Title 22 Engineering Report

Prepared for the

Rancho Murieta Community Services District

December 2013

Prepared by

AECOM

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Acronyms and Abbreviations

ACP	Asbestos Cement Pipe
AF	Acre-feet
AFY	Acre-feet per Year
AWWA	American Water Works Association
CCB	Chlorine Contact Basin
CCP	Chlorine Contact Pipeline
CDO	Cease and Desist Order
CDPH	California Department of Public Health
CEQA	California Environmental Quality Act
cfm	Cubic foot per minute or cubic feet per minute
DAF	Dissolved Air Flotation
District	Rancho Murieta Community Services District
DO	Dissolved Oxygen
ft	Foot or Feet
gpm	Gallons per Minute
lf	Linear Feet
MG	Million Gallons
MGD	Million Gallons per Day
MPN	Most Probable Number
MTI	Murieta Townhomes Inc.
PIP	Plastic Irrigation Pipe
psi	Pounds per square inch
RMA	Rancho Murieta Association
RMCSD	Rancho Murieta Community Services District

RMCC	Rancho Murieta Country Club
RP	Reverse Flow Protection Device
RWQCB or Regional Board	Regional Water Quality Control Board
VA	Villas Association
WWRP	Wastewater Reclamation Plant

1.0 Introduction

1.1 Purpose

The State of California Water Recycling Criteria (adopted December 2000) require the submission of an engineering report to the Regional Water Quality Control Board (Regional Board) and the California Department of Public Health (CDPH) before implementing recycled water projects. Pursuant to these requirements, the Rancho Murieta Community Services District (hereafter referred to as "RMCSD" or the "District") has prepared this Title 22 Engineering Report to establish compliance 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 and prescribe:

- Recycled water quality and wastewater treatment requirements for the various grades of recycled water and types of allowed uses,
- Reliability features required in the treatment facilities to ensure safe performance, and
- Recycled water Use Area requirements pertaining to the use of the recycled water (including dual plumbed facilities).

This document describes the existing recycled water uses for irrigation of two golf courses managed by the Rancho Murieta Country Club (RMCC) and irrigation of the Van Vleck Ranch. In addition, this document describes the proposed recycled water landscape irrigation and ancillary uses, which will be supported by the District's ability to continue to comply with Title 22 requirements with the addition of these proposed uses and expanded service area.

1.2 Recycled Water Use Areas

Rancho Murieta is a 3,500-acre residential development located 23 miles east of Sacramento, CA and is bisected by both the Cosumnes River and State Highway 16 as shown in Figure 1. The District owns and operates a wastewater reclamation plant (WWRP) which receives domestic and a relatively small amount of commercial wastewater from the community of Rancho Murieta. The WWRP is capable of producing secondary and tertiary treated wastewater.

1.2.1 Existing Recycled Water Uses

Recycled water has been used successfully to irrigate the two eighteen hole golf courses within Rancho Murieta for approximately 30 years in accordance with Waste Discharge Requirements Order No. 5-01-124. Currently, the total combined irrigation area and demand of the two golf courses is estimated to be 250 acres and 550 AFY, respectively. Currently recycled water deliveries provide, on average about 455 AFY and the remaining 95 AFY is met through raw water diversions from the Cosumnes River.

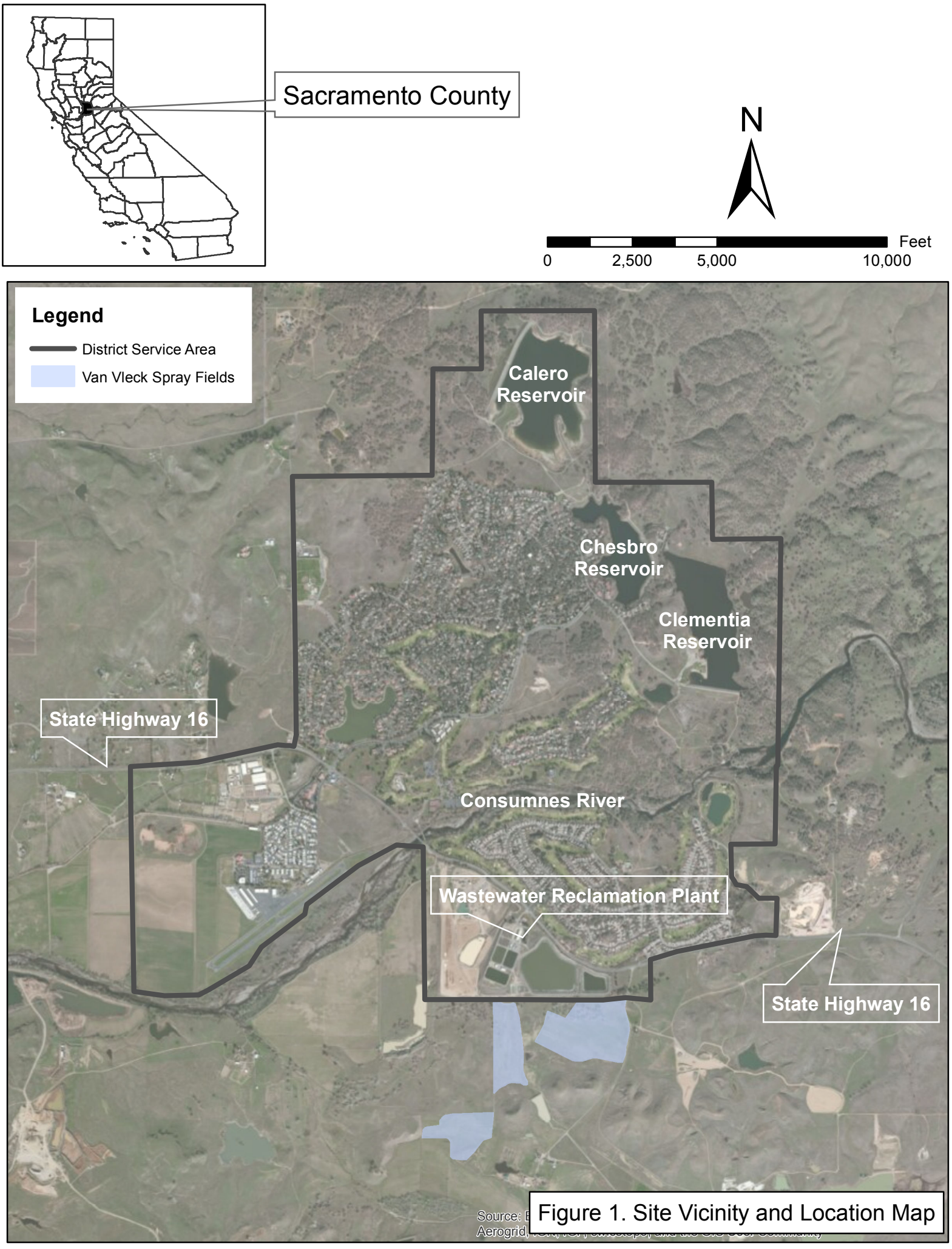


Figure 1. Site Vicinity and Location Map

In 2005, during an abnormally high winter rainfall season, mandatory upgrades to the WWRP's disinfection process required by the WDR issued in 2001, resulted in a carryover of approximately 300 acre-feet (AF) of stored secondary effluent, which ultimately led to the release of tertiary treated effluent from one of the golf course storage lakes. To address this issue and ensuing Cease and Desist Order (CDO), RMCSD obtained Waste Discharge Requirements Order No. R5-2007-0109 adopted in August 2007 and amended in December 2009, which allows for the irrigation of certain spray fields within the Van Vleck Ranch. The location of the spray fields are immediately south of the WWRP as shown in *Figure 2*. This WDR is set to expire on December 31, 2014. Currently, the total combined spray field area and disposal capacity is 97 acres and 215 AFY, respectively. Table 1 summarizes the existing recycled water uses and disposal capacities. As shown, RMCSD has the ability to dispose of 765 AFY. Currently only 450 AFY is produced by the WWRP.

Table 1. Summary of Existing Recycled Water Use Areas

Area	Description	Assessor's Parcel Nos.	Approximate Disposal Capacity (AFY)*
North Golf Course	One 18-hole golf courses. Total estimated area of North and South Golf Courses is 250 acres.	07301900060000, 07301900070000, 07301900080000, 07301900090000, 07301900100000, and 07301901080000	550
South Golf Course	One 18-hole golf courses. Total estimated area of North and South Golf Courses is 250 acres.	07307900090000, 07307900100000, 07307900210000, and 07307900350000	
Van Vleck Ranch	Approximately 97 acres of undeveloped pastureland	12800800670000 and 12800800680000	215
		Total	765

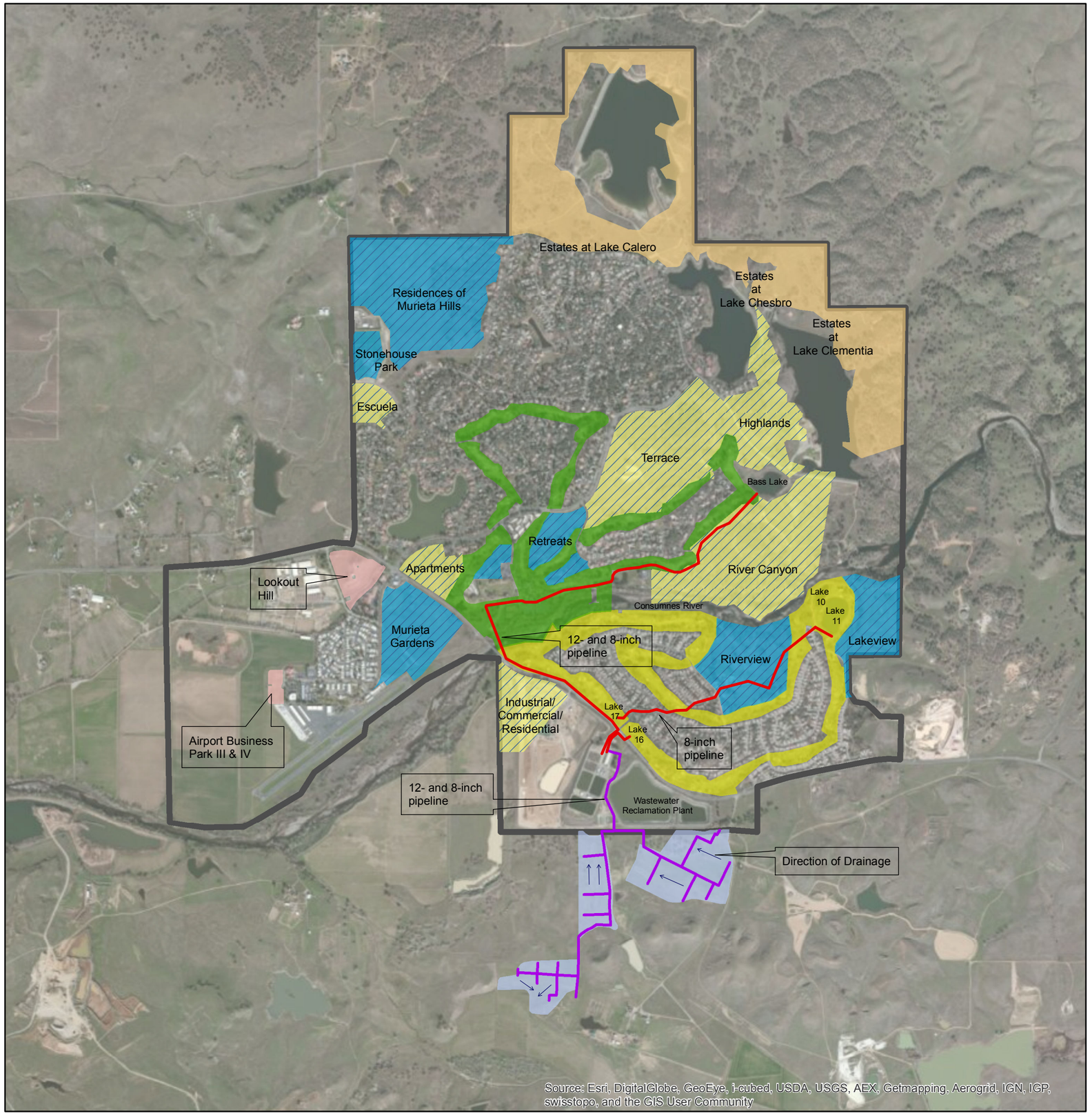
*Capacities are based on average agronomic rates of 3.3 acre-ft per acre.

