECLARATION OF RESPONSIBLE CHARGE:

I HEREBY DECLARE THAT I AM (INSERT TITLE) OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THIS PROJECT AS DEFINED IN SECTION 6730 OF THE BUSINESS AND PROFESSIONS CODE AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS.

I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE CITY OF ESCONDIDO AND THE SAN DIEGO COUNTY DEPARTMENT OF ENVIRONMENTAL HEALTH IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS (INSERT TITLE) OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

FIRM

LANDSCAPE ARCHITECT

LICENSE NO.

EXPIRATION DATE

ADDRESS

PHONE

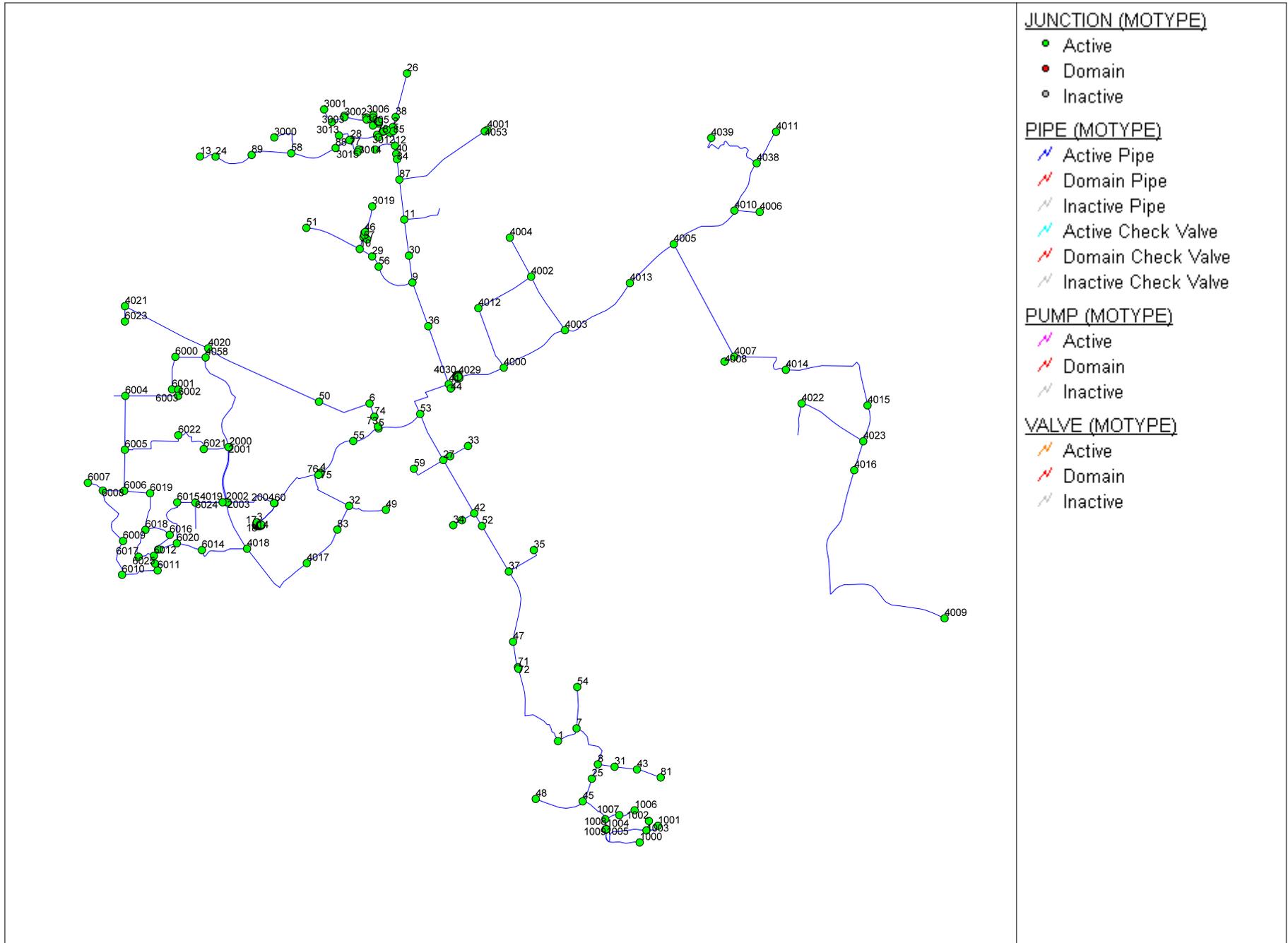
County of San Diego Department of Health Services
Approved Signature Blocks

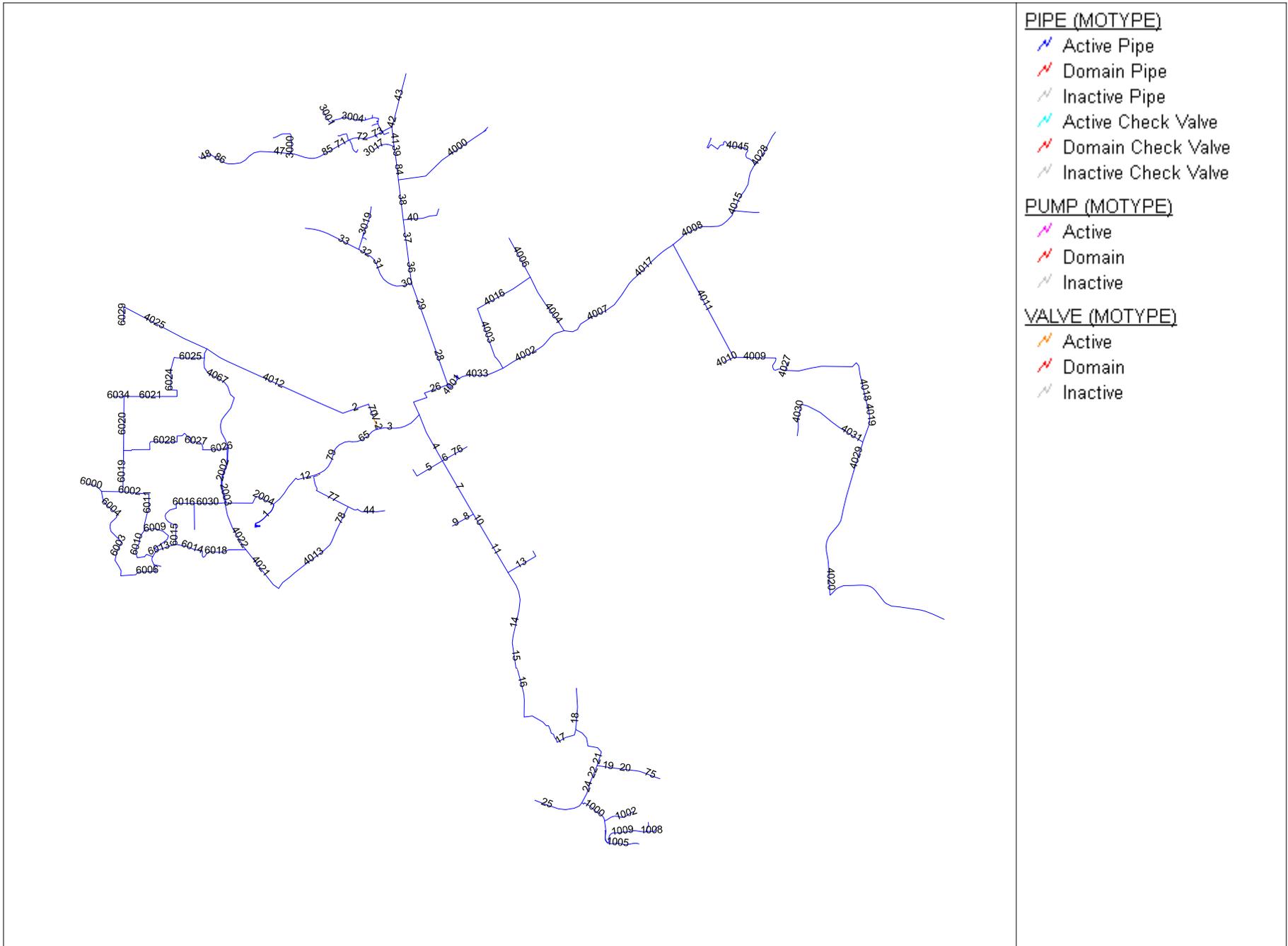
APPENDIX H

Model Information

ESCONDIDO

MODEL_JUNCTIONS





PHASE 1 JUNCTION REPORT

JUNCTION: ID (Char)	JUNCTION: ELEVATION (Num)	DEMAND: DEMAND1 (Num)	DEMAND: PATTERN1 (Char)	DEMAND: DEMAND2 (Num)	DEMAND: PATTERN2 (Char)	DEMAND: DEMAND3 (Num)	DEMAND: PATTERN3 (Char)
1	381.00	153.52	IRRIGATION	0.00		0.00	
2	729.17	0.00	IRRIGATION	0.00		0.00	
3	618.33	0.00	IRRIGATION	0.00		0.00	
4	611.73	9.20	IRRIGATION	0.00		0.00	
5	629.26	21.87	IRRIGATION	0.00		0.00	
6	638.00	4.43	IRRIGATION	0.00		0.00	
7	378.35	0.00	IRRIGATION	0.00		0.00	
8	363.84	0.00	IRRIGATION	0.00		0.00	
9	677.91	74.12	IRRIGATION	0.00		0.00	
10	680.27	6.32	IRRIGATION	0.00		0.00	
11	708.74	4.79	IRRIGATION	0.00		0.00	
12	711.99	3.65	IRRIGATION	0.00		0.00	
13	717.72	184.10	IRRIGATION	0.00		0.00	
14	613.00	0.00	IRRIGATION	0.00		0.00	
15	613.00	0.00	IRRIGATION	0.00		0.00	
16	613.00	0.00	IRRIGATION	0.00		0.00	
17	613.00	0.00	IRRIGATION	0.00		0.00	
18	613.00	0.00	IRRIGATION	0.00		0.00	
19	613.00	0.00	IRRIGATION	0.00		0.00	
20	613.00	0.00	IRRIGATION	0.00		0.00	
21	613.00	0.00	IRRIGATION	0.00		0.00	
22	613.00	0.00	IRRIGATION	0.00		0.00	
23	613.00	0.00	IRRIGATION	0.00		0.00	
24	722.08	37.47	IRRIGATION	0.00		0.00	
25	356.00	24.16	IRRIGATION	0.00		0.00	
26	749.00	18.62	IRRIGATION	0.00		0.00	
27	647.00	10.21	IRRIGATION	0.00		0.00	
28	775.47	0.00	IRRIGATION	0.00		0.00	
29	671.00	21.85	IRRIGATION	0.00		0.00	
30	705.83	35.01	IRRIGATION	0.00		0.00	
31	383.35	3.75	IRRIGATION	0.00		0.00	
32	644.02	27.77	IRRIGATION	0.00		0.00	
33	654.00	2.53	IRRIGATION	0.00		0.00	
34	664.86	17.47	IRRIGATION	0.00		0.00	
35	662.23	10.50	IRRIGATION	0.00		0.00	
36	661.12	25.97	IRRIGATION	0.00		0.00	
37	640.00	67.55	IRRIGATION	0.00		0.00	
38	736.60	143.87	IRRIGATION	0.00		0.00	
39	669.00	4.84	IRRIGATION	0.00		0.00	
40	711.00	1.92	IRRIGATION	0.00		0.00	

PHASE 1 JUNCTION REPORT

JUNCTION: ID (Char)	JUNCTION: ELEVATION (Num)	DEMAND: DEMAND1 (Num)	DEMAND: PATTERN1 (Char)	DEMAND: DEMAND2 (Num)	DEMAND: PATTERN2 (Char)	DEMAND: DEMAND3 (Num)	DEMAND: PATTERN3 (Char)
41	653.00	19.56	IRRIGATION	0.00		0.00	
42	654.00	3.02	IRRIGATION	0.00		0.00	
43	413.54	72.48	IRRIGATION	0.00		0.00	
44	654.42	38.92	IRRIGATION	0.00		0.00	
45	342.52	0.00	IRRIGATION	0.00		0.00	
46	713.17	11.26	IRRIGATION	0.00		0.00	
47	599.02	156.16	IRRIGATION	0.00		0.00	
48	374.00	21.43	IRRIGATION	0.00		0.00	
49	729.34	4.81	IRRIGATION	0.00		0.00	
50	636.00	30.51	IRRIGATION	0.00		0.00	
51	743.13	14.42	IRRIGATION	0.00		0.00	
52	659.00	24.32	IRRIGATION	0.00		0.00	
53	646.00	15.81	IRRIGATION	0.00		0.00	
54	425.94	18.77	IRRIGATION	0.00		0.00	
55	617.01	6.44	IRRIGATION	271.67	ICEOPLEX	0.00	
56	671.00	66.23	IRRIGATION	0.00		0.00	
57	701.98	0.18	IRRIGATION	0.00		0.00	
58	750.04	52.70	IRRIGATION	0.00		0.00	
59	649.29	8.24	IRRIGATION	0.00		0.00	
60	611.51	13.84	IRRIGATION	0.00		0.00	
61	613.00	0.00	IRRIGATION	0.00		0.00	
62	613.00	0.00	IRRIGATION	0.00		0.00	
63	613.00	0.00	IRRIGATION	0.00		0.00	
64	613.00	0.00	IRRIGATION	0.00		0.00	
65	613.00	0.00	IRRIGATION	0.00		0.00	
66	613.00	0.00	IRRIGATION	0.00		0.00	
67	613.00	0.00	IRRIGATION	0.00		0.00	
68	613.00	0.00	IRRIGATION	0.00		0.00	
69	613.00	0.00	IRRIGATION	0.00		0.00	
70	613.00	0.00	IRRIGATION	0.00		0.00	
71	553.45	3.45	IRRIGATION	0.00		0.00	
72	552.04	4.52	IRRIGATION	0.00		0.00	
73	640.11	0.83	IRRIGATION	0.00		0.00	
74	638.00	7.75	IRRIGATION	0.00		0.00	
75	627.15	2.97	IRRIGATION	0.00		0.00	
76	625.00	33.41	IRRIGATION	0.00		0.00	
3000	817.37	13.30	IRRIGATION	0.00		0.00	
77	774.05	11.96	IRRIGATION	0.00		0.00	
78	731.63	1.01	IRRIGATION	0.00		0.00	
79	727.00	0.00	IRRIGATION	0.00		0.00	

PHASE 1 JUNCTION REPORT

JUNCTION: ID (Char)	JUNCTION: ELEVATION (Num)	DEMAND: DEMAND1 (Num)	DEMAND: PATTERN1 (Char)	DEMAND: DEMAND2 (Num)	DEMAND: PATTERN2 (Char)	DEMAND: DEMAND3 (Num)	DEMAND: PATTERN3 (Char)
80	727.00	0.00	IRRIGATION	0.00		0.00	
3001	873.96	0.02	IRRIGATION	0.00		0.00	
3002	880.15	4.42	IRRIGATION	0.00		0.00	
3003	875.96	8.83	IRRIGATION	0.00		0.00	
3004	811.92	8.83	IRRIGATION	0.00		0.00	
3005	807.99	8.83	IRRIGATION	0.00		0.00	
3006	790.05	4.42	IRRIGATION	0.00		0.00	
3007	782.23	0.00	IRRIGATION	0.00		0.00	
3008	758.23	0.00	IRRIGATION	0.00		0.00	
3009	750.29	0.00	IRRIGATION	0.00		0.00	
3010	759.49	13.25	IRRIGATION	0.00		0.00	
3011	725.00	0.00	IRRIGATION	0.00		0.00	
3012	731.00	8.36	IRRIGATION	0.00		0.00	
3013	808.58	8.83	IRRIGATION	0.00		0.00	
3014	770.00	17.35	IRRIGATION	0.00		0.00	
3015	770.00	6.15	IRRIGATION	0.00		0.00	
3016	838.10	0.00	IRRIGATION	0.00		0.00	
3017	748.57	7.33	IRRIGATION	0.00		0.00	
3018	708.00	22.43	IRRIGATION	0.00		0.00	
3019	747.75	17.36	IRRIGATION	0.00		0.00	
3020	708.51	0.00	IRRIGATION	0.00		0.00	
3021	717.13	0.59	IRRIGATION	0.00		0.00	
2000	742.00	88.03	IRRIGATION	2,141.67	POWER_PLANT	0.00	
2001	742.00	107.43	IRRIGATION	23.33	HOSPITAL	0.00	
2002	634.08	5.61	IRRIGATION	0.00		0.00	
1000	501.44	13.00	IRRIGATION	0.00		0.00	
1001	662.00	4.01	IRRIGATION	0.00		0.00	
1002	610.21	0.00	IRRIGATION	0.00		0.00	
1003	594.46	14.10	IRRIGATION	0.00		0.00	
1004	423.83	63.76	IRRIGATION	0.00		0.00	
1005	424.56	0.00	IRRIGATION	0.00		0.00	
1006	471.76	27.57	IRRIGATION	0.00		0.00	
1007	410.00	3.46	IRRIGATION	0.00		0.00	
1008	374.89	7.13	IRRIGATION	0.00		0.00	
4000	665.00	17.88	IRRIGATION	0.00		0.00	
81	440.86	48.32	IRRIGATION	0.00		0.00	
82	647.00	15.81	IRRIGATION	0.00		0.00	
83	675.98	19.66	IRRIGATION	0.00		0.00	
84	711.00	24.61	IRRIGATION	0.00		0.00	
85	723.00	6.82	IRRIGATION	0.00		0.00	

PHASE 1 JUNCTION REPORT

JUNCTION: ID (Char)	JUNCTION: ELEVATION (Num)	DEMAND: DEMAND1 (Num)	DEMAND: PATTERN1 (Char)	DEMAND: DEMAND2 (Num)	DEMAND: PATTERN2 (Char)	DEMAND: DEMAND3 (Num)	DEMAND: PATTERN3 (Char)
86	727.99	4.42	IRRIGATION	0.00		0.00	
87	703.00	10.63	IRRIGATION	0.00		0.00	
4002	685.80	14.41	IRRIGATION	0.00		0.00	
4003	681.69	56.76	IRRIGATION	0.00		0.00	
4004	709.44	12.63	IRRIGATION	0.00		0.00	
4005	698.00	69.49	IRRIGATION	0.00		0.00	
4007	729.01	19.66	IRRIGATION	0.00		0.00	
4008	720.91	10.35	IRRIGATION	0.00		0.00	
2003	632.11	13.42	IRRIGATION	0.00		0.00	
4013	681.31	58.75	IRRIGATION	0.00		0.00	
4014	867.29	317.83	IRRIGATION	0.00		0.00	
4015	437.00	307.31	IRRIGATION	0.00		0.00	
4016	445.84	165.34	IRRIGATION	0.00		0.00	
4017	672.00	15.15	IRRIGATION	0.00		0.00	
4018	642.00	20.38	IRRIGATION	0.00		0.00	
4019	637.00	9.55	IRRIGATION	0.00		0.00	
4020	694.54	9.81	IRRIGATION	0.00		0.00	
1009	426.55	0.00	IRRIGATION	0.00		0.00	
1010	423.57	0.00	IRRIGATION	0.00		0.00	
1011	424.04	0.00	IRRIGATION	0.00		0.00	
1012	424.49	0.00	IRRIGATION	0.00		0.00	
1013	426.21	0.00	IRRIGATION	0.00		0.00	
1014	426.37	0.00	IRRIGATION	0.00		0.00	
3022	756.50	0.00	IRRIGATION	0.00		0.00	
3023	759.00	0.00	IRRIGATION	0.00		0.00	
3024	757.00	0.00	IRRIGATION	0.00		0.00	
3025	759.90	4.42	IRRIGATION	0.00		0.00	
3026	757.93	0.00	IRRIGATION	0.00		0.00	
3027	758.44	0.00	IRRIGATION	0.00		0.00	
3028	758.36	0.00	IRRIGATION	0.00		0.00	
3029	759.00	0.00	IRRIGATION	0.00		0.00	
3030	758.03	0.00	IRRIGATION	0.00		0.00	
3031	757.60	0.00	IRRIGATION	0.00		0.00	
3032	756.43	0.00	IRRIGATION	0.00		0.00	
1015	424.21	0.00	IRRIGATION	0.00		0.00	
1016	425.87	0.00	IRRIGATION	0.00		0.00	
1017	426.34	0.00	IRRIGATION	0.00		0.00	
1018	424.33	0.00	IRRIGATION	0.00		0.00	
1019	424.00	0.00	IRRIGATION	0.00		0.00	
88	777.00	31.33	IRRIGATION	0.00		0.00	