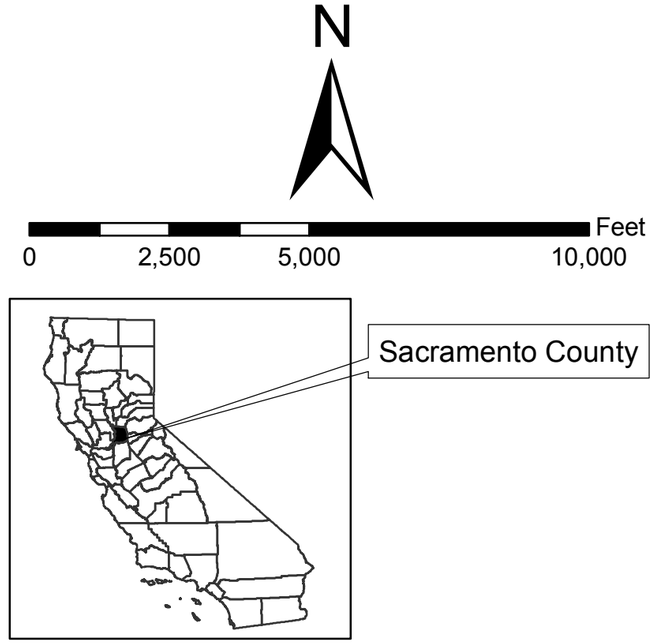
1.2.2 Proposed Recycled Water Use Areas

Recycled water has been approved by the California Department of Public Health (CDPH) for a variety of uses. In Rancho Murieta, proposed landscape irrigation and ancillary recycled water uses include the irrigation of parks; greenbelts; playgrounds; athletic fields; residential front and backyard landscaping; common areas; commercial, freeway, highway, and street landscaping; and dust control.

The District is requesting that all of these uses, except for residential front and backyard irrigation, be approved by the CDPH and the RWQCB throughout the District's service area. Residential front and backyard irrigation use areas would most likely be limited to the developments shown in Figure 3. Table 2 summarizes the estimated number of residential, commercial, and park users associated with each development shown in Figure 3. Altogether,

the projected recycled water demands associated with the developments described in this table and figure equal approximately 415 AFY.





Legend

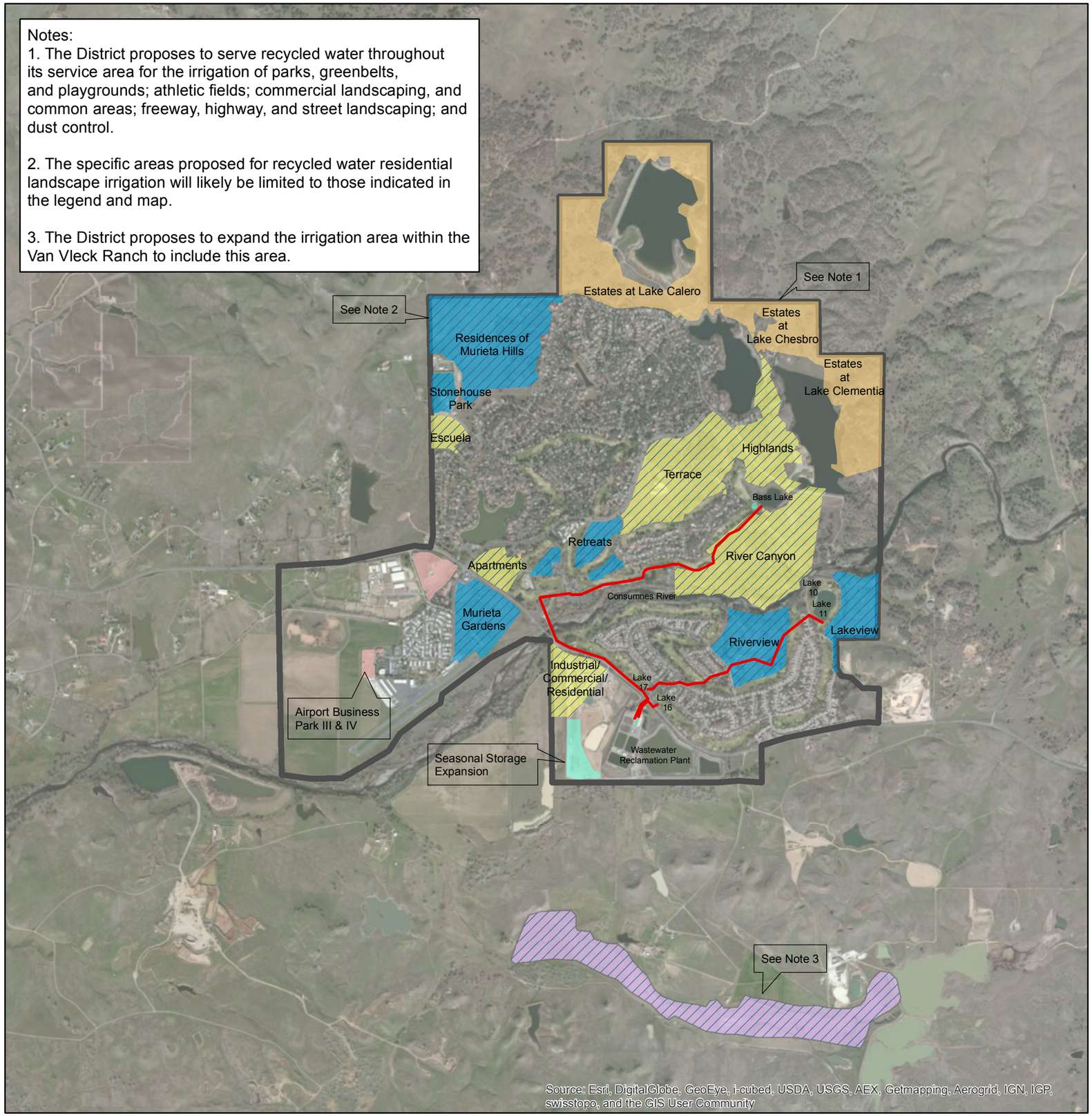
- Golf Course Conveyance System
- Phase 1 Developments
- Phase 2 Developments
- Phase 2 Developments (No Recycled Water Service)
- North Golf Course (Recycled Water Use Area)
- South Golf Course (Recycled Water Use Area)
- Van Vleck Ranch Conveyance and Distribution System
- Van Vleck Ranch (Recycled Water Use Area)
- District Service Area

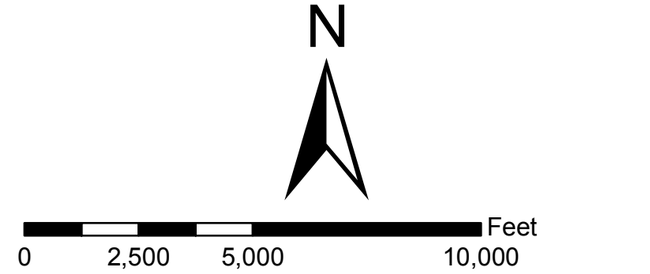
Figure 2. Existing Recycled Water Use Areas

Notes:
1. The District proposes to serve recycled water throughout its service area for the irrigation of parks, greenbelts, and playgrounds; athletic fields; commercial landscaping, and common areas; freeway, highway, and street landscaping; and dust control.

2. The specific areas proposed for recycled water residential landscape irrigation will likely be limited to those indicated in the legend and map.

3. The District proposes to expand the irrigation area within the Van Vleck Ranch to include this area.





Legend

- Golf Course Conveyance System
- Phase 1 Developments (Proposed Recycled Water Use Area)
- Phase 2 Developments (Proposed Recycled Water Use Area)
- Phase 2 Developments (No Recycled Water Service)
- Van Vleck Ranch (Proposed Spray Field 4)
- District Service Area

Figure 3. Proposed Recycled Water Use Areas

Table 2. Summary of Proposed Recycled Water Use Areas

Development	Description	Parcel Numbers	Disposal Capacity (AFY)
Phase 1 Developments (620 residential units, 50 commercial units, and 2 parks)			
Lakeview	99 residential units	07307900460000	15.8
Murieta Gardens	99 residential and 50 commercial units; 1 acre park	07304700040000, 07304700050000, and 07304700060000	19.6
Residences of Murieta Hills	198 residential units	07301901060000 and 07301901050000	73.8
Retreats	84 residential units	07307900440000 and 07301900990000	18.8
Riverview	140 residential units	07307900070000	22.4
Stonehouse Park	4 acre park (existing)	07301900460000	14.4
Van Vleck Ranch – Spray Field No. 4	Approximately 185 acres of undeveloped pastureland	12800800670000 12801000290000 12800800680000	410
		Subtotal	575
Phase 2 Developments (717 residential units, 125 commercial units, and 4 acre park)			
Apartments	170 residential units	07301900690000	23.8
Escuela	40 residential units and 4 acre park	07301900250000	25.9
Highlands	110 residential units	07308000090000 and 07308000050000	42.1
Industrial / Commercial / Residential	100 residential and 125 commercial units	07301800290000	50.9
River Canyon	120 residential units	07307900230000	46.4
Terrace	177 residential units	07308000080000, 07308000060000, and 07308000070000	59.9
		Subtotal	249
		Total	825

1.3 Schedule

The schedule for the expansion of the recycled water program has been established in two phases based on the following assumed occupancy of the future residential developments:

- Phase 1: 2016 – 2019 (estimated recycled water demand of 165 AFY)
- Phase 2: 2020 – 2026 (estimated recycled water demand of 250 AFY)

The timing of the Phase 1 projects is contiguous with the assumed occupancy schedules for the Lakeview, Murieta Gardens, Retreats, Residences of Murieta Hills, and Riverview developments of 2015 to 2018. For Phase 2, project timing is based on the assumed occupancy schedule for the Escuela, Apartments, Industrial / Commercial / Residential, Terrace, Highlands, and River Canyon developments of 2018 to 2022.

Based on the occupancy schedule described above, and satisfying golf course irrigation demands first, recycled water will not become available for residential landscape irrigation until 2018 when recycled water production is estimated to exceed 500 AFY on average. Comparison of recycled water production and demands estimates indicate there will be about a 100 AFY deficit of recycled water throughout the development period, without the use of the Van Vleck spray fields.

2.0 Recycled Water Project

2.1 General

The RMCSD owns and operates the WWRP which receives domestic wastewater from the community of Rancho Murieta and currently provides secondary- and tertiary-level treatment of recycled water for two specific irrigation activities. The secondary treatment facilities have a rated average annual capacity of 1.55 million gallons per day (MGD) whereas the tertiary treatment facilities have rated filtration and disinfection capacities of 3.0 and 2.3 MGD, respectively. The secondary treatment facilities have sufficient capacity to meet the original service area build-out of 5,200 units. This build-out projection has since been reduced to 4,348 units with a projected average dry weather flow (ADWF) of 0.90 MGD. Currently the estimated ADWF is approximately 0.51 MGD.

The RMCSD and the landowners of the Rancho Murieta Country Club (RMCC) golf courses entered into the *Agreement for the Use of Reclaimed Wastewater* (dated May 17, 1988) and an *Amendment to Agreement for the Use of Reclaimed Wastewater* (dated May 4, 1994). These agreements, as modified by the Waste Discharge Requirements 5-01-124 issued by the Regional Board for the use of recycled water at Rancho Murieta, set forth the operating principles and the respective responsibilities of the RMCSD and RMCC for the use of recycled water on the golf courses. In general, RMCSD is responsible for the operation and maintenance of the collection system, wastewater and tertiary treatment facilities, whereas the RMCC is responsible for the operation and maintenance of the golf course irrigation systems, including transmission pipelines from the WWRP to RMCC facilities, irrigation storage ponds (e.g., Bass Lake and Lakes 10, 11, 16, and 17). In addition and in accordance with their easement agreement and WDR R5-2007-0109, RMCSD manages the treatment, distribution and use of recycled water at the Van Vleck Ranch for pasture irrigation. The use of recycled water at the Van Vleck Ranch is coordinated by the RMCSD with the Van Vleck Ranch manager to allow for movement of the K-line irrigation lines to accommodate periodic grass cutting and cattle rotation.

Table 3 lists the roles associated with the existing and proposed recycled water systems. Specific responsibilities associated with these roles are described in Sections 2.3.1, 2.3.2, and 2.3.3.

2.2 Rules and Regulations

Title 22 of the California Code of Regulations (Water Recycled Criteria) sets the criteria for "disinfected tertiary recycled water". This designation allows for unrestricted use of recycled water for irrigation, which encompasses the current and proposed uses for recycled water at Rancho Murieta. The criteria are as follows:

- CT (the product of total chlorine residual and modal contact time measured at the same point) must be at least 450 milligram-minutes per liter at all times with a model contact time of at least 90 minutes.

Table 3. Producer, Distributor, and User Roles and Responsibilities

Use Area	Producer	Distributor	User
Existing			
South Golf Courses	RMCSD	RMCSD	RMCC
North Golf Course	RMCSD	RMCSD	RMCC
Van Vleck Ranch	RMCSD	RMCSD	RMCSD
Proposed Residential Landscape Irrigation			
Murieta Gardens	RMCSD	RMCSD	Property Owners
Residences of Murieta Hills	RMCSD	RMCSD	Property Owners
Retreats	RMCSD	RMCSD	Property Owners
Apartments	RMCSD	RMCSD	Property Owners
Escuela	RMCSD	RMCSD	Property Owners
Highlands	RMCSD	RMCSD	Property Owners
Industrial / Commercial / Residential	RMCSD	RMCSD	Property Owners
River Canyon	RMCSD	RMCSD	Property Owners
Terrace	RMCSD	RMCSD	Property Owners
All Other Proposed Landscape Irrigation Uses			
Service Area	RMCSD	RMCSD	RMA, MTI, VA, and RMCSD
Dust Control			
Service Area	RMCSD	RMCSD	To Be Determined

- Coliform bacteria must not exceed:
    - Most probable number (MPN) of 2.2 per 100 mL (7-day median),
    - MPN of 23 per 100 mL (one sample in 30 days), and
    - Never exceed an MPN of 240 per 100 mL.
- Turbidity of filtered tertiary water must not exceed:
    - 2 NTU (average),
    - 5 NTU (up to 5% of the time), and
    - Never exceed 10 NTU.

The Rancho Murieta WWRP recycled water effluent meets all of these criteria.

RMCSD recently adopted Recycled Water Standards (October 16, 2013) and the Recycled Water Code (January 18, 2012). District Code, Chapter 17 (Recycled Water Code) sets forth rules and regulations regarding the use of recycled water in Rancho Murieta. The Recycled Water Standards define District procedures, design, work, materials, capacities, facilities and other improvements pertaining to recycled water facilities or connections.

Together the Recycled Water Code and Recycled Water Standards establish and provide the means to enforce rules and regulations for recycled water users, design and construction of recycled water facilities, and the use of recycled water in accordance with federal and state reclamation criteria. Copies of the Recycled Water Standards and Recycled Water Code are provided in Appendix B and C.

2.3 Producer – Distributor - User

Table 3 summarizes the producer, distributor, and user roles for the existing and proposed recycled water systems. The following are descriptions associated with these roles.

2.3.1 Producer Responsibilities

Key responsibilities of the Producer (i.e., RMCSD for both the existing and proposed recycled water systems) are to operate the WWRP and produce recycled water which complies with the standards set forth for "disinfected tertiary recycled water" as defined by Section 60301.230 of Title 22. The District is responsible for obtaining and complying with Waste Discharge Requirements, which describe requirements and limitations associated with recycled water production and WWRP operation, maintenance, and monitoring.

2.3.2 Distributor Responsibilities

Key responsibilities of the Distributor (i.e., RMCSD and RMCC for both the existing and proposed recycled water systems) include the conveyance of recycled water from the WWRP to the point of use, establishing design criteria, and the operation and maintenance of the facilities associated with this activity. Table 4 lists the entities that currently own, operate, and/or maintain the facilities associated with existing recycled water uses.

Table 4. Distributors Associated with Existing Recycled Water Distribution Components

Distribution Component	Own	Operate	Maintain
Equalization Basin	RMCSD	RMCSD	RMCSD
South Golf Course[a]			
12-inch Gravity Pipeline	RMCSD	RMCSD/RMCC[b]	RMCSD/RMCC[b]
Lakes 16 and 17[c]	RMCC	RMCC	RMCC
Lake 17 Pump Station	RMCC	RMCC	RMCC
8-inch Transfer Pipeline	RMCC	RMCC	RMCC
Lakes 10 and 11	RMCC	RMCC	RMCC

Lake 10 and 11 Pump Station	RMCC	RMCC	RMCC
South Course Irrigation System	RMCC	RMCC	RMCC
North Golf Course[a]			
North Course Pump Station	RMCSD	RMCSD	RMCSD
12-inch Pressure Pipeline[c] (WWRP to the Yellow Bridge)	RMCSD	RMCSD / RMCC[b]	RMCSD / RMCC[b]
8-inch Pressure Pipeline (Yellow Bridge to Bass Lake)	RMCC	RMCC	RMCC
Bass Lake	RMCC	RMCC	RMCC
Bass Lake Irrigation Pump Station	RMCC	RMCC	RMCC
North Course Irrigation System	RMCC	RMCC	RMCC
Van Vleck Ranch[d]			
Recycled Water Pump Station	RMCSD	RMCSD	RMCSD
6-inch Transmission Pipeline	RMCSD	RMCSD	RMCSD
Spray Field Irrigation System	RMCSD	RMCSD	RMCSD

[a] Agreement for Availability of Use of Reclaimed Water (dated May 17, 1988).
[b] According to the Amendment to Agreement for Availability of Use of Reclaimed Water (dated May 4, 1994), RMCSD and RMCC agreed to share operation and maintenance costs on a 50 / 50 basis.
[c] Equivalent Point of Connection
[d] Grant and Agreement Regarding Temporary Irrigation Easement (dated August 13, 2007).

With respect to recycled water irrigation of future residential developments, RMCSD shall be responsible for establishing the design criteria and review of Recycled Water Plans for offsite and onsite facilities, as well as the operation and maintenance of the distribution of recycled water up to the Point of Connection (i.e., recycled water meter), except for RMCC facilities.

Individual home owners shall be responsible for the onsite design (in compliance with the District's Recycled Water Standard), operation, and maintenance of their recycled water landscape irrigation system downstream of the Point of Connection. Furthermore, as described in Recycled Water Standards, the District reserves the right to control and schedule the use of recycled water to maintain acceptable working conditions within the recycled water systems. These and other recycled water distribution conditions will be administered by the District at its discretion. Where repairs or replacement of a service pipeline upstream of the Point of Connection is required, it shall be the responsibility of the District. Conversely, the cost of repairs or replacement of components downstream of the Point of Connection shall be the responsibility of the property owner and made within the timelines described in the Recycled Water Code.

2.3.3 User Responsibilities

The RMCC is responsible for the use of recycled water for golf course irrigation as well as the operation and maintenance of the golf course irrigation systems and irrigation storage ponds. As previously described, RMCSD manages the use of recycled water at the Van Vleck Ranch. The use of recycled water at the Van Vleck Ranch is coordinated by the RMCSD with the Van Vleck Ranch manager to allow for movement of the K-line irrigation lines to accommodate periodic grass cutting and cattle rotation.

In the future, it is envisioned that the Rancho Murieta Association (RMA), Murieta Townhomes Inc. (MTI), Villas Association (VA), and RMCSD will be responsible for the use of recycled water for landscape irrigation. As described in the Recycled Water Standards, individual owners of homes using recycled water for front and backyard landscape irrigation shall be responsible for maintaining and operating the recycled water system downstream of the Point of Connection and ensuring that recycled water use is in accordance with all applicable rules and regulations. More specifically, all irrigation users must:

- Designate a site supervisor that receives training by attending a District-sponsored Recycled Water Orientation or be able to demonstrate knowledge of the application and maintenance of their recycled water system.

- Be aware of, and familiar with the District's Recycled Water Standards and Recycled Water Code and knowledgeable about the practices and procedures of using recycled water.

- Obtain all permits and pay all fees required to establish, operate, and maintain their recycled water system.

- Ensure that all materials used during the design, construction, and maintenance of the system are approved or recommended for recycled water use.

- Routinely monitor and inspect the recycled water system for any situation that may not be in conformance with the regulatory requirements. Problems such as irrigation controller malfunctions, irrigation schedule adjustments, excessive ponding or runoff of recycled water, broken or out-of-adjustment sprinkler heads, etc. must be corrected as soon as they become apparent.

- Maintain the use area's recycled water system downstream of the Point of Compliance.

- Report all violations and emergencies to the required local governing agencies.

- Obtain prior written authorization from the District and any required regulatory agency before making any modifications to an approved recycled water system, or to the potable water system if it is in close proximity to the recycled water system.

2.3.4 Other District Responsibilities

As described in Section 2.2.9 of the Recycled Water Standards, the District shall be responsible for eliminating or controlling conditions that directly or indirectly cause runoff or windblown spray to pass outside of approved recycled water Use Areas or cause ponding or overspray of recycled water whether by design, construction practice, or system operation to the greatest extent possible through the use of the following Best Management Practices (BMPs):

- Proper design, selection, operation, and maintenance of sprinkler heads.[1]
- Implementation of operations and management plans that provide for detection of leaks, and correction within 72 hours of learning of a leak or prior to the release of 1,000 gallons.[1]
- Refraining from application during precipitation events.[1]
- Management of any impoundment such that no discharge occurs unless the discharge is a result of a 25-year, 24-hour storm event or greater. In the event of an unauthorized discharge, the Executive Officer of the RWQCB shall be notified in writing within thirty (30) days.[1]

Areas irrigated with recycled water shall be managed to prevent ponding and conditions conducive to the proliferation of mosquitoes and other disease vectors, and to avoid creation of a public nuisance or health hazard. The following practices shall be implemented, at a minimum:

1. Irrigation water must infiltrate completely within a 48-hour period.
2. Ditches receiving irrigation runoff, not serving as wildlife habitat, shall be maintained free of emergent, marginal and floating vegetation.
3. Low-pressure and unpressurized pipelines and ditches that may be accessible to mosquitoes shall not be used to store recycled water.

2.4 Raw Wastewater

2.4.1 Source and Chemical Quality

The source of raw wastewater for the WWRP is residential homes in the Rancho Murieta community and a few commercial facilities (e.g., stores, restaurants, bank, etc.) within the community. There are no industrial activities that discharge wastewater to the WWRP. Current

[1] One of the four required Administrator BMPs as required by Recycled Water Specification B. 15 of WQO No. 2009-0006-DWQ

influent flows are approximately 0.5 MGD, and projected future flows are expected to be approximately 0.9 MGD based on the anticipated level of development. As described later in this report, raw wastewater monitoring is limited to flow, five-day biochemical oxygen demand (BOD_5), and total suspended solids (TSS).

The raw wastewater quality data for 2010 and 2011 are summarized below in Table 5.

Table 5. Raw Wastewater Quality

Parameter	Range (mg/L)	Median (mg/L)	95th Percentile (mg/L)
Flow	0.28-1.20	0.50	0.69
BOD	104 - 266	175	260
Total Suspended Solids	113 - 410	205	318

2.4.2 Source Control Program

The wastewater generated at Rancho Murieta is domestic with minimal commercial contributions; therefore, a pretreatment program is not required. It is expected that future developments will continue to discharge domestic wastewater. RMCSD Sewer Code prohibits the discharge of toxic chemicals and other harmful compounds to the sewer. Residents and businesses routinely receive written materials describing substances that are prohibited from discharge into sewers for the protection of the wastewater treatment processes or cause the recycled water to be unsuitable for irrigation.