PHASE 1 JUNCTION REPORT

JUNCTION: ID (Char)	JUNCTION: ELEVATION (Num)	DEMAND: DEMAND1 (Num)	DEMAND: PATTERN1 (Char)	DEMAND: DEMAND2 (Num)	DEMAND: PATTERN2 (Char)	DEMAND: DEMAND3 (Num)	DEMAND: PATTERN3 (Char)
89	738.85	24.50	IRRIGATION	0.00		0.00	
90	610.00	9.07	IRRIGATION	138.89	HARRF	0.00	
4022	949.75	0.00	IRRIGATION	0.00		0.00	
4023	557.00	0.00	IRRIGATION	0.00		0.00	
4024	637.50	0.00	IRRIGATION	0.00		0.00	
4025	638.25	0.00	IRRIGATION	0.00		0.00	
4026	655.00	0.00	IRRIGATION	0.00		0.00	
4027	655.00	0.00	IRRIGATION	0.00		0.00	
4036	655.00	0.00	IRRIGATION	0.00		0.00	
4037	655.00	0.00	IRRIGATION	0.00		0.00	
2004	608.51	2.40	IRRIGATION	0.00		0.00	
4058	699.59	18.18	IRRIGATION	0.00		0.00	
6006	768.00	36.05	IRRIGATION	0.00		19.05	HARMONY
6007	805.00	0.00	IRRIGATION	0.00		19.05	HARMONY
6008	757.00	0.00	IRRIGATION	0.00		19.05	HARMONY
6009	652.00	16.92	IRRIGATION	0.00		19.05	HARMONY
6010	587.00	0.00	IRRIGATION	0.00		19.05	HARMONY
6011	590.00	0.00	IRRIGATION	0.00		19.05	HARMONY
6012	625.00	0.00	IRRIGATION	0.00		19.05	HARMONY
6013	631.00	0.00	IRRIGATION	0.00		19.05	HARMONY
6014	605.81	11.37	IRRIGATION	0.00		19.05	HARMONY
6015	637.00	0.00	IRRIGATION	0.00		19.05	HARMONY
6016	617.00	15.46	IRRIGATION	0.00		19.05	HARMONY
6017	593.00	0.00	IRRIGATION	0.00		19.05	HARMONY
6018	611.00	0.00	IRRIGATION	0.00		19.05	HARMONY
6019	715.00	44.78	IRRIGATION	0.00		19.05	HARMONY
6020	646.61	0.00	IRRIGATION	0.00		19.05	HARMONY
6024	727.35	0.00	IRRIGATION	0.00		19.05	HARMONY
6025	597.00	0.00	IRRIGATION	0.00		19.05	HARMONY

PHASE 1 PIPE REPORT

PIPE: ID (Char)	PIPEHYD: LENGTH (Num)	PIPEHYD: DIAMETER (Num)
1	1,372.28	24.00
2	2,710.53	8.00
3	2,309.39	24.00
4	2,576.61	18.00
5	1,857.67	4.00
6	395.40	4.00
7	3,065.89	18.00
8	699.57	6.00
9	501.60	4.00
10	741.98	18.00
11	2,633.43	18.00
12	2,941.00	24.00
13	1,896.66	4.00
14	3,685.69	18.00
15	1,363.87	18.00
16	4,728.36	18.00
17	1,213.79	18.00
18	2,066.42	6.00
19	844.19	24.00
20	1,122.69	24.00
21	2,583.97	18.00
22	774.10	8.00
23	87.23	8.00
24	1,224.78	8.00
25	2,527.24	6.00
26	2,892.97	24.00
27	236.68	6.00
28	3,062.44	16.00
29	2,319.95	16.00
30	2,185.05	8.00
31	614.19	8.00
32	719.57	8.00
33	2,891.76	6.00
34	617.62	6.00
35	220.03	6.00
36	1,348.41	16.00
37	1,815.89	16.00
38	2,004.24	16.00
39	411.58	16.00
40	2,015.80	16.00
41	727.48	16.00
42	515.97	8.00
43	2,244.94	8.00
44	1,924.50	8.00
45	343.44	12.00
46	64.58	12.00
47	2,024.26	12.00
48	889.00	12.00
49	117.30	24.00

PHASE 1 PIPE REPORT

PIPE: ID (Char)	PIPEHYD: LENGTH (Num)	PIPEHYD: DIAMETER (Num)
50	32.04	24.00
51	31.03	24.00
52	28.04	24.00
53	26.10	24.00
54	25.02	24.00
55	28.02	24.00
56	30.02	24.00
57	32.03	24.00
58	42.03	24.00
59	23.02	16.00
60	25.04	16.00
61	23.11	16.00
62	27.10	16.00
63	24.04	16.00
64	27.04	16.00
65	1,454.37	24.00
66	24.02	16.00
67	27.04	16.00
68	24.04	16.00
69	28.09	16.00
70	1,156.40	6.00
3000	1,942.67	12.00
71	795.33	12.00
72	1,374.43	12.00
73	302.14	12.00
74	59.66	12.00
3001	769.68	4.00
3002	672.22	6.00
3003	80.97	4.00
3004	1,134.94	6.00
3005	119.70	4.00
3006	345.64	6.00
3007	138.30	4.00
3008	469.33	6.00
3009	8.15	8.00
3010	313.87	4.00
3011	454.78	8.00
3012	423.32	4.00
3013	148.12	4.00
3014	782.71	6.00
3015	742.03	6.00
3016	151.58	4.00
3017	1,118.60	6.00
3018	164.52	6.00
3019	1,336.26	6.00
3020	59.41	6.00
3021	223.42	4.00
2000	2,651.08	16.00
2002	2,806.83	8.00

PHASE 1 PIPE REPORT

PIPE: ID (Char)	PIPEHYD: LENGTH (Num)	PIPEHYD: DIAMETER (Num)
1000	1,591.13	8.00
1001	756.28	6.00
1002	839.56	4.00
1003	501.18	8.00
1004	13.93	8.00
1005	2,219.40	4.00
1006	3.79	6.00
1007	502.07	6.00
1008	703.10	6.00
75	1,246.77	12.00
76	1,024.40	4.00
77	2,687.75	8.00
78	1,317.57	8.00
79	2,485.76	24.00
80	96.45	12.00
81	268.88	16.00
82	213.86	16.00
83	175.83	12.00
84	1,016.12	16.00
4001	817.19	24.00
4002	3,625.22	24.00
4004	3,165.64	8.00
4006	2,213.55	8.00
4007	4,229.93	24.00
4009	3,329.46	24.00
4010	535.94	12.00
4011	6,368.57	24.00
4012	6,141.83	8.00
2003	2,815.02	16.00
4013	2,330.63	12.00
4017	2,928.20	24.00
4018	5,904.01	24.00
4019	1,859.58	24.00
4021	3,210.48	12.00
4022	3,722.21	12.00
4023	182.15	12.00
4024	5,916.67	8.00
1009	2,936.82	6.00
1010	3.82	6.00
1011	3.89	6.00
1012	7.04	6.00
1013	6.83	6.00
3022	97.82	8.00
3023	23.29	8.00
3024	6.51	8.00
3025	7.50	8.00
3026	26.78	8.00
3027	8.96	8.00
3028	7.82	8.00

PHASE 1 PIPE REPORT

PIPE: ID (Char)	PIPEHYD: LENGTH (Num)	PIPEHYD: DIAMETER (Num)
3029	26.39	8.00
3030	6.52	8.00
3031	22.48	8.00
1014	6.92	6.00
1015	7.58	6.00
1016	3.05	6.00
1017	3.09	6.00
1018	2.98	6.00
85	2,359.45	12.00
86	2,018.74	12.00
87	33.90	12.00
4029	1,510.50	16.00
4030	1,590.41	24.00
4031	3,622.69	24.00
4032	88.99	24.00
4033	2,319.98	24.00
4038	82.51	24.00
4041	17.07	12.00
4044	23.71	12.00
2004	2,615.76	16.00
4067	5,433.46	8.00
6000	865.05	6.00
6001	1,066.05	6.00
6002	1,298.81	6.00
6003	1,837.68	6.00
6004	3,198.80	6.00
6005	838.34	8.00
6006	1,827.73	6.00
6007	354.49	10.00
6008	1,170.60	8.00
6009	1,326.45	8.00
6010	1,477.43	6.00
6011	1,858.62	6.00
6012	416.32	10.00
6013	943.65	10.00
6014	1,297.26	8.00
6015	2,688.12	12.00
6016	674.38	12.00
6018	2,745.42	8.00
6030	1,586.62	12.00
6031	1,346.88	12.00
6032	422.30	10.00