2.5 Treatment Processes

The WWRP consists of both a secondary wastewater facility and a tertiary treatment plant. It is designed to treat an average annual flow of 1.55 MGD and a peak flow of 3.00 MGD in the secondary treatment ponds (a series of five aerated facultative ponds). Seasonal storage (October to March) of the secondary treated wastewater is provided in two storage reservoirs, which have a combined storage capacity of approximately 238 million gallons (MG) or 728 AF. Approximately 170 AF of additional seasonal storage capacity may be installed to accommodate anticipated projected growth within the community. The assumed timing for Phase 1 and 2 developments requires this project to be initiated in mid- to late-2018 and completed by the end of 2019 when average dry weather flows to the WWRP approach 0.67 MGD. The process flow diagram for the WWRP is shown in

Figure 4. The major components of the WWRP are as follows:

- Five aerated facultative ponds and two secondary storage reservoirs,
- Two dissolved air flotation (DAF) units
- Two sand filtration units
- Chlorine contact detention facilities
- Equalization basin
- Recycled water pump station

Raw wastewater is pumped to the WWRP through three pumping stations located throughout Rancho Murieta. Raw wastewater enters the WWRP at Pond #1. The WWRP is equipped with a system to add chlorine to the raw wastewater before entering Pond #1 if needed. Pond #1 contains five rotating brush and floating aerators all of which run continuously, to provide dissolved oxygen (DO) and maintain DO levels in the pond above a concentration of 1 mg/L. The aerators in the other ponds are managed by District operations staff that set the timers to maintain proper DO levels. The effluent from Pond #1 flows by gravity through the remaining ponds in sequential order. Ponds #2 and #3 each contain three aerators; Pond #4 has two, and Pond #5 has one aerator. There is one solar powered mixer in each of the five treatment ponds, and the ponds are equipped with piping such that any pond can be bypassed while keeping the plant in operation. In addition, all ponds except Pond 1 can be drained completely for sludge removal and/or repairs.

The capacity of the tertiary filtration facilities is 3.0 MGD. However, the limiting capacity of the overall tertiary treatment process is 2.3 MGD due to the existing chlorine contact basin. The District will be initiating an upgrade to this facility by adding chlorine contact capacity through the addition of concrete walls within the existing equalization basin to increase the rated disinfection capacity to 3.0 MGD. The District estimates that this project should be completed prior to serving recycled water to additional landscape irrigation customers (e.g., 2018 or thereabouts depending on development and funding capabilities). After tertiary treatment, the recycled water is stored in an equalization basin located at the WWRP prior to conveyance to the Use Areas. This basin has a capacity of 1.8 MG.

The design parameters for the WWRP are summarized in Table 6.

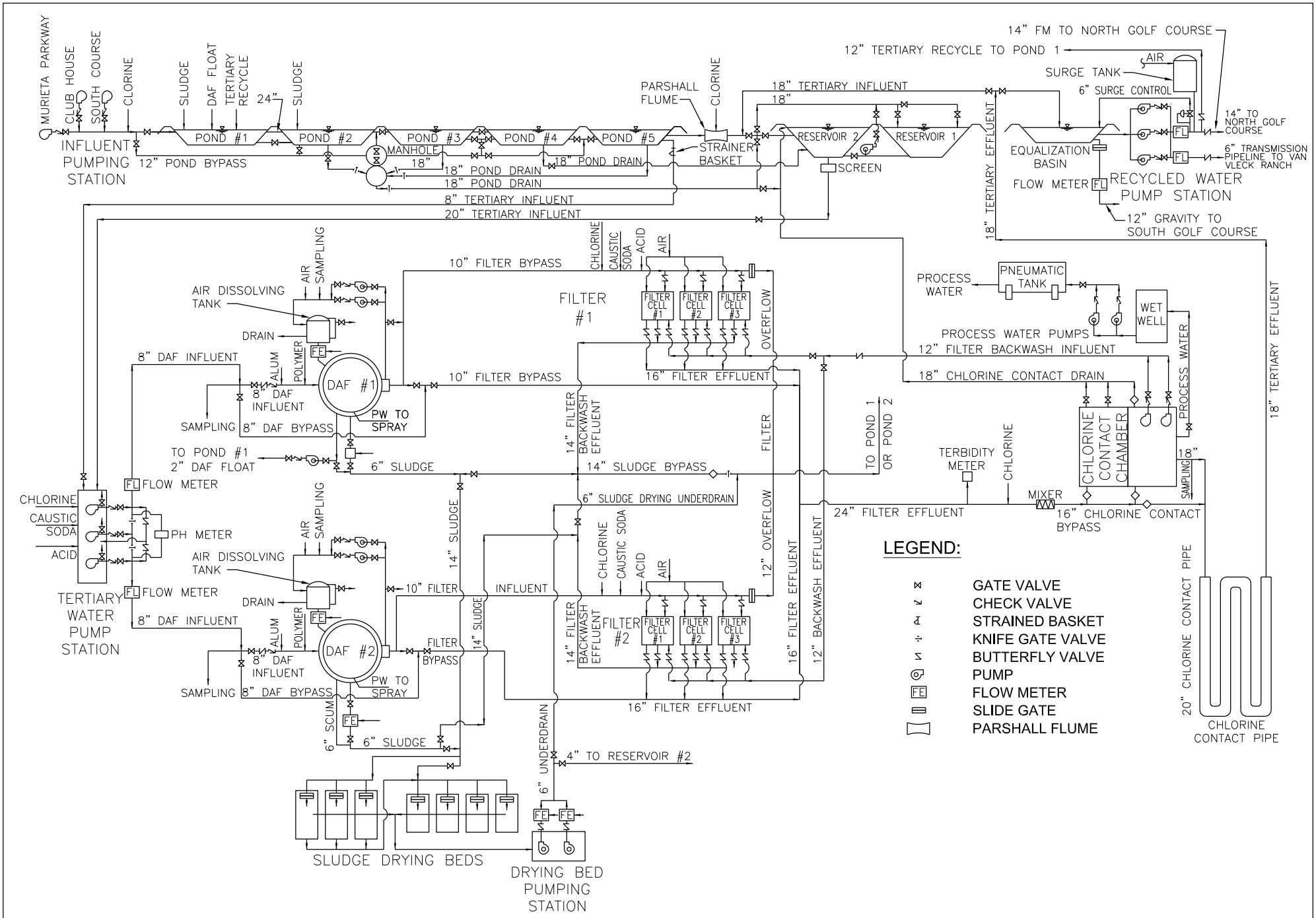


FIGURE 4 - WWRP PROCESS FLOW DIAGRAM

Table 6. WWRP Design Parameters

Parameter	Value				
Design Flows					
Average daily flow:	1.55 MGD (secondary) 3.0 MGD (tertiary) 2.3 MGD (disinfection)				
Control:	Continuous operation				
Secondary Treatment					
Number of basins:	5				
Volume: (each basin – ft^3)	345,870	349,350	787,560	1,157,390	737,040
Hydraulic Detention Time (days) at 1.55 MGD	1.7	1.7	3.8	5.6	3.6
Number of Surface Aerators (each basin)	5	3	3	2	1
Tertiary Treatment					
Tertiary Water Pump Station					
Number of Units (Pumps)	3				
Type of Pumps	Vertical Turbine				
Horsepower	25 (each pump)				
Number of Stages	3				
Column Length	49 feet, 7 inches (per specifications)				
Capacity (unthrottled)	1,150 gpm @ 43 feet TDH				
Capacity (throttled)	950 gpm @ 75 feet TDH				
Dissolved Air Flotation (DAF)					
Number of Units	2				
Capacity (each unit)	1.5 MGD				
Diameter (ft.)	27				
Side Water Depth (ft.)	11.75				
Number and Type of Pumps @DAF Pump Station	3 – (2 duty, 1 standby) Vertical turbine				
Flow Rate (gpm)	1,150 gpm @ 43 ft. TDH 950 gpm @ 75 ft. TDH				
Air Flow Rate (cfm)	1.0				
Recirculation Pumps	2 each 320 gpm @ 87 psig				
Gravity Sand Filters					
Number of Filters	2				
Approx. Overall Dimensions (ft.)	11 (W) x 30 (L) x 9 (D)				

Media Depth (inches)	10
Number of Filter Cells (per filter)	3
Hydraulic Loading	3.16 – 4.74 with one cell out of service
Surface Area per Cell	100 ft^2
Backwash Flow Rate (gpm)	1,320 @ 25 ft. TDH (2 pumps – 1 duty, 1 standby)
Chlorination	
Chemical Feed Pump Type:	Chlorinators
Quantity:	2, 1 each for Pre-Chlorination and Post-Chlorination
Post Chlorine Dosage:	8 mg/L
Control Strategy	Manually flow paced
Chlorine Gas Storage	
Storage Tank Type:	Ton Canister Storage
Quantity Tanks:	4 (minimum)
Operation:	2 Canisters on-line, 2 stand-by Automatic switch-over as needed
Chlorine Contact & Detention Facilities	
Length to Width Ratio	66:1
Length to Depth Ratio	33:1
Chlorine Contact Pipeline	2 – parallel 20-inch diameter PIP at 3,300 linear feet each
Total Contact Time	100 minutes at 2.3 MGD

The secondary effluent flows into two storage reservoirs, which store the secondary treated wastewater over the winter months when recycled water is not being produced and the tertiary treatment facility is not in operation.

The storage reservoirs have a combined capacity of 728 AF, with two feet of freeboard. The current capacity is sufficient to contain approximately 238 million gallons of secondary treated wastewater annually. The water balances developed for 100-yr levels of annual precipitation (see Appendix D) demonstrate that there is sufficient capacity to contain the secondary treated wastewater over the winter months when recycled water is not in production until average dry weather flows are equal to 0.65 MGD. After that, an additional 200 AF (approximately) of secondary effluent storage is required for the projected average dry weather flow of 0.91 MGD.

The tertiary treatment system consists of a tertiary water pump station, coagulation, DAF units, gravity sand filters, chlorine contact tank, chlorine contact pipe, equalization basin, the Recycled Water Pump Station, and the 12-inch South Course gravity pipeline. The Tertiary Water Pump Station, which has a capacity of over 3.0 MGD, pumps secondary treated wastewater from Secondary Storage Reservoir #1 to the DAF units. Alum and chlorine are added, with polymer

being an option, to the stream prior to the DAF units to promote solids coagulation (mostly algae). Typical turbidity entering the DAF units is approximately 2 NTU. Following DAF treatment, water flows into two sets of sand filtration units. The typical influent and effluent turbidities for the sand filters are 1 NTU and 0.25 NTU, respectively. The sand filters are backwashed based on the headloss measured through the filters. A water level float switch is located in each filter, and when the water level increases to a specific set point, the filter is automatically backwashed. The average number of backwash cycles per day during normal operation is two to four. The backwash water source is recycled water obtained from the chlorine contact basin. The backwash flow rate and duration are approximately 1,300 gpm or 12 gpm / ft^2 per cell and approximately 3.5 minutes.

Chlorine is then added to the filtered effluent as it flows into the chlorine contact tank. A chlorine contact time of 100 minutes, at a maximum flow rate of 2.3 MGD, is provided by the concrete chlorine contact basin (CCB) followed by a chlorine contact pipeline (CCP). A dye tracer test was conducted on the disinfection system to verify the modal contact time, as reported in WWRP Modified Chlorine Contact Disinfection System Compliance Report (HSe, 2006). Approximately 6,600 linear feet of 20-inch plastic irrigation pipe (PIP) was installed in the equalization basin to provide additional contact time. Water leaving the CCP is stored in the equalization basin before used for recycled water irrigation.

Sludge from the DAF units and the sand filter backwash is pumped to the sludge drying beds where, after drying, the sludge is stored and disposed at a landfill. The sludge drying bed under-drain system collects filtrate from the drying beds. The filtrate is then pumped by the drying beds pumps to treatment Ponds #1 or #2. Alternatively, sludge may be diverted from the DAFs directly to Ponds #1 or #2.

Chemicals used and their purpose, delivery method, application point, and approximate dosage are summarized in Table 7.

Table 7. Process Chemicals Used at the WWRP

Chemical	Purpose	Delivery Method	Application Point	Dosage[a] (mg/L)
Gas Chlorine	Disinfection	1.) Direct injection 2.) Direct injection; inline mixer	1.) Before DAF 2.) Before Chlorine Contact tank	1.) 8 2.) 8
Aluminum Sulfate (Alum)	Coagulation	Direct injection	Before DAF	100 - 300
Polymer	Coagulation	Direct injection	Before sand filter DAF	As needed
Sodium Hydroxide (Caustic Soda)	pH control	Direct injection	Before chlorine contact tank	As needed

[a] Dosages are approximate and vary depending on site conditions.

All Operation and Maintenance Manuals for the equipment used at the WWRP are stored in the Operator Supervisor Office which is located in the WWRP Maintenance Building or in the WWRP Laboratory Building along with the current Sludge Management Plan.

2.6 Plant Reliability Features

Sections 60333 through 60355 (Articles 8 through 10) of the Water Recycling Criteria describe the reliability features for wastewater treatment plants producing recycled water. The features that have been incorporated into the WWRP which comply with the applicable requirements are described in Table 8. The WWRP monitored at all times and is fully staffed between 7:00 am and 4:00 pm, seven days a week, and with a minimum of one operator on-call during all other hours.

Table 8. Summary of Plant Reliability Features

Water Recycling Criteria Section[a]	WWRP Features
60333 – Flexibility of Design	• Availability of redundant and standby equipment • Bypass capabilities for all major components of the WWRP to prevent loss of treatment in the event of equipment failure or required maintenance • Substantial recycled water storage provided in the storage reservoirs
60335 – Alarms	• WWRP operations on a PLC base control system • Alarm alerts: o Loss of power from normal supply o High (greater than 5 NTU) turbidity after ponds o Low chlorine residual (less than 5 mg/L) in tertiary effluent o Failure of the coagulation process o High (greater than 2 NTU) turbidity after sand filters o High water level in equalization basin • Backup power from on-site auxiliary system for alarm systems • Automatic shutdown of tertiary treatment plant when alarm condition occurs. 24-hour security staff is automatically alerted and will contact the operator on call. Recycled water flow can be stopped simply by shutting down the recycled water pump station; no automatic actuation equipment is required.
60337 – Power Supply	• Loss of power alarm is triggered when power service is interrupted and the auxiliary power generator is automatically brought on-line • Auxiliary power generator capable of powering the entire WWRP and administrative building
60341 – Emergency Storage	• Extensive storage provided in the WWRP. Secondary treatment system designed to store effluent for the duration of the winter months, when irrigation production is zero. Storage reservoirs can contain excess of 20 days of storage without any special diversions or equipment. • Several days of storage at equalization basin for tertiary treated wastewater
60345 – Biological Treatment	• Secondary treatment ponds capable of treating wastewater at an average annual flow of 1.55 MGD with one pond out of service • Pond system is equipped with piping and valves to bypass any pond for cleaning, maintenance, or repairs.

60349 – Coagulation	• Tertiary treatment uses two DAF and two sand filtration units in series to achieve low turbidity recycled water. Two parallel trains are used, and one train can be taken out of service without interrupting operations. • Alum is added to the secondary effluent stream prior to DAF units to aid in coagulation. The alum feed system has three pumps (one standby), automatic dosage control, and a reserve chemical supply.
60351 – Filtration	• Tertiary treatment uses two DAF and two sand filtration units in series to achieve low turbidity recycled water. Two parallel trains are used, and one train can be taken out of service without interrupting operations. • Turbidity is measured continuously before and after the sand filters. If turbidity in the filter effluent exceeds 2 NTU, an alarm is triggered and the recycled water pump station is automatically shut down.
60353 – Disinfection	• Disinfection system consists of o Two chlorinators o Chlorine cylinders o Scales o Manifold system o Chlorine contact basin and extended contact pipeline o Effluent chlorine residual analyzer / monitor • Chlorine is added before the DAF units and prior to the chlorine contact basin. • When primary chlorine cylinder empties the standby cylinder automatically becomes the primary unit and the operator is alerted. • When the primary chlorine capacity drops below 40%, the operator is alerted. • Spare repair kits are kept on-site for immediate repair of the chlorinators if necessary. • Monitoring: o Manual monitoring between the CCB and CCP. o Automatic monitoring by on-line instrumentation at the termination of the chlorine contact pipeline. • If the chlorine residual drops below 5 mg/L at the termination of the chlorine contact pipeline, the recycled water pump station is automatically shut down. • The recycled water chlorine concentration is kept at 5.5 mg/L or 0.5 mg/L greater than the required minimum residual concentration to allow for slight variations in the recycled water chlorine residual. • Daily grab samples of the effluent are collected and submitted to a certified laboratory for Total Coliform (15 tube count) analysis.

[a] Sections 60339, 60343, 60347, and 60355 do not pertain to the WWRP.

2.7 Supplemental Water Supply

Currently, the WWRP does not produce enough recycled water to meet the full irrigation demands of the golf courses, and thus supplemental water must be provided to satisfy golf course irrigation demands. The recycled water system for the golf courses is currently supplemented with river water from the Cosumnes River. RMCC's river pumps divert water

from the Cosumnes River to Bass Lake and Lake 10 where it is stored for future golf course irrigation in the spring. Currently, recycled water production is estimated to be 455 acre-ft per year AFY, whereas golf course demands based on average levels of annual precipitation are 550 AFY. It is estimated that recycled water production will exceed golf course irrigation demands in 2018 based on the development timeline described in Section 1.3. However, at full build-out, all golf course irrigation will be supplied by recycled water, and river water will be used only for emergency purposes.

In the near future, the golf course irrigation system will continue to be supplemented with river water from the Consumes River. However residential, park, and commercial irrigation systems will still be supplemented with water obtained from the District's potable water system. Most likely, potable water supplementation will occur at recycled water storage tanks or at the equalization basin located at the WWRP. In either case, an approved air gap separation will be provided in accordance with the District's Recycled Water Standards.

2.8 Monitoring and Reporting

RMCSD currently monitors and reports in accordance with the requirements specified in Monitoring and Reporting Program Nos. 5-01-124 and R5-2007-0109-01, which were adopted by the Regional Board on December 1, 2006 and August 2, 2007, respectively. These requirements are summarized inTable 9. The water quality monitoring includes influent, secondary effluent, and tertiary effluent. In addition, the monitoring and reporting program includes monitoring of the treatment ponds, secondary storage reservoirs, golf course irrigation lakes, and recycled water use areas. It is anticipated that the monitoring and reporting requirements associated with the future recycled water uses would mirror those required for either the golf courses or the Van Vleck spray field.

Table 9. Summary of Monitoring Requirements

Constituents	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Influent Wastewater Monitoring				
Flow	gpd	Continuous	Daily	Monthly
BOD_5	mg/L	Grab	Weekly	Monthly
Total Suspended Solids	mg/L	Grab	Weekly	Monthly
Secondary Effluent Monitoring				
BOD_5	mg/L	Grab	Weekly	Monthly
Total Settleable Solids	mL/L/hr	Grab	Weekly	Monthly
Total Dissolved Solids	mg/L	Grab	Monthly	Monthly
Nitrate (as Nitrogen)	mg/L	Grab	Monthly	Monthly
Ammonia (as Nitrogen)	mg/L	Grab	Monthly	Monthly
Standard Minerals[1]	mg/L	Grab	Annually	Annually
Tertiary Effluent Monitoring				
Flow	gpd	Continuous	Daily	Monthly
Turbidity	NTU	Continuous	Daily	Monthly
Total Chlorine Residual	mg/L	Continuous	Daily	Monthly
Total Coliform Organisms	MPN / 100 mL	Grab	Daily	Monthly
pH	su	Grab	Weekly	Monthly
Total Dissolved Solids	mg/L	Grab	Weekly	Monthly

Sodium	mg/L	Grab	Weekly	Monthly
Chloride	mg/L	Grab	Weekly	Monthly
Nitrates (as Nitrogen)	mg/L	Grab	Monthly	Monthly
Total Kjeldalh Nitrogen	mg/L	Grab	Monthly	Monthly
WWRP Pond Monitoring				
Freeboard	0.1 feet	Measurement	Weekly	Monthly
Dissolved Oxygen	mg/L	Grab	Weekly	Monthly
pH	su	Grab	Weekly	Monthly
North and South Golf Course Monitoring				
Flow to irrigated areas	gpd	Continuous	Daily	Monthly
Rainfall	inches per day	Measurement	Daily	Monthly
Acreage Applied	acres	Calculated	Daily	Monthly
Application Rate	gal/acre/day	Calculated	Daily	Monthly
Total Nitrogen	lbs/month	Calculated	Monthly	Monthly
Total Dissolved Solids (TDS)	lbs/month	Calculated	Monthly	Monthly
Recycled Water Storage Lake Monitoring (Golf Course Lakes)				
Freeboard	feet	Measurement	Weekly	Monthly
Dissolved Oxygen	mg/L	Grab	Weekly	Monthly
pH	su	Grab	Weekly	Monthly
Odors	--	Observation	Daily	Monthly
Van Vleck Ranch Monitoring				
Flow to each reuse area	gpd	Continuous	Daily	Monthly
Rainfall	inches per day	measurement	Daily	Monthly
Acreage Applied	acres	calculated	Daily	Monthly
Nitrogen Loading Rate	lbs/acre-month & cumulative lbs/acre-year	Calculated	Monthly	Monthly
TDS Loading Rate		Calculated	Monthly	Monthly
Groundwater Monitoring				
Depth to groundwater	0.01 feet	Measurement	Quarterly	Quarterly
Groundwater elevation	0.01 feet	Calculated	Quarterly	Quarterly
Gradient	feet/feet	Calculated	Quarterly	Quarterly
Gradient direction	degrees	Calculated	Quarterly	Quarterly
pH	su	Grab	Quarterly	Quarterly
Total Dissolved Solids	mg/L	Grab	Quarterly	Quarterly
Nitrates (as Nitrogen)	mg/L	Grab	Quarterly	Quarterly
Ammonia (as Nitrogen)	mg/L	Grab	Quarterly	Quarterly
Total Coliform Organisms	MPN/100 mL	Grab	Quarterly	Quarterly
Standard Minerals[2]	mg/L	Grab	Quarterly	Quarterly
Metals[3]	ug/L	Grab	Quarterly	Quarterly
Total Trihalomethanes	ug/L	Grab	Quarterly	Quarterly

[1] Standard minerals include, at a minimum, the following elements/compounds: pH, boron, bromide, calcium, chloride, fluoride, magnesium, phosphate, potassium, sodium, sulfate, total alkalinity, (including alkalinity series), hardness as $CaCO_3$, aluminum, arsenic, cadmium, copper, lead, iron, manganese, nickel, and zinc.

[2] Standard minerals include, at a minimum, the following elements/compounds: pH, boron, bromide, calcium, chloride, fluoride, magnesium, phosphate, potassium, sodium, sulfate, total alkalinity, (including alkalinity series), and hardness as $CaCO_3$.

[3] Metals include, at a minimum, the following elements/compounds: aluminum, arsenic, cadmium, copper, lead, iron, manganese, nickel, and zinc.

The District operates a laboratory on-site, and performs some of the water quality analyses listed above, including chlorine residual, settable solids, and turbidity. On-line continuous monitoring is conducted for flow, turbidity, and recycled water chlorine residual. The instrumentation used to perform this monitoring is calibrated regularly in accordance with manufacturer's specifications and recommendations. An Environmental Laboratory Accreditation Program (ELAP) Certified Laboratory, utilizing US EPA protocols and methods, performs all other required sample analyses.