PHASE 2 JUNCTION REPORT

JUNCTION: ID (Char)	JUNCTION: ELEVATION (Num)	DEMAND: DEMAND1 (Num)	DEMAND: PATTERN1 (Char)	DEMAND: DEMAND2 (Num)	DEMAND: PATTERN2 (Char)	DEMAND: DEMAND3 (Num)	DEMAND: PATTERN3 (Char)
1	381.00	154.80	IRRIGATION	0.00		0.00	
2	729.17	0.00	IRRIGATION	0.00		0.00	
3	618.33	0.00	IRRIGATION	0.00		0.00	
4	611.73	15.95	IRRIGATION	0.00		0.00	
5	629.26	22.04	IRRIGATION	0.00		0.00	
6	638.00	16.19	IRRIGATION	0.00		0.00	
7	378.35	0.00	IRRIGATION	0.00		0.00	
8	363.84	0.04	IRRIGATION	0.00		0.00	
9	677.91	74.57	IRRIGATION	0.00		0.00	
10	680.27	13.14	IRRIGATION	0.00		0.00	
11	708.74	4.79	IRRIGATION	0.00		0.00	
12	711.99	3.65	IRRIGATION	0.00		0.00	
13	717.72	197.18	IRRIGATION	0.00		0.00	
14	613.00	0.00	IRRIGATION	0.00		0.00	
15	613.00	0.00	IRRIGATION	0.00		0.00	
16	613.00	0.00	IRRIGATION	0.00		0.00	
17	613.00	0.00	IRRIGATION	0.00		0.00	
18	613.00	0.00	IRRIGATION	0.00		0.00	
19	613.00	0.00	IRRIGATION	0.00		0.00	
20	613.00	0.00	IRRIGATION	0.00		0.00	
21	613.00	0.00	IRRIGATION	0.00		0.00	
22	613.00	0.00	IRRIGATION	0.00		0.00	
23	613.00	0.00	IRRIGATION	0.00		0.00	
24	722.08	38.13	IRRIGATION	0.00		0.00	
25	356.00	24.16	IRRIGATION	0.00		0.00	
26	749.00	41.97	IRRIGATION	0.00		0.00	
27	647.00	10.35	IRRIGATION	0.00		0.00	
28	775.47	0.00	IRRIGATION	0.00		0.00	
29	671.00	21.85	IRRIGATION	0.00		0.00	
30	705.83	35.11	IRRIGATION	0.00		0.00	
31	383.35	3.88	IRRIGATION	0.00		0.00	
32	644.02	35.53	IRRIGATION	0.00		0.00	
33	654.00	4.42	IRRIGATION	0.00		0.00	
34	664.86	18.11	IRRIGATION	0.00		0.00	
35	662.23	11.49	IRRIGATION	0.00		0.00	
36	661.12	44.73	IRRIGATION	0.00		0.00	
37	640.00	78.05	IRRIGATION	0.00		0.00	
38	736.60	143.87	IRRIGATION	0.00		0.00	
39	669.00	4.84	IRRIGATION	0.00		0.00	
40	711.00	8.99	IRRIGATION	0.00		0.00	

PHASE 2 JUNCTION REPORT

JUNCTION: ID (Char)	JUNCTION: ELEVATION (Num)	DEMAND: DEMAND1 (Num)	DEMAND: PATTERN1 (Char)	DEMAND: DEMAND2 (Num)	DEMAND: PATTERN2 (Char)	DEMAND: DEMAND3 (Num)	DEMAND: PATTERN3 (Char)
41	653.00	21.99	IRRIGATION	0.00		0.00	
42	654.00	3.15	IRRIGATION	0.00		0.00	
43	413.54	72.48	IRRIGATION	0.00		0.00	
44	654.42	44.89	IRRIGATION	0.00		0.00	
45	342.52	0.00	IRRIGATION	0.00		0.00	
46	713.17	21.37	IRRIGATION	0.00		0.00	
47	599.02	163.77	IRRIGATION	0.00		0.00	
48	374.00	46.16	IRRIGATION	0.00		0.00	
49	729.34	26.09	IRRIGATION	0.00		0.00	
50	636.00	47.60	IRRIGATION	0.00		0.00	
51	743.13	29.17	IRRIGATION	0.00		0.00	
52	659.00	25.55	IRRIGATION	0.00		0.00	
53	646.00	20.34	IRRIGATION	0.00		0.00	
54	425.94	18.79	IRRIGATION	0.00		0.00	
55	617.01	18.40	IRRIGATION	271.67	ICEOPLEX	0.00	
56	671.00	83.25	IRRIGATION	0.00		0.00	
57	701.98	0.18	IRRIGATION	0.00		0.00	
58	750.04	70.06	IRRIGATION	0.00		0.00	
59	649.29	22.03	IRRIGATION	0.00		0.00	
60	611.51	21.05	IRRIGATION	0.00		0.00	
61	613.00	0.00	IRRIGATION	0.00		0.00	
62	613.00	0.00	IRRIGATION	0.00		0.00	
63	613.00	0.00	IRRIGATION	0.00		0.00	
64	613.00	0.00	IRRIGATION	0.00		0.00	
65	613.00	0.00	IRRIGATION	0.00		0.00	
66	613.00	0.00	IRRIGATION	0.00		0.00	
67	613.00	0.00	IRRIGATION	0.00		0.00	
68	613.00	0.00	IRRIGATION	0.00		0.00	
69	613.00	0.00	IRRIGATION	0.00		0.00	
70	613.00	0.00	IRRIGATION	0.00		0.00	
71	553.45	7.15	IRRIGATION	0.00		0.00	
72	552.04	4.52	IRRIGATION	0.00		0.00	
73	640.11	0.83	IRRIGATION	0.00		0.00	
74	638.00	10.42	IRRIGATION	0.00		0.00	
75	627.15	6.32	IRRIGATION	0.00		0.00	
76	625.00	41.37	IRRIGATION	0.00		0.00	
3000	817.37	14.68	IRRIGATION	0.00		0.00	
77	774.05	11.96	IRRIGATION	0.00		0.00	
78	731.63	1.01	IRRIGATION	0.00		0.00	
79	727.00	0.00	IRRIGATION	0.00		0.00	

PHASE 2 JUNCTION REPORT

JUNCTION: ID (Char)	JUNCTION: ELEVATION (Num)	DEMAND: DEMAND1 (Num)	DEMAND: PATTERN1 (Char)	DEMAND: DEMAND2 (Num)	DEMAND: PATTERN2 (Char)	DEMAND: DEMAND3 (Num)	DEMAND: PATTERN3 (Char)
80	727.00	0.00	IRRIGATION	0.00		0.00	
3001	873.96	0.26	IRRIGATION	0.00		0.00	
3002	880.15	4.42	IRRIGATION	0.00		0.00	
3003	875.96	8.83	IRRIGATION	0.00		0.00	
3004	811.92	8.83	IRRIGATION	0.00		0.00	
3005	807.99	8.83	IRRIGATION	0.00		0.00	
3006	790.05	4.42	IRRIGATION	0.00		0.00	
3007	782.23	0.00	IRRIGATION	0.00		0.00	
3008	758.23	0.00	IRRIGATION	0.00		0.00	
3009	750.29	0.00	IRRIGATION	0.00		0.00	
3010	759.49	13.25	IRRIGATION	0.00		0.00	
3011	725.00	0.00	IRRIGATION	0.00		0.00	
3012	731.00	8.36	IRRIGATION	0.00		0.00	
3013	808.58	8.83	IRRIGATION	0.00		0.00	
3014	770.00	17.35	IRRIGATION	0.00		0.00	
3015	770.00	6.15	IRRIGATION	0.00		0.00	
3016	838.10	1.44	IRRIGATION	0.00		0.00	
3017	748.57	7.33	IRRIGATION	0.00		0.00	
3018	708.00	22.43	IRRIGATION	0.00		0.00	
3019	747.75	18.03	IRRIGATION	0.00		0.00	
3020	708.51	0.00	IRRIGATION	0.00		0.00	
3021	717.13	0.59	IRRIGATION	0.00		0.00	
2000	742.00	127.66	IRRIGATION	2,141.67	POWER_PLANT	0.00	
2001	742.00	95.63	IRRIGATION	23.33	HOSPITAL	0.00	
2002	634.08	5.61	IRRIGATION	0.00		0.00	
1000	501.44	13.00	IRRIGATION	0.00		0.00	
1001	662.00	4.30	IRRIGATION	0.00		0.00	
1002	610.21	0.00	IRRIGATION	0.00		0.00	
1003	594.46	14.10	IRRIGATION	0.00		0.00	
1004	423.83	63.76	IRRIGATION	0.00		0.00	
1005	424.56	0.00	IRRIGATION	0.00		0.00	
1006	471.76	40.58	IRRIGATION	0.00		0.00	
1007	410.00	11.14	IRRIGATION	0.00		0.00	
1008	374.89	7.13	IRRIGATION	0.00		0.00	
4000	665.00	35.49	IRRIGATION	0.00		0.00	
81	440.86	59.85	IRRIGATION	0.00		0.00	
82	647.00	16.05	IRRIGATION	0.00		0.00	
83	675.98	31.37	IRRIGATION	0.00		0.00	
84	711.00	24.73	IRRIGATION	0.00		0.00	
85	723.00	12.84	IRRIGATION	0.00		0.00	

PHASE 2 JUNCTION REPORT

JUNCTION: ID (Char)	JUNCTION: ELEVATION (Num)	DEMAND: DEMAND1 (Num)	DEMAND: PATTERN1 (Char)	DEMAND: DEMAND2 (Num)	DEMAND: PATTERN2 (Char)	DEMAND: DEMAND3 (Num)	DEMAND: PATTERN3 (Char)
86	727.99	4.42	IRRIGATION	0.00		0.00	
4001	799.50	803.98	IRRIGATION	0.00		0.00	
87	703.00	10.63	IRRIGATION	0.00		0.00	
4002	685.80	14.57	IRRIGATION	0.00		0.00	
4003	681.69	56.90	IRRIGATION	0.00		0.00	
4004	709.44	20.21	IRRIGATION	0.00		0.00	
4005	698.00	204.20	IRRIGATION	0.00		0.00	
4006	726.00	178.27	IRRIGATION	0.00		0.00	
4007	729.01	19.66	IRRIGATION	0.00		0.00	
4008	720.91	17.87	IRRIGATION	0.00		0.00	
4009	376.00	0.00	IRRIGATION	526.80	WAP	0.00	
2003	632.11	15.52	IRRIGATION	0.00		0.00	
4010	715.00	33.38	IRRIGATION	0.00		0.00	
4011	738.00	237.08	IRRIGATION	0.00		0.00	
4012	666.00	21.72	IRRIGATION	0.00		0.00	
4013	681.31	64.53	IRRIGATION	0.00		0.00	
4014	867.29	340.47	IRRIGATION	0.00		0.00	
4015	437.00	318.90	IRRIGATION	0.00		0.00	
4016	445.84	485.60	IRRIGATION	0.00		0.00	
4017	672.00	19.15	IRRIGATION	0.00		0.00	
4018	642.00	24.53	IRRIGATION	0.00		0.00	
4019	637.00	9.55	IRRIGATION	0.00		0.00	
4020	694.54	18.62	IRRIGATION	0.00		0.00	
4021	664.00	8.08	IRRIGATION	0.00		0.00	
1009	426.55	0.00	IRRIGATION	0.00		0.00	
1010	423.57	0.00	IRRIGATION	0.00		0.00	
1011	424.04	0.00	IRRIGATION	0.00		0.00	
1012	424.49	0.00	IRRIGATION	0.00		0.00	
1013	426.21	0.00	IRRIGATION	0.00		0.00	
1014	426.37	0.00	IRRIGATION	0.00		0.00	
3022	756.50	0.00	IRRIGATION	0.00		0.00	
3023	759.00	0.00	IRRIGATION	0.00		0.00	
3024	757.00	0.00	IRRIGATION	0.00		0.00	
3025	759.90	4.42	IRRIGATION	0.00		0.00	
3026	757.93	0.00	IRRIGATION	0.00		0.00	
3027	758.44	0.00	IRRIGATION	0.00		0.00	
3028	758.36	0.00	IRRIGATION	0.00		0.00	
3029	759.00	0.00	IRRIGATION	0.00		0.00	
3030	758.03	0.00	IRRIGATION	0.00		0.00	
3031	757.60	0.00	IRRIGATION	0.00		0.00	

PHASE 2 JUNCTION REPORT

JUNCTION: ID (Char)	JUNCTION: ELEVATION (Num)	DEMAND: DEMAND1 (Num)	DEMAND: PATTERN1 (Char)	DEMAND: DEMAND2 (Num)	DEMAND: PATTERN2 (Char)	DEMAND: DEMAND3 (Num)	DEMAND: PATTERN3 (Char)
3032	756.43	0.00	IRRIGATION	0.00		0.00	
1015	424.21	0.00	IRRIGATION	0.00		0.00	
1016	425.87	0.00	IRRIGATION	0.00		0.00	
1017	426.34	0.00	IRRIGATION	0.00		0.00	
1018	424.33	0.00	IRRIGATION	0.00		0.00	
1019	424.00	0.00	IRRIGATION	0.00		0.00	
88	777.00	31.38	IRRIGATION	0.00		0.00	
89	738.85	27.26	IRRIGATION	0.00		0.00	
90	610.00	13.28	IRRIGATION	138.89	HARRF	0.00	
4038	725.08	0.00	IRRIGATION	0.00		0.00	
4040	613.00	0.00	IRRIGATION	0.00		0.00	
4041	613.00	0.00	IRRIGATION	0.00		0.00	
4042	613.00	0.00	IRRIGATION	0.00		0.00	
4043	613.00	0.00	IRRIGATION	0.00		0.00	
4044	613.00	0.00	IRRIGATION	0.00		0.00	
4045	613.00	0.00	IRRIGATION	0.00		0.00	
4046	613.00	0.00	IRRIGATION	0.00		0.00	
4047	613.00	0.00	IRRIGATION	0.00		0.00	
4022	949.75	0.00	IRRIGATION	0.00		0.00	
4023	557.00	0.00	IRRIGATION	0.00		0.00	
4024	637.50	0.00	IRRIGATION	0.00		0.00	
4025	638.25	0.00	IRRIGATION	0.00		0.00	
4026	655.00	0.00	IRRIGATION	0.00		0.00	
4027	655.00	0.00	IRRIGATION	0.00		0.00	
4036	655.00	0.00	IRRIGATION	0.00		0.00	
4037	655.00	0.00	IRRIGATION	0.00		0.00	
4048	618.91	4.50	IRRIGATION	0.00		0.00	
2004	608.51	25.06	IRRIGATION	0.00		0.00	
4053	790.08	0.00	IRRIGATION	0.00		0.00	
4058	699.59	20.75	IRRIGATION	0.00		0.00	
6000	715.00	21.40	IRRIGATION	0.00		0.00	
6001	682.00	10.22	IRRIGATION	0.00		0.00	
6002	708.00	2.47	IRRIGATION	0.00		0.00	
6003	701.00	6.00	IRRIGATION	0.00		0.00	
6004	730.00	10.98	IRRIGATION	0.00		0.00	
6005	757.00	4.54	IRRIGATION	0.00		0.00	
6006	768.00	36.05	IRRIGATION	0.00		19.05	HARMONY
6007	805.00	0.00	IRRIGATION	0.00		19.05	HARMONY
6008	757.00	0.00	IRRIGATION	0.00		19.05	HARMONY
6009	652.00	16.92	IRRIGATION	0.00		19.05	HARMONY

PHASE 2 JUNCTION REPORT

JUNCTION: ID (Char)	JUNCTION: ELEVATION (Num)	DEMAND: DEMAND1 (Num)	DEMAND: PATTERN1 (Char)	DEMAND: DEMAND2 (Num)	DEMAND: PATTERN2 (Char)	DEMAND: DEMAND3 (Num)	DEMAND: PATTERN3 (Char)
6010	587.00	0.12	IRRIGATION	0.00		19.05	HARMONY
6011	590.00	0.00	IRRIGATION	0.00		19.05	HARMONY
6012	625.00	0.00	IRRIGATION	0.00		19.05	HARMONY
6013	631.00	0.00	IRRIGATION	0.00		19.05	HARMONY
6014	605.81	11.37	IRRIGATION	0.00		19.05	HARMONY
6015	637.00	0.00	IRRIGATION	0.00		19.05	HARMONY
6016	617.00	15.46	IRRIGATION	0.00		19.05	HARMONY
6017	593.00	0.00	IRRIGATION	0.00		19.05	HARMONY
6018	611.00	0.00	IRRIGATION	0.00		19.05	HARMONY
6019	715.00	47.28	IRRIGATION	0.00		19.05	HARMONY
6020	646.61	0.00	IRRIGATION	0.00		19.05	HARMONY
6021	772.00	15.76	IRRIGATION	0.00		0.00	
6022	677.00	4.05	IRRIGATION	0.00		0.00	
6023	737.00	51.86	IRRIGATION	0.00		0.00	
6024	727.35	0.05	IRRIGATION	0.00		19.05	HARMONY
6025	597.00	0.00	IRRIGATION	0.00		19.05	HARMONY

PHASE 2 PIPE REPORT

PIPE: ID (Char)	PIPEHYD: LENGTH (Num)	PIPEHYD: DIAMETER (Num)
1	1,372.28	24.00
2	2,710.53	8.00
3	2,309.39	24.00
4	2,576.61	18.00
5	1,857.67	4.00
6	395.40	4.00
7	3,065.89	18.00
8	699.57	6.00
9	501.60	4.00
10	741.98	18.00
11	2,633.43	18.00
12	2,941.00	24.00
13	1,896.66	4.00
14	3,685.69	18.00
15	1,363.87	18.00
16	4,728.36	18.00
17	1,213.79	18.00
18	2,066.42	6.00
19	844.19	24.00
20	1,122.69	24.00
21	2,583.97	18.00
22	774.10	8.00
23	87.23	8.00
24	1,224.78	8.00
25	2,527.24	6.00
26	2,892.97	24.00
27	236.68	6.00
28	3,062.44	16.00
29	2,319.95	16.00
30	2,185.05	8.00
31	614.19	8.00
32	719.57	8.00
33	2,891.76	6.00
34	617.62	6.00
35	220.03	6.00
36	1,348.41	16.00
37	1,815.89	16.00
38	2,004.24	16.00
39	411.58	16.00
40	2,015.80	16.00
41	727.48	16.00
42	515.97	8.00
43	2,244.94	8.00
44	1,924.50	8.00
45	343.44	12.00
46	64.58	12.00
47	2,024.26	12.00
48	889.00	12.00
50	32.04	24.00

PHASE 2 PIPE REPORT

PIPE: ID (Char)	PIPEHYD: LENGTH (Num)	PIPEHYD: DIAMETER (Num)
52	28.04	24.00
53	26.10	24.00
54	25.02	24.00
55	28.02	24.00
57	32.03	24.00
58	42.03	24.00
59	23.02	16.00
60	25.04	16.00
61	23.11	16.00
62	27.10	16.00
63	24.04	16.00
64	27.04	16.00
65	1,454.37	24.00
66	24.02	16.00
67	27.04	16.00
68	24.04	16.00
69	28.09	16.00
70	1,156.40	6.00
3000	1,942.67	12.00
71	795.33	12.00
72	1,374.43	12.00
73	302.14	12.00
74	59.66	12.00
3001	769.68	4.00
3002	672.22	6.00
3003	80.97	4.00
3004	1,134.94	6.00
3005	119.70	4.00
3006	345.64	6.00
3007	138.30	4.00
3008	469.33	6.00
3009	8.15	8.00
3010	313.87	4.00
3011	454.78	8.00
3012	423.32	4.00
3013	148.12	4.00
3014	782.71	6.00
3015	742.03	6.00
3016	151.58	4.00
3017	1,118.60	6.00
3018	164.52	6.00
3019	1,336.26	6.00
3020	59.41	6.00
3021	223.42	4.00
2002	2,806.83	8.00
1000	1,591.13	8.00
1001	756.28	6.00
1002	839.56	4.00
1003	501.18	8.00