2.9 Contingency Plan

The following operational and design features are intended to prevent inadequately treated wastewater (off-specification recycled water) from being delivered to the recycled water user:

- The plant is operated by certified wastewater treatment plant operators. The operators are trained to implement contingency actions when inadequately treated effluent is produced. In addition, the operators utilize operations and maintenance manuals that include standard procedures for responding to alarms that indicate inadequately treated effluent; and

- Applicable design features required by Sections 60333-60355 of the Water Recycling Criteria are provided, as described in Section 2.6.

Should off-specification recycled water be produced at the WWRP, the recycled water pump station will be shut down and off-specification recycled water would not enter the equalization basin or the recycled water distribution system. The following conditions would indicate the possibility that the plant is producing inadequately treated effluent. The presence of any of these turbidity or residual chlorine conditions will result in the automatic shutdown of the recycled water pump station and associated facilities:

- The turbidity of the filtered effluent exceeds 2 NTU; or
- The chlorine residual falls below 5.5 mg/L.

In the event a shutdown is required, an investigation will be conducted to determine the cause of the incident, and the recycled water will not be redirected to the equalization basin until the problem has been corrected and the tertiary effluent is in compliance with the recycled water criteria. If it has not already been shut down by the control system, the manual procedure for ceasing the production of inadequately treated recycled water requires the operator to simply shutdown the recycled water pump station. As noted in Section 2.6, the WWRP has sufficient secondary treatment and storage capacity to contain the wastewater while a system problem is being investigated and corrected.

In the implausible event of off-specification, or inadequately treated recycled water, being conveyed to either existing or future use areas, the Regional Board and CDPH will be notified within 24 hours. A copy of the Recycled Water Contingency and Response Plan is included in

Appendix E and provides direction and guidance to notify the Regional Board and CDPH accordingly.

3.0 Transmission and Distribution Systems

This chapter describes the existing and proposed recycled water transmission and distribution systems.

3.1 Existing Transmission and Distribution Systems

Existing recycled water uses include the two golf courses and the Van Vleck Ranch. The transmission and distribution systems used to convey recycled water to serve these existing uses are shown in *Figure 2*. A recycled water flow diagram of the transmission and storage lakes is shown in Figure 5.

3.1.1 North and South Golf Courses

The recycled water transmission and distribution systems associated with the two golf courses were installed in 1983. Since that time, recycled water has been successfully used in accordance with Title 22 and other regulatory requirements to meet golf course irrigation demands. Tertiary treated recycled water is pumped from the 1.8 MG Equalization Basin located at the WWRP to Bass Lake by the Recycled Water Pump Station. Recycled water is conveyed through a 12-inch asbestos cement pipe (ACP) from the WWRP, across Highway 16, over the foot bridge (Yellow Bridge), to the 10th hole of the North Course Golf Course. From this point, the pipeline is reduced to an 8-inch ACP and runs east along the golf course fairways to Bass Lake.

Tertiary treated recycled water is also conveyed from the WWRP to Lake 16 of the South Golf Course by gravity through another 12-inch ACP pipeline. Lakes 16 and 17 of the South Golf Course are interconnected by a culvert. From these lakes, recycled water is pumped to Lakes 10 and 11. The pipeline from Lake 17 to Lake 11 also runs along the golf course fairways and is 8-inch ACP. The pressure rating for all ACP pipelines is 150 psi.

Irrigation pump stations are located adjacent to both Bass Lake and Lake 11. These stations continuously pump the recycled water from the lakes and pressurize the golf course irrigation systems. Multiple pumps are used to meet varying demands, and fertilizer injections systems are also present. The piping material for the irrigation systems is PVC and varies in size from 2- to 6-inch in diameter. The main irrigation distribution pipelines run along the golf course fairways with branches for the sprinkler heads. Irrigation valves are located throughout the golf courses to control the operation of the sprinkler heads. Most valves in the fairways control 3 to 4 sprinklers, while each sprinkler on the greens is generally controlled by individual control valves. Detailed drawings of both the North and South Golf Course distribution and irrigation systems are included in Appendix F.

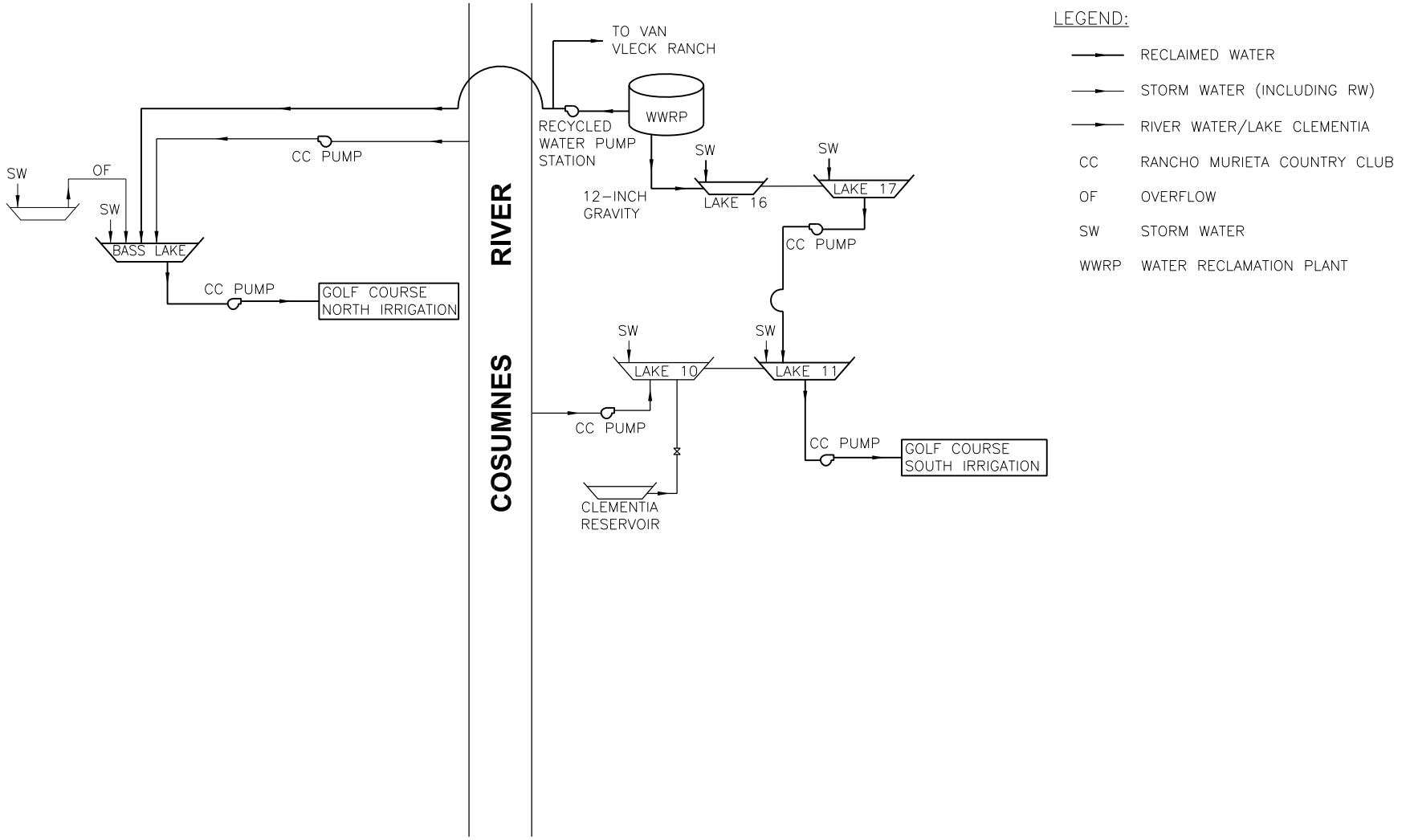


FIGURE 5 - RECYCLED WATER FLOW DIAGRAM

Based on the construction drawings, it appears that a minimum 10-foot separation has been maintained between recycled water and potable water pipelines.[2] For example there are three pipelines on the Yellow Bridge: sewer, potable water, and recycled water. The sewer and recycled water pipelines are mounted on one side of the bridge, with the potable water on the other side. The District, in association with the RMCC, has developed, submitted, and gained RWQCB approval of an operations manual describing the delivery and use of recycled water at the North and South Golf Courses (May 2010).

3.1.2 Van Vleck Ranch

Approximately 1,800 linear feet of aboveground 12- and 8-inch Certa-Lok™ PVC irrigation pipe is used to convey recycled water to the Van Vleck Ranch boundary and about 4,050 linear feet (LF) of aboveground 8-, 6-, 4-, and 3-inch Certa-Lok™ PVC irrigation pipe is used to convey recycled water to three spray irrigation systems. The 12- and 8-inch PVC pipeline was installed in 2007 and is owned and operated by the District, and has the words "RECYCLED WATER/RECLAIMED WATER" stenciled on top. One of the three existing pumps within Recycled Water Pump Station is used to convey recycled water through the transmission pipeline to three spray fields. There are no potable water or sewer pipelines along the transmission or distribution pipeline alignment.

The distribution system consists of approximately 29 strings of K-line irrigation systems, which are in turn composed of movable sprinklers and 40 mm piping. Each movable sprinkler is housed within a plastic pod. The connecting piping is flexible and the entire string of sprinklers can be moved from spray field to spray field.

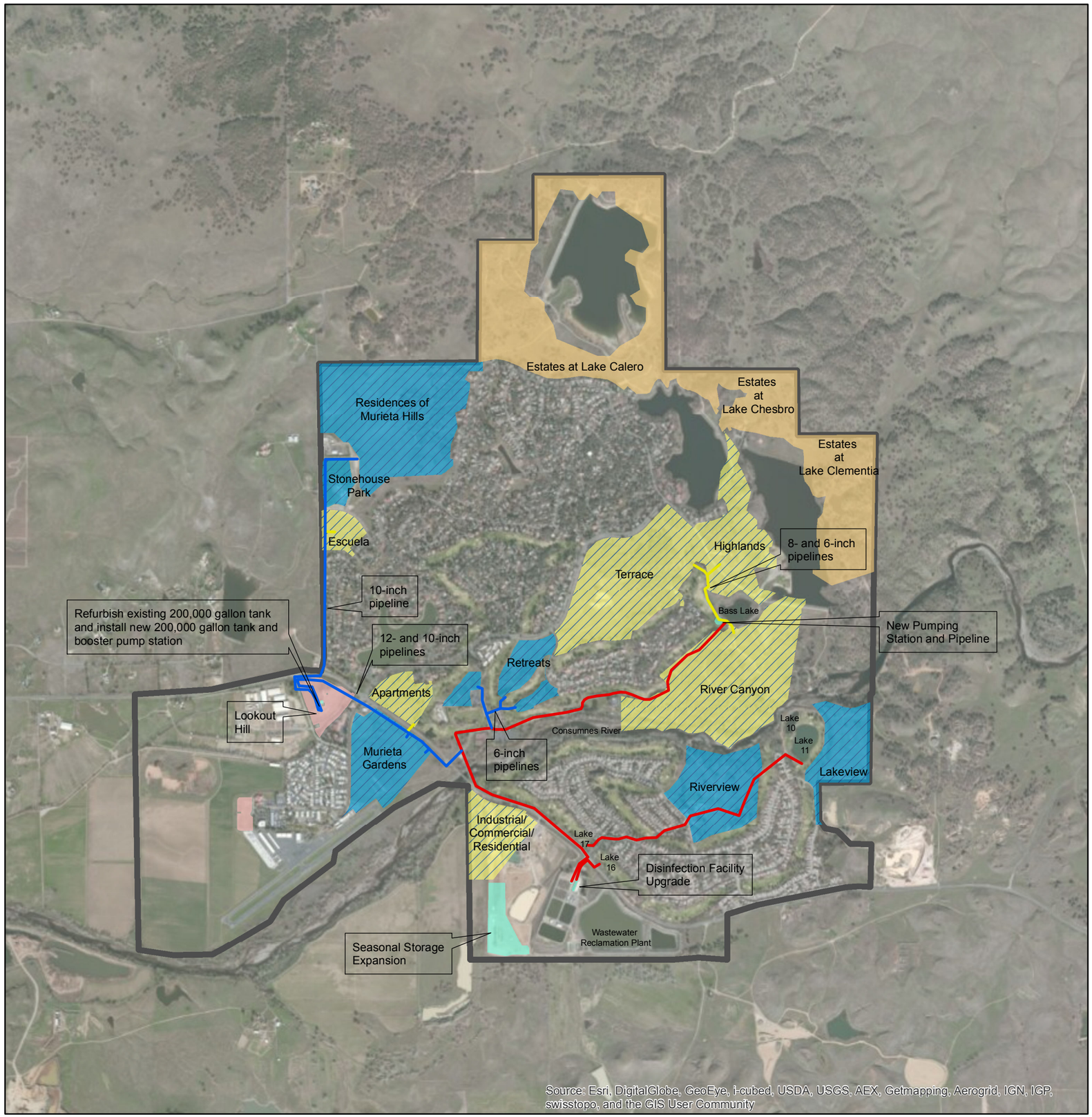
The District has developed, submitted, and gained RWQCB approval of an operations and management plan describing the delivery and use of recycled water at the Van Vleck Ranch (August 2007). The District to use the existing aboveground 12- and 8-inch Certa-Lok™ PVC pipeline in the future to serve the existing and proposed spray fields as described later in this report.