PHASE 2 PIPE REPORT

PIPE: ID (Char)	PIPEHYD: LENGTH (Num)	PIPEHYD: DIAMETER (Num)
1004	13.93	8.00
1005	2,219.40	4.00
1006	3.79	6.00
1007	502.07	6.00
1008	703.10	6.00
75	1,246.77	12.00
76	1,024.40	4.00
77	2,687.75	8.00
78	1,317.57	8.00
79	2,485.76	24.00
80	96.45	12.00
81	268.88	16.00
82	213.86	16.00
83	175.83	12.00
84	1,016.12	16.00
4000	5,169.29	16.00
4001	817.19	24.00
4002	3,625.22	24.00
4003	3,249.68	8.00
4004	3,165.64	8.00
4006	2,213.55	8.00
4007	4,229.93	24.00
4008	3,661.61	24.00
4009	3,329.46	24.00
4010	535.94	12.00
4011	6,368.57	24.00
4012	6,141.83	8.00
2003	2,815.02	16.00
4013	2,330.63	12.00
4014	1,277.59	16.00
4015	2,633.08	12.00
4016	3,069.47	8.00
4017	2,928.20	24.00
4018	5,904.01	24.00
4019	1,859.58	24.00
4020	12,865.56	12.00
4021	3,210.48	12.00
4022	3,722.21	12.00
4023	182.15	12.00
4024	5,916.67	8.00
4025	4,247.90	8.00
1009	2,936.82	6.00
1010	3.82	6.00
1011	3.89	6.00
1012	7.04	6.00
1013	6.83	6.00
3022	97.82	8.00
3023	23.29	8.00
3024	6.51	8.00

PHASE 2 PIPE REPORT

PIPE: ID (Char)	PIPEHYD: LENGTH (Num)	PIPEHYD: DIAMETER (Num)
3025	7.50	8.00
3026	26.78	8.00
3027	8.96	8.00
3028	7.82	8.00
3029	26.39	8.00
3030	6.52	8.00
3031	22.48	8.00
1014	6.92	6.00
1015	7.58	6.00
1016	3.05	6.00
1017	3.09	6.00
1018	2.98	6.00
85	2,359.45	12.00
86	2,018.74	12.00
4028	1,848.87	12.00
4046	24.68	24.00
4047	22.97	24.00
4048	11.86	16.00
4049	12.43	16.00
4050	16.77	16.00
4051	15.52	16.00
4052	24.90	24.00
4053	22.46	24.00
4029	1,510.50	16.00
4030	1,590.41	24.00
4031	3,622.69	24.00
4032	88.99	24.00
4033	2,319.98	24.00
4038	82.51	24.00
4041	17.07	12.00
4044	23.71	12.00
4054	161.11	16.00
4056	119.03	16.00
4057	1,391.17	16.00
88	36.34	12.00
89	114.04	24.00
2004	2,615.76	16.00
90	40.65	24.00
4062	134.62	16.00
4067	5,433.46	8.00
6000	865.05	6.00
6001	1,066.05	6.00
6002	1,298.81	6.00
6003	1,837.68	6.00
6004	3,198.80	6.00
6005	838.34	8.00
6006	1,827.73	6.00
6007	354.49	10.00
6008	1,170.60	8.00

PHASE 2 PIPE REPORT

PIPE: ID (Char)	PIPEHYD: LENGTH (Num)	PIPEHYD: DIAMETER (Num)
6009	1,326.45	8.00
6010	1,477.43	6.00
6011	1,858.62	6.00
6012	416.32	10.00
6013	943.65	10.00
6014	1,297.26	8.00
6015	2,688.12	12.00
6016	674.38	12.00
6018	2,745.42	8.00
6019	2,048.71	8.00
6020	2,687.23	8.00
6021	2,628.97	8.00
6022	311.88	8.00
6023	314.13	8.00
6024	1,639.34	8.00
6025	1,505.16	8.00
6026	1,248.36	8.00
6027	1,932.20	8.00
6028	3,356.00	8.00
6029	761.92	8.00
6030	1,586.62	12.00
6031	1,346.88	12.00
6032	422.30	10.00
4076	87.46	24.00

PHASE 3 JUNCTION REPORT

JUNCTION: ID (Char)	JUNCTION: ELEVATION (Num)	DEMAND: DEMAND1 (Num)	DEMAND: PATTERN1 (Char)	DEMAND: DEMAND2 (Num)	DEMAND: PATTERN2 (Char)	DEMAND: DEMAND3 (Num)	DEMAND: PATTERN3 (Char)
1	381.00	171.72	IRRIGATION	0.00		0.00	
2	729.17	0.00	IRRIGATION	0.00		0.00	
3	618.33	0.00	IRRIGATION	0.00		0.00	
4	611.73	38.23	IRRIGATION	0.00		0.00	
5	629.26	22.46	IRRIGATION	0.00		0.00	
6	638.00	65.35	IRRIGATION	0.00		0.00	
7	378.35	0.00	IRRIGATION	0.00		0.00	
8	363.84	0.22	IRRIGATION	0.00		0.00	
9	677.91	82.53	IRRIGATION	0.00		0.00	
10	680.27	14.33	IRRIGATION	0.00		0.00	
11	708.74	6.69	IRRIGATION	0.00		0.00	
12	711.99	3.65	IRRIGATION	0.00		0.00	
13	717.72	260.22	IRRIGATION	0.00		0.00	
14	613.00	0.00	IRRIGATION	0.00		0.00	
15	613.00	0.00	IRRIGATION	0.00		0.00	
16	613.00	0.00	IRRIGATION	0.00		0.00	
17	613.00	0.00	IRRIGATION	0.00		0.00	
18	613.00	0.00	IRRIGATION	0.00		0.00	
19	613.00	0.00	IRRIGATION	0.00		0.00	
20	613.00	0.00	IRRIGATION	0.00		0.00	
21	613.00	0.00	IRRIGATION	0.00		0.00	
22	613.00	0.00	IRRIGATION	0.00		0.00	
23	613.00	0.00	IRRIGATION	0.00		0.00	
24	722.08	69.29	IRRIGATION	0.00		0.00	
25	356.00	24.16	IRRIGATION	0.00		0.00	
26	749.00	57.04	IRRIGATION	0.00		0.00	
27	647.00	11.53	IRRIGATION	0.00		0.00	
28	775.47	0.00	IRRIGATION	0.00		0.00	
29	671.00	21.85	IRRIGATION	0.00		0.00	
30	705.83	42.92	IRRIGATION	0.00		0.00	
31	383.35	4.81	IRRIGATION	0.00		0.00	
32	644.02	37.20	IRRIGATION	0.00		0.00	
33	654.00	16.22	IRRIGATION	0.00		0.00	
34	664.86	36.82	IRRIGATION	0.00		0.00	
35	662.23	167.34	IRRIGATION	0.00		0.00	
36	661.12	70.59	IRRIGATION	0.00		0.00	
37	640.00	103.54	IRRIGATION	0.00		0.00	
38	736.60	146.32	IRRIGATION	0.00		0.00	
39	669.00	5.72	IRRIGATION	0.00		0.00	
40	711.00	8.99	IRRIGATION	0.00		0.00	

PHASE 3 JUNCTION REPORT

JUNCTION: ID (Char)	JUNCTION: ELEVATION (Num)	DEMAND: DEMAND1 (Num)	DEMAND: PATTERN1 (Char)	DEMAND: DEMAND2 (Num)	DEMAND: PATTERN2 (Char)	DEMAND: DEMAND3 (Num)	DEMAND: PATTERN3 (Char)
41	653.00	22.33	IRRIGATION	0.00		0.00	
42	654.00	8.86	IRRIGATION	0.00		0.00	
43	413.54	79.28	IRRIGATION	0.00		0.00	
44	654.42	47.75	IRRIGATION	0.00		0.00	
45	342.52	0.00	IRRIGATION	0.00		0.00	
46	713.17	21.37	IRRIGATION	0.00		0.00	
47	599.02	194.00	IRRIGATION	0.00		0.00	
48	374.00	72.08	IRRIGATION	0.00		0.00	
49	729.34	47.30	IRRIGATION	0.00		0.00	
50	636.00	115.27	IRRIGATION	0.00		0.00	
51	743.13	50.57	IRRIGATION	0.00		0.00	
52	659.00	43.80	IRRIGATION	0.00		0.00	
53	646.00	20.68	IRRIGATION	0.00		0.00	
54	425.94	39.85	IRRIGATION	0.00		0.00	
55	617.01	19.16	IRRIGATION	271.67	ICEOPLEX	0.00	
56	671.00	119.94	IRRIGATION	0.00		0.00	
57	701.98	0.18	IRRIGATION	0.00		0.00	
58	750.04	70.06	IRRIGATION	0.00		0.00	
59	649.29	23.09	IRRIGATION	0.00		0.00	
60	611.51	21.05	IRRIGATION	0.00		0.00	
61	613.00	0.00	IRRIGATION	0.00		0.00	
62	613.00	0.00	IRRIGATION	0.00		0.00	
63	613.00	0.00	IRRIGATION	0.00		0.00	
64	613.00	0.00	IRRIGATION	0.00		0.00	
65	613.00	0.00	IRRIGATION	0.00		0.00	
66	613.00	0.00	IRRIGATION	0.00		0.00	
67	613.00	0.00	IRRIGATION	0.00		0.00	
68	613.00	0.00	IRRIGATION	0.00		0.00	
69	613.00	0.00	IRRIGATION	0.00		0.00	
70	613.00	0.00	IRRIGATION	0.00		0.00	
71	553.45	7.17	IRRIGATION	0.00		0.00	
72	552.04	41.31	IRRIGATION	0.00		0.00	
73	640.11	0.83	IRRIGATION	0.00		0.00	
74	638.00	10.42	IRRIGATION	0.00		0.00	
75	627.15	6.32	IRRIGATION	0.00		0.00	
76	625.00	42.25	IRRIGATION	0.00		0.00	
3000	817.37	21.42	IRRIGATION	0.00		0.00	
77	774.05	11.96	IRRIGATION	0.00		0.00	
78	731.63	1.01	IRRIGATION	0.00		0.00	
79	727.00	0.00	IRRIGATION	0.00		0.00	