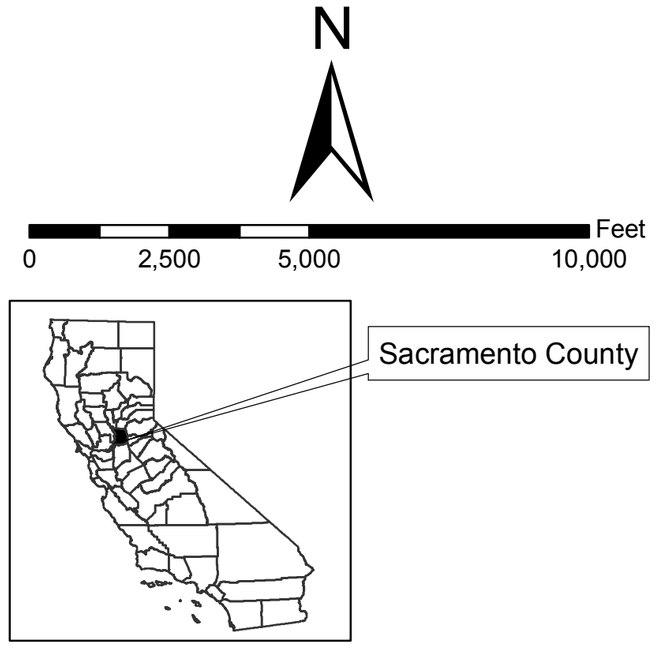
3.2 Proposed Transmission Improvements

The recommended improvements for expanding the District recycled water program are shown in Figure 6. Individual improvements would be time-phased into two projects to correspond with development. The following two improvement phases have been established for the addition of recycled water facilities based on the assumed occupancy of Phase 1 and 2 residential developments described in Section 1.3.

- Phase 1 Transmission and Distribution System Improvements: 2015 – 2018
- Phase 2 Transmission and Distribution System Improvements: 2018 – 2022

[2] South Golf Course Irrigation Systems and North Course Irrigation Systems (Raymond Vail and Associates, February 1983).





Legend

- District Service Area
- Golf Course Conveyance System
- Phase 1 Developments (Proposed Recycled Water Use Area)
- Phase 1 Recycled Water Improvements
- Phase 2 Developments (Proposed Recycled Water Use Area)
- Phase 2 Developments (No Recycled Water Service)
- Phase 2 Recycled Water Improvements

Figure 6. Proposed Recycled Water Transmission and Distribution Improvements

3.2.1 Phase 1 Improvements

The Recycled Water Pump Station is currently configured to pump recycled water to either the North Golf Course or the Van Vleck Ranch. Improvements to this station will be made to (1) separate the functions of this station (one dedicated station for the North Recycled Water Transmission Main and one dedicated for the Van Vleck Ranch) and (2) expand the firm capacity of the station serving the North Recycled Water Transmission Main to approximately 2,110 gpm.[3]

As shown in Figure 6, a new 12- and 10-inch recycled water transmission main is recommended to serve future developments and Stonehouse Park located along the northwest portion of Rancho Murieta. This particular transmission main will be connected to the existing 12-inch conveyance pipeline immediately north of the Yellow Bridge. Both the highway undercrossing and transmission main up to the point at which the Murieta Gardens development is served shall be a 12-inch pipeline. Beyond this point, the transmission main is reduced to a 10-inch pipeline. Recycled water storage tanks, located at Lookout Hill, are installed to supplement recycled water production during peak irrigation demand seasons. A total of 400,000 gallons of recycled water storage will be provided at this location to satisfy peak irrigation demands. To minimize costs, the District intends to rehabilitate the existing 200,000 gallon water storage tank located on Lookout Hill and use it for recycled water service. In addition, a new 200,000 gallon storage tank will be installed at this site along with a 700 gpm booster pumping station required to deliver recycled water to the developments located in the northwest corner of Rancho Murieta.

A new 6-inch diameter recycled water pipeline will be installed to serve the Retreats, Lakeview, and Riverview developments. As shown in Figure 5, these pipelines will be connected to either the existing 8-inch North Golf Course conveyance pipeline or 8-inch South Golf Course conveyance pipeline. A new pumping station will be installed at Lakes 16/17 to convey recycled water to the Lakeview and Riverview developments then discharge the remaining recycled water into Lakes 10/11. The south recycled water transmission main has adequate capacity to accommodate South Golf Course, Riverview, and Lakeview irrigation demands without significantly impacting Lake 10 and 11 water levels. Therefore, withdrawal of recycled water from Lakes 10 and 11 for residential landscape irrigation will be infrequent.

Recycled water would be routinely transferred through Lakes 16 and 17 in order to serve both the South Golf Course and Riverview and Lakeview residential landscape irrigation demands. It has been estimated that the total combined capacity of these lakes is on the order of 0.9 million gallons. Landscape irrigation demands served by these lakes have been projected to be between 0.5 and 1.1 million gallons per day, which implies a theoretical hydraulic retention time of about one (1) to two (2) days. The District considers this range of detention times to be relatively short and does not anticipate the use of Lakes 16 and 17 to detrimentally impact recycled water quality.

[3] The 2,110 gpm flow rate represents the estimated capacity of the existing 12-inch recycled water pipeline serving the North Golf Course.

It should also be understood that the watershed associated with these particular lakes is relatively small (less than 1 acre) and that these lakes are pumped down as much as possible so that minimal amounts of recycled water are in the lakes when the wet season begins in accordance with the *Operations Manual Delivery and Use of Recycled Water at the Rancho Murieta Country Club*, which has been reviewed and approved by the RWQCB. Once the recycled water has been pumped from these lakes, they can either be refilled with raw or potable water or allowed to fill from direct rainfall and runoff during the wet season.

The District has adopted the Recycled Water Standards and the Recycled Water Code. Together, these documents establish and provide the District the ability to enforce rules or regulations for recycled water use and govern the design and construction of recycled water facilities and its use to be in accordance with the uniform statewide reclamation criteria established pursuant to CWC Section 13521.

3.2.2 Phase 2 Improvements

The Phase 2 Improvements consist of installing 8- and 6-inch diameter recycled water pipelines to serve specific developments. As shown in Figure 6, each pipeline shall be connected to the North Recycled Water Transmission Main.

Recycled water for residential landscape irrigation in the north and west regions would be served directly from either the WWRP or the Lookout Hill Recycled Water Tanks under all conditions except for the peak month irrigation season. During this particular 30-day season, approximately 30 percent of the recycled water served to residential customers will be conveyed through Bass Lake. It has been estimated that the total capacity of Bass Lake is on the order of 8.3 MG. During the peak month irrigation season, it is estimated that the daily recycled water demand is on the order of 1.2 MGD, which implies a theoretical hydraulic retention time of seven (7) days. We consider this retention time, coupled with the fact that Bass Lake will be used infrequently as a source of residential landscape recycled water supply, to be relatively short and do not anticipate the use of Bass Lake to detrimentally impact recycled water quality.

As part of their future recycled water operating strategy, the District may elect to maintain a measurable chlorine residual throughout the distribution system (downstream of Bass Lake) when recycled water is withdrawn for residential landscape irrigation purposes. In addition, the District has elected to filter (e.g., through the use of 100 micron filter screens such as those manufactured by Amiad Water Systems) the recycled water withdrawn from Bass Lake prior to distribution for residential landscape irrigation.

4.0 Use Areas

As shown in *Figure 2* existing Use Areas are limited to two (2), eighteen hole golf courses covering approximately 250 acres and pastureland and unimproved areas.

4.1 Irrigation

4.1.1 Golf Course Irrigation (Existing)

Recycled water has been used successfully to irrigate the two eighteen hole golf courses within Rancho Murieta for over 30 years. Currently, the total combined irrigation area and demand of the two golf courses is estimated to be 250 acres and 550 AFY, respectively. Currently recycled water deliveries provide about 455 AFY and the remaining 95 AFY is met through raw water deliveries from the Cosumnes River. Both golf courses are located on sloped topography, both natural and developed. The soils underlying the golf courses are silty; however, the irrigation areas were amended prior to planting.

During the summer months, irrigation demands are high and precipitation is low. The last month of significant irrigation is typically October, but additional irrigation may be required during the month of November depending on the weather. A summary of historic monthly and annual golf course irrigation demands are summarized in Table 10. As shown, the peak month irrigation demand is approximately 150 AF per month or 1.6 MGD or roughly 175 acres.

Table 10. Historic Golf Course Irrigation Demands

Month	Irrigation Demand (AF per month)[a]
January	0
February	0
March	1
April	16
May	51
June	111
July	151
August	121
September	79
October	20
November	0
December	0
Total	550

[a] Based on 2012 golf course irrigation demands records.

Detailed drawings of both golf courses irrigation systems are included in Appendix F.

Wells

There is one well located approximately 400 feet from the golf courses at 7300 Bridge House Lane. This well is used for irrigation purposes only and the District supplies potable water service to this parcel of land.

Containment

Both the North and South Golf Courses have computer controlled irrigation systems. In most areas each control valve operates no more than three sprinkler heads. This allows for precise application of recycled water providing the grass with the proper amount of irrigation without creating puddles or excessive run-off. On the greens, where even more precise control is needed, each sprinkler head is controlled individually. RMCC also uses a remote weather station to track rain and wind magnitudes so that irrigation does not occur during rainy or excessively windy conditions. Throughout the course, quick connections for hose bibs and portable sprinklers are present for manual watering. The following measures are used to minimize run-off and ponding:

- No irrigation is conducted when the weather station detects wind or sustained gusts in excess of 30 miles per hour (mph)
- RMCC staff visually check all areas of the golf courses each morning to ensure optimum application of irrigation, proper operation of sprinkler heads, and identify the presence of ponding.
- Irrigation is not conducted within 24 hours of precipitation.

Setback Distances

The Rancho Murieta golf course community has been designed to merge golf course greenery with the landscaping of the homes located along the courses. As such, setback distances between the golf course irrigation systems and the homes are monitored to prevent the application of recycled water to areas not permitted, such as outdoor eating areas.

Signage

Signs currently used on the golf courses are located at most of the golf course tees, around some of the golf course lakes, and at road crossings. Figure 7 and Figure 8 are photos of the signs currently posted at the tees and lakes, respectively. In addition to the signs, the golf course score cards include a "Do Not Drink" warning and state that recycled water is used to irrigate the golf courses.

Cross Connection Testing

Areas of potential cross connection exist on the golf courses near the restrooms. This is the only potable water service near the recycled water system. Cross-connection testing is conducted every four years in accordance with the procedure described in Appendix D of the Recycled Water Standards. In addition to cross connection testing, reduced pressure, reverse flow protection devices (RP) are installed on the potable water services to the restrooms. This will further protect the public water supply in the event of a cross connection. The RP is installed near the flow meter next to the streets, at the furthest point from the recycled water piping.

Figure 7. Signs Used at Golf Course Tees and Road Crossings

Figure 8. Signs Used at Golf Course Lakes

Irrigation Schedule

All irrigation with recycled water is conducted in the night time hours, approximately between 8:00 p.m. and 6:00 a.m., when public access to the golf courses is not allowed. Both the North and South Golf Courses have computer controlled irrigation systems.

4.1.2 Spray Field Irrigation (Existing)

As shown in Figure 2, the existing spray field use areas, as well as surrounding land use, is limited to pastureland. There are no domestic water distribution systems within this use area for which cross-connection testing would be required. In addition, the spray fields are restricted to the public. Table 11 summarizes the size of the spray fields, estimated annual water demand, type of reuse, and level of access to the public.

The District is responsible for the distribution and use of the recycled water. The application of the recycled water is coordinated with the land manager (Van Vleck Ranch) for necessary grass cuttings or cattle rotation.

Table 11. Existing Irrigation Use Area (Van Vleck Ranch)

User	Use Area (Gross Acres)	Annual Demand (AFY)	Type of Reuse	Method of Application	Land Use	Level of Access
Pastureland (RMCSD)	97	215	Irrigation	Spray	Pastureland	Restricted

The operation of the spray field irrigation system is under the direct supervision of a RMCSD Certified Wastewater Operator. The Operator is responsible for monitoring the use areas for potential ponding or runoff of recycled water. To minimize the potential impacts, there is no irrigation of pastureland:

- Within 24 hours of anticipated precipitation (greater than 50 percent chance of rain);
- Within 24 hours after measurable precipitation (greater than 0.10 inches); or
- If sustained wind speeds exceed 30 mph.

The District currently uses a rain gauge for measuring precipitation at the WWRP. A weather station owned and operated by the RMCC is used to determine wind speeds.

Wells

There are four groundwater wells located within 1,000 feet of the spray fields. These wells, located north of the spray fields, are not used for potable or nonpotable water uses. Rather, these wells are strictly used by the District to monitor groundwater quality underneath the District's WWRP.

Containment

The spray fields are inspected throughout the day when the recycled water irrigation system is in operation and the pasturelands are being irrigated with recycled water so that the potential

occurrence of ponding or tail water is minimized. These particular spray fields were originally designed for flood irrigation. Therefore, each spray field drains to a common point for immediate visual inspection of tail water migration. The typical direction of drainage is shown in *Figure 2*.

Setback Distances

The spray fields are not located near residential homes, drinking water fountains, outdoor eating, or picnic areas. Thus, no set-back distances are required. However, a minimum of 50 feet from the property boundary is provided. In addition, signs are posted at regular intervals even though the spray fields are located within restricted areas, with no public access. The spray fields are located within a gated area with the District's WWRP between the use areas and any potential public access point (Highway 16). Further, an existing three-strand barbed wire fence surrounds each spray field.

Signage

Although public access is not allowed, signs are posted along each spray field parameter to notify operators and land use personnel regarding the use of recycled water for irrigation purposes on the pastureland. In general, signs are located along the boundary of each spray field, at all access points, and at other locations necessary for notifications.

Irrigation Schedule

The spray fields are irrigated with recycled water between the hours of 6:00 a.m. and 6:00 p.m., during normal District operating hours. The spray fields are only operated when an operator is on-site and can visually inspect the spray fields.

4.1.3 Proposed Irrigation

As described in Section 1.3.3 of the Recycled Water Standards, each use area must obtain a Recycled Water Permit prior to receiving recycled water from the District. A description of the required procedures for obtaining a Recycled Water Permit for irrigation uses, which includes the preparation of a Recycled Water Plan, is provided in Section 1.3.4 of the Recycled Water Standards.

The District proposes to serve recycled water within its service area for the irrigation of parks, greenbelts, and playgrounds; athletic fields; common areas; commercial landscaping; freeway, highway, and street landscaping; and dust control. The use of recycled water for these purposes is governed by the Recycled Water Standards and Recycled Water Code. The use of recycled water for these irrigation uses shall conform to the following requirements:

- Not cause a pollution or nuisance as defined by Section 13050 of the CWC.
- Not cause degradation of any water supply
- Be managed in conformance with the regulations contained in Title 22, Division 4, Chapter 3, CCR

- All recycled water equipment, pumps, piping, valves, and outlets shall be appropriately marked to differentiate them from potable water facilities. All recycled water distribution system piping shall be purple or adequately wrapped with purple tape.

- Perimeter warning signs indicating that recycled water is in use shall be posted as prescribed in the User's Recycled Water Plan that is subject to approval by the District.

- Recycled water shall not be allowed to escape from the authorized use areas by airborne spray or by surface flow except in minor amounts such as that associated with good irrigation practices.

- There shall be at least a ten foot horizontal and one foot vertical separation at crossings between all pipelines transporting recycled water and those transporting potable water, with potable water above the recycled water pipeline. Unless otherwise approved by the District.

- There shall be no cross connection between the potable and recycled water supply and piping. Supplementing recycled water with potable water shall not be allowed except through an air-gap separation.

- Areas irrigated with recycled water shall be managed to prevent ponding and conditions conducive to the proliferation of mosquitoes and other disease vectors, and to avoid creation of a public nuisance or health hazard. The following practices shall be implemented, at a minimum:

    - Irrigation water must infiltrate within a 48-hour period.

    - Landscape irrigation facilities shall be designed and operated for watering periods that minimize the potential for human contact. Spray irrigation shall generally operate between the hours of 10:00 p.m. and 6:00 a.m. Drip irrigation systems may operate at any time.

    - Ditches receiving irrigation runoff, not serving as wildlife habitat, shall be maintained free or emergent, marginal, and floating vegetation.

    - Low-pressure ad unpressurized pipelines and ditches accessible to mosquitoes shall not be used to store recycled water.

- No hose bibs are allowed to connect to the recycled water system.

4.2 Impoundments

4.2.1 Existing Impoundments

Irrigation pump stations are located adjacent to (or within) Bass Lake and Lake 11. These stations pump the recycled water from the lakes and pressurize the golf course irrigation systems. Multiple pumps are used to meet the varying golf course irrigation demands.

4.2.2 Proposed Impoundments

A new pumping station will be installed at Lakes 16/17 to convey recycled water to the Lakeview and Riverview developments then discharge the remaining recycled water into Lakes 10/11. The south recycled water transmission main has adequate capacity to accommodate South Golf Course, Riverview, and Lakeview irrigation demands without significantly impacting Lake 10 and 11 water levels. Therefore, withdrawal of recycled water from Lakes 10 and 11 for residential landscape irrigation will be infrequent.

Recycled water would be routinely transferred through Lakes 16 and 17 in order to serve both the South Golf Course and Riverview and Lakeview residential landscape irrigation demands. It has been estimated that the total combined capacity of these lakes is on the order of 0.9 MG. Landscape irrigation demands served by these lakes have been projected to be between 0.5 and 1.1 MGD, which implies a theoretical hydraulic retention time of about one (1) to two (2) days. The District considers this range of detention times to be relatively short and does not anticipate the use of Lakes 16 and 17 to detrimentally impact recycled water quality.

The watershed associated with Lakes 16 and 17 is relatively small (less than 1 acre). In addition these lakes are pumped down as much as possible so that minimal amounts of recycled water are in the lakes when the wet season begins in accordance with the *Operations Manual Delivery and Use of Recycled Water at the Rancho Murieta Country Club*. Once the recycled water has been pumped from these lakes, they can either be refilled with raw or potable water or allowed to fill from direct rainfall and runoff during the wet season.

Recycled water for residential landscape irrigation in the north and west regions would be served directly from either the WWRP or the Lookout Hill Recycled Water Tanks under all conditions except for the peak month irrigation season. During this particular 30-day season, approximately 30 percent of the recycled water served to residential customers will be conveyed through Bass Lake. It has been estimated that the total capacity of Bass Lake is on the order of 8.3 MG. During the peak month irrigation season, it is estimated that the daily recycled water demand is on the order 1.2 MGD, which implies a theoretical hydraulic retention time of seven (7) days. We consider this retention time, coupled with the fact that Bass Lake will be used infrequently as a source of residential landscape recycled water supply, to be relatively short and do not anticipate the use of Bass Lake to detrimentally impact recycled water quality.

As part of their future recycled water operating strategy, the District may elect to maintain a measurable chlorine residual throughout the distribution system (downstream of Bass Lake) when recycled water is withdrawn for residential landscape irrigation purposes. In addition, the District has elected to filter (e.g., through the use of 100 micron filter screens such as those manufactured by Amiad Water Systems) the recycled water withdrawn from Bass Lake prior to distribution for residential landscape irrigation.

4.3 Cooling

Not Applicable

4.4 Groundwater Recharge

Not Applicable

4.5 Dual Plumbed Use Areas

4.5.1 Existing Dual Plumbed Use Areas

Not Applicable

4.5.2 Proposed Dual Plumbed Use Areas

The requirements associated with the use of recycled water for residential landscape irrigation are contained in Section 2.2 of the Recycled Water Standards. As described in 2.2.11.3 of the Recycled Water Standards, the following information shall be submitted to the District as part of an applicant's Recycled Water Plan:

- A detailed description of the intended use area identifying the following:
    - The number, location, and type of facilities within the use area proposed to use recycled water for residential landscape irrigation,
    - The average number of persons estimated to be served by each facility on a daily basis,
    - The specific boundaries of the proposed use area including a map showing the location of each facility to be served,
    - The Site Supervisor responsible for the operation and maintenance of the residential recycled water landscape irrigation system, and
    - The specific use of recycled water at the use area.
- Each Recycled Water Plan shall describe the following:
    - Proposed piping systems to be used. Piping system shall be in compliance with the materials described in Section 2.2. 5 of the Recycled Water Standards.
    - Pipe locations of both the recycled and potable water systems as described in Section 2.2.11.3 of the Recycled Water Standards.
    - Type and locations of outlets and plumbing fixtures that will be accessible to the public. As described in Note 8 of Section 2.2.11.3.4, there shall be no hose bibs or quick connectors on the recycled water system.

- The methods and devices to be used to prevent backflow of recycled water into the public water system (see Recycled Water Standard Detail RW-27).

The District shall conduct the following testing and inspections specific to residential landscape irrigation as described in Section 1.9 of the Recycled Water Standards:

a. Cross-Connection testing prior to receiving recycled water and every four (4) years thereafter, or at change of ownership.

b. Backflow prevention device testing shall be conducted prior to receiving recycled water service and annually thereafter.

c. Coverage testing shall be performed prior to receiving recycled water and annual thereafter. Coverage testing shall be conducted by the District's inspector to verify that the Site Supervisor certification is current, that the potable and recycled water systems have not been significantly modified, and that the irrigation system is being operated and maintained in the proper manner and that overspray, ponding, and runoff are being controlled.

The District shall notify the CDPH of any incidence of backflow from the residential landscape irrigation system into the potable water system within 24 hours of the discovery of the incident.

4.6 Other Uses

4.6.1 Other Existing Uses

Not Applicable

4.6.2 Dust Control

The California Code of Regulations, Title 22 Section 60307(b) (6) allows for the use of recycled water for dust control on streets and roads. The District has prepared a Dust Control Guideline to support the use this proposed use (see Appendix G). As described in this guidelines, vehicles used for collecting and distributing recycled water for dust control shall:

- Have an adequate tank and plumbing system to ensure that leaks and ruptures will not occur due to normal use.

- Be equipped with either two risers, one for potable water and one for recycled water, or each tank used shall be equipped with a District-approved air-gap separation between the filler tube and the tank.

- Have color-coded risers, hoses, and fittings; blue for potable water and purple for recycled water.

- Be equipped with uniquely sized fittings to prevent accidental connection between the potable water and recycled water systems.

- Be equipped with spray heads / nozzles configured to minimize runoff, ponding, and drift.

- Be equipped with control valves configured such that recycled water can be applied in a controlled fashion on the site and completely retained during transit.

- Be clearly labeled as specified in the "Signage Requirements."

- Prior to use, the District will inspect the Users' vehicles to ensure compliance with the requirements listed above.

- Each vehicle tank used to store and / or transport recycled water must be flushed