PHASE 3 JUNCTION REPORT

JUNCTION: ID (Char)	JUNCTION: ELEVATION (Num)	DEMAND: DEMAND1 (Num)	DEMAND: PATTERN1 (Char)	DEMAND: DEMAND2 (Num)	DEMAND: PATTERN2 (Char)	DEMAND: DEMAND3 (Num)	DEMAND: PATTERN3 (Char)
80	727.00	0.00	IRRIGATION	0.00		0.00	
3001	873.96	0.26	IRRIGATION	0.00		0.00	
3002	880.15	4.42	IRRIGATION	0.00		0.00	
3003	875.96	8.83	IRRIGATION	0.00		0.00	
3004	811.92	8.83	IRRIGATION	0.00		0.00	
3005	807.99	8.83	IRRIGATION	0.00		0.00	
3006	790.05	4.42	IRRIGATION	0.00		0.00	
3007	782.23	0.00	IRRIGATION	0.00		0.00	
3008	758.23	0.00	IRRIGATION	0.00		0.00	
3009	750.29	0.00	IRRIGATION	0.00		0.00	
3010	759.49	13.25	IRRIGATION	0.00		0.00	
3011	725.00	0.00	IRRIGATION	0.00		0.00	
3012	731.00	8.36	IRRIGATION	0.00		0.00	
3013	808.58	8.83	IRRIGATION	0.00		0.00	
3014	770.00	17.35	IRRIGATION	0.00		0.00	
3015	770.00	6.24	IRRIGATION	0.00		0.00	
3016	838.10	1.44	IRRIGATION	0.00		0.00	
3017	748.57	7.33	IRRIGATION	0.00		0.00	
3018	708.00	22.43	IRRIGATION	0.00		0.00	
3019	747.75	18.03	IRRIGATION	0.00		0.00	
3020	708.51	0.00	IRRIGATION	0.00		0.00	
3021	717.13	0.59	IRRIGATION	0.00		0.00	
2000	742.00	155.45	IRRIGATION	2,141.67	POWER_PLANT	0.00	
2001	742.00	95.63	IRRIGATION	23.33	HOSPITAL	0.00	
2002	634.08	5.61	IRRIGATION	0.00		0.00	
1000	501.44	13.00	IRRIGATION	0.00		0.00	
1001	662.00	4.53	IRRIGATION	0.00		0.00	
1002	610.21	0.00	IRRIGATION	0.00		0.00	
1003	594.46	14.10	IRRIGATION	0.00		0.00	
1004	423.83	63.76	IRRIGATION	0.00		0.00	
1005	424.56	0.00	IRRIGATION	0.00		0.00	
1006	471.76	43.28	IRRIGATION	0.00		0.00	
1007	410.00	11.14	IRRIGATION	0.00		0.00	
1008	374.89	7.13	IRRIGATION	0.00		0.00	
4000	665.00	90.00	IRRIGATION	0.00		0.00	
81	440.86	67.06	IRRIGATION	0.00		0.00	
82	647.00	19.18	IRRIGATION	0.00		0.00	
83	675.98	47.69	IRRIGATION	0.00		0.00	
84	711.00	24.73	IRRIGATION	0.00		0.00	
85	723.00	15.10	IRRIGATION	0.00		0.00	

PHASE 3 JUNCTION REPORT

JUNCTION: ID (Char)	JUNCTION: ELEVATION (Num)	DEMAND: DEMAND1 (Num)	DEMAND: PATTERN1 (Char)	DEMAND: DEMAND2 (Num)	DEMAND: PATTERN2 (Char)	DEMAND: DEMAND3 (Num)	DEMAND: PATTERN3 (Char)
86	727.99	4.42	IRRIGATION	0.00		0.00	
4001	799.50	1,012.20	IRRIGATION	0.00		0.00	
87	703.00	14.52	IRRIGATION	0.00		0.00	
4002	685.80	25.27	IRRIGATION	0.00		0.00	
4003	681.69	146.32	IRRIGATION	0.00		0.00	
4004	709.44	125.76	IRRIGATION	0.00		0.00	
4005	698.00	376.52	IRRIGATION	0.00		0.00	
4006	726.00	739.29	IRRIGATION	0.00		0.00	
4007	729.01	33.46	IRRIGATION	0.00		0.00	
4008	720.91	75.40	IRRIGATION	0.00		0.00	
4009	376.00	42.60	IRRIGATION	526.80	WAP	0.00	
2003	632.11	15.52	IRRIGATION	0.00		0.00	
4010	715.00	59.13	IRRIGATION	0.00		0.00	
4011	738.00	471.18	IRRIGATION	0.00		0.00	
4012	666.00	53.45	IRRIGATION	0.00		0.00	
4013	681.31	224.14	IRRIGATION	0.00		0.00	
4014	867.29	441.96	IRRIGATION	0.00		0.00	
4015	437.00	375.00	IRRIGATION	0.00		0.00	
4016	445.84	797.93	IRRIGATION	0.00		0.00	
4017	672.00	50.67	IRRIGATION	0.00		0.00	
4018	642.00	31.36	IRRIGATION	0.00		0.00	
4019	637.00	9.55	IRRIGATION	0.00		0.00	
4020	694.54	76.93	IRRIGATION	0.00		0.00	
4021	664.00	8.19	IRRIGATION	0.00		0.00	
1009	426.55	0.00	IRRIGATION	0.00		0.00	
1010	423.57	0.00	IRRIGATION	0.00		0.00	
1011	424.04	0.00	IRRIGATION	0.00		0.00	
1012	424.49	0.00	IRRIGATION	0.00		0.00	
1013	426.21	0.00	IRRIGATION	0.00		0.00	
1014	426.37	0.00	IRRIGATION	0.00		0.00	
3022	756.50	0.00	IRRIGATION	0.00		0.00	
3023	759.00	0.00	IRRIGATION	0.00		0.00	
3024	757.00	0.00	IRRIGATION	0.00		0.00	
3025	759.90	4.42	IRRIGATION	0.00		0.00	
3026	757.93	0.00	IRRIGATION	0.00		0.00	
3027	758.44	0.00	IRRIGATION	0.00		0.00	
3028	758.36	0.00	IRRIGATION	0.00		0.00	
3029	759.00	0.00	IRRIGATION	0.00		0.00	
3030	758.03	0.00	IRRIGATION	0.00		0.00	
3031	757.60	0.00	IRRIGATION	0.00		0.00	

PHASE 3 JUNCTION REPORT

JUNCTION: ID (Char)	JUNCTION: ELEVATION (Num)	DEMAND: DEMAND1 (Num)	DEMAND: PATTERN1 (Char)	DEMAND: DEMAND2 (Num)	DEMAND: PATTERN2 (Char)	DEMAND: DEMAND3 (Num)	DEMAND: PATTERN3 (Char)
3032	756.43	0.00	IRRIGATION	0.00		0.00	
1015	424.21	0.00	IRRIGATION	0.00		0.00	
1016	425.87	0.00	IRRIGATION	0.00		0.00	
1017	426.34	0.00	IRRIGATION	0.00		0.00	
1018	424.33	0.00	IRRIGATION	0.00		0.00	
1019	424.00	0.00	IRRIGATION	0.00		0.00	
88	777.00	33.90	IRRIGATION	0.00		0.00	
89	738.85	42.36	IRRIGATION	0.00		0.00	
90	610.00	13.28	IRRIGATION	138.89	HARRF	0.00	
4038	725.08	0.00	IRRIGATION	0.00		0.00	
4040	613.00	0.00	IRRIGATION	0.00		0.00	
4041	613.00	0.00	IRRIGATION	0.00		0.00	
4042	613.00	0.00	IRRIGATION	0.00		0.00	
4043	613.00	0.00	IRRIGATION	0.00		0.00	
4022	949.75	0.00	IRRIGATION	0.00		0.00	
4023	557.00	0.00	IRRIGATION	0.00		0.00	
4024	637.50	0.00	IRRIGATION	0.00		0.00	
4025	638.25	0.00	IRRIGATION	0.00		0.00	
4026	655.00	0.00	IRRIGATION	0.00		0.00	
4027	655.00	0.00	IRRIGATION	0.00		0.00	
4036	655.00	0.00	IRRIGATION	0.00		0.00	
4037	655.00	0.00	IRRIGATION	0.00		0.00	
4048	618.91	4.50	IRRIGATION	0.00		0.00	
2004	608.51	27.85	IRRIGATION	0.00		0.00	
4053	790.08	0.00	IRRIGATION	0.00		0.00	
4058	699.59	20.75	IRRIGATION	0.00		0.00	
6000	715.00	21.40	IRRIGATION	0.00		0.00	
6001	682.00	10.22	IRRIGATION	0.00		0.00	
6002	708.00	2.47	IRRIGATION	0.00		0.00	
6003	701.00	6.00	IRRIGATION	0.00		0.00	
6004	730.00	11.40	IRRIGATION	0.00		0.00	
6005	757.00	4.54	IRRIGATION	0.00		0.00	
6006	768.00	36.05	IRRIGATION	0.00		19.05	HARMONY
6007	805.00	0.00	IRRIGATION	0.00		19.05	HARMONY
6008	757.00	0.00	IRRIGATION	0.00		19.05	HARMONY
6009	652.00	16.92	IRRIGATION	0.00		19.05	HARMONY
6010	587.00	24.36	IRRIGATION	0.00		19.05	HARMONY
6011	590.00	35.95	IRRIGATION	0.00		19.05	HARMONY
6012	625.00	0.00	IRRIGATION	0.00		19.05	HARMONY
6013	631.00	0.00	IRRIGATION	0.00		19.05	HARMONY

PHASE 3 JUNCTION REPORT

JUNCTION: ID (Char)	JUNCTION: ELEVATION (Num)	DEMAND: DEMAND1 (Num)	DEMAND: PATTERN1 (Char)	DEMAND: DEMAND2 (Num)	DEMAND: PATTERN2 (Char)	DEMAND: DEMAND3 (Num)	DEMAND: PATTERN3 (Char)
6014	605.81	11.37	IRRIGATION	0.00		19.05	HARMONY
6015	637.00	0.00	IRRIGATION	0.00		19.05	HARMONY
6016	617.00	15.46	IRRIGATION	0.00		19.05	HARMONY
6017	593.00	0.00	IRRIGATION	0.00		19.05	HARMONY
6018	611.00	0.00	IRRIGATION	0.00		19.05	HARMONY
6019	715.00	47.28	IRRIGATION	0.00		19.05	HARMONY
6020	646.61	0.00	IRRIGATION	0.00		19.05	HARMONY
6021	772.00	15.76	IRRIGATION	0.00		0.00	
6022	677.00	4.05	IRRIGATION	0.00		0.00	
6023	737.00	60.74	IRRIGATION	0.00		0.00	
6024	727.35	0.05	IRRIGATION	0.00		19.05	HARMONY
6025	597.00	0.00	IRRIGATION	0.00		19.05	HARMONY

PHASE 3 PIPE REPORT

PIPE: ID (Char)	PIPEHYD: LENGTH (Num)	PIPEHYD: DIAMETER (Num)
1	1,372.28	24.00
2	2,710.53	8.00
3	2,309.39	24.00
4	2,576.61	18.00
5	1,857.67	4.00
6	395.40	4.00
7	3,065.89	18.00
8	699.57	6.00
9	501.60	4.00
10	741.98	18.00
11	2,633.43	18.00
12	2,941.00	24.00
13	1,896.66	8.00
14	3,685.69	18.00
15	1,363.87	18.00
16	4,728.36	18.00
17	1,213.79	18.00
18	2,066.42	6.00
19	844.19	24.00
20	1,122.69	24.00
21	2,583.97	18.00
22	774.10	8.00
23	87.23	12.00
24	1,224.78	8.00
25	2,527.24	6.00
26	2,892.97	24.00
27	236.68	6.00
28	3,062.44	24.00
29	2,319.95	24.00
30	2,185.05	8.00
31	614.19	8.00
32	719.57	8.00
33	2,891.76	6.00
34	617.62	6.00
35	220.03	6.00
36	1,348.41	24.00
37	1,815.89	24.00
38	2,004.24	16.00
39	411.58	16.00
40	2,015.80	24.00
41	727.48	16.00
42	515.97	8.00
43	2,244.94	8.00
44	1,924.50	8.00
45	343.44	12.00
46	64.58	12.00
47	2,024.26	12.00
48	889.00	12.00
50	32.04	24.00

PHASE 3 PIPE REPORT

PIPE: ID (Char)	PIPEHYD: LENGTH (Num)	PIPEHYD: DIAMETER (Num)
52	28.04	24.00
53	26.10	24.00
54	25.02	24.00
55	28.02	24.00
57	32.03	24.00
58	42.03	24.00
59	23.02	16.00
60	25.04	16.00
61	23.11	16.00
62	27.10	16.00
63	24.04	16.00
64	27.04	16.00
65	1,454.37	24.00
66	24.02	16.00
67	27.04	16.00
68	24.04	16.00
69	28.09	16.00
70	1,156.40	6.00
3000	1,942.67	12.00
71	795.33	12.00
72	1,374.43	12.00
73	302.14	12.00
74	59.66	12.00
3001	769.68	4.00
3002	672.22	6.00
3003	80.97	4.00
3004	1,134.94	6.00
3005	119.70	4.00
3006	345.64	6.00
3007	138.30	4.00
3008	469.33	6.00
3009	8.15	8.00
3010	313.87	4.00
3011	454.78	8.00
3012	423.32	4.00
3013	148.12	4.00
3014	782.71	6.00
3015	742.03	6.00
3016	151.58	4.00
3017	1,118.60	6.00
3018	164.52	6.00
3019	1,336.26	6.00
3020	59.41	6.00
3021	223.42	4.00
2002	2,806.83	8.00
1000	1,591.13	8.00
1001	756.28	6.00
1002	839.56	4.00
1003	501.18	8.00

PHASE 3 PIPE REPORT

PIPE: ID (Char)	PIPEHYD: LENGTH (Num)	PIPEHYD: DIAMETER (Num)
1004	13.93	8.00
1005	2,219.40	4.00
1006	3.79	6.00
1007	502.07	6.00
1008	703.10	6.00
75	1,246.77	12.00
76	1,024.40	4.00
77	2,687.75	12.00
78	1,317.57	12.00
79	2,485.76	24.00
80	96.45	12.00
81	268.88	16.00
82	213.86	16.00
83	175.83	12.00
84	1,016.12	16.00
4000	5,169.29	16.00
4001	817.19	24.00
4002	3,625.22	24.00
4003	3,249.68	8.00
4004	3,165.64	8.00
4006	2,213.55	8.00
4007	4,229.93	24.00
4008	3,661.61	24.00
4009	3,329.46	24.00
4010	535.94	12.00
4011	6,368.57	24.00
4012	6,141.83	8.00
2003	2,815.02	16.00
4013	2,330.63	12.00
4014	1,277.59	16.00
4015	2,633.08	12.00
4016	3,069.47	8.00
4017	2,928.20	24.00
4018	5,904.01	24.00
4019	1,859.58	24.00
4020	12,865.56	12.00
4021	3,210.48	12.00
4022	3,722.21	12.00
4023	182.15	12.00
4024	5,916.67	8.00
4025	4,247.90	8.00
1009	2,936.82	6.00
1010	3.82	6.00
1011	3.89	6.00
1012	7.04	6.00
1013	6.83	6.00
3022	97.82	8.00
3023	23.29	8.00
3024	6.51	8.00

PHASE 3 PIPE REPORT

PIPE: ID (Char)	PIPEHYD: LENGTH (Num)	PIPEHYD: DIAMETER (Num)
3025	7.50	8.00
3026	26.78	8.00
3027	8.96	8.00
3028	7.82	8.00
3029	26.39	8.00
3030	6.52	8.00
3031	22.48	8.00
1014	6.92	6.00
1015	7.58	6.00
1016	3.05	6.00
1017	3.09	6.00
1018	2.98	6.00
85	2,359.45	12.00
86	2,018.74	12.00
4028	1,848.87	12.00
4046	24.68	24.00
4048	11.86	16.00
4051	15.52	16.00
4053	22.46	24.00
4029	1,510.50	16.00
4030	1,590.41	24.00
4031	3,622.69	24.00
4032	88.99	24.00
4033	2,319.98	24.00
4038	82.51	24.00
4041	17.07	12.00
4044	23.71	12.00
4054	161.11	16.00
4056	119.03	16.00
4057	1,391.17	16.00
88	36.34	12.00
89	114.04	24.00
2004	2,615.76	16.00
90	40.65	24.00
4062	134.62	16.00
4067	5,433.46	8.00
6000	865.05	6.00
6001	1,066.05	6.00
6002	1,298.81	6.00
6003	1,837.68	6.00
6004	3,198.80	6.00
6005	838.34	8.00
6006	1,827.73	6.00
6007	354.49	10.00
6008	1,170.60	8.00
6009	1,326.45	8.00
6010	1,477.43	6.00
6011	1,858.62	6.00
6012	416.32	10.00

PHASE 3 PIPE REPORT

PIPE: ID (Char)	PIPEHYD: LENGTH (Num)	PIPEHYD: DIAMETER (Num)
6013	943.65	10.00
6014	1,297.26	8.00
6015	2,688.12	12.00
6016	674.38	12.00
6018	2,745.42	8.00
6019	2,048.71	8.00
6020	2,687.23	8.00
6021	2,628.97	8.00
6022	311.88	8.00
6023	314.13	8.00
6024	1,639.34	8.00
6025	1,505.16	8.00
6026	1,248.36	8.00
6027	1,932.20	8.00
6028	3,356.00	8.00
6029	761.92	8.00
6030	1,586.62	12.00
6031	1,346.88	12.00
6032	422.30	10.00
4076	87.46	24.00



Lori Vereker
 Director of Utilities
 201 North Broadway, Escondido, CA 92025
 Phone: 760-839-4090 Fax: 760-839-4597

July 5, 2011

Mr. David Gibson
 Executive Officer
 California Regional Water Quality Control Board
 San Diego Region
 9174 Sky Park Court, Suite 100
 San Diego, CA 92123-4340
 Attn: Groundwater Basin Branch

Subject: Certification letter for Recycled Water Master Plan

Dear Mr. Gibson:

I certify that the City of Escondido has completed the Recycled Water Master Plan in compliance with Order No. R9-2010-0032.

A copy of Recycled Water Master Plan is available to review upon request.

These documents were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

If you have any questions, contact me at (760) 839-4090.

Sincerely,

Lori Vereker
 Director of Utilities

SENDER: COMPLETE THIS SECTION	
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	
1. Article Addressed to:	
Mr. David Gibson	
Executive Officer	
California Regional Water Quality Control Bd., San Diego Region	
9174 Sky Park Ct., Ste. 100	
San Diego, CA 92123-4340	
Attn: Groundwater Basin Branch	
2. Article Number	
(Transfer from service label)	

COMPLETE THIS SECTION ON DELIVERY	
A. Signature	
<input checked="" type="checkbox"/> B. Stewart <input type="checkbox"/> Agent <input type="checkbox"/> Address	
B. Received by (Printed Name)	C. Date of Delivery
D. Is delivery address different from item 1? <input type="checkbox"/> Yes	
If YES, enter delivery address below: <input checked="" type="checkbox"/> No	
3. Service Type	
<input checked="" type="checkbox"/> Certified Mail <input type="checkbox"/> Express Mail <input type="checkbox"/> Registered <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Insured Mail <input type="checkbox"/> C.O.D.	
4. Restricted Delivery? (Extra Fee) <input type="checkbox"/> Yes	
7010 3090 0003 7011 6882	

Sam Abed, Mayor

Marie Walk

Recycled water *Certify of master plan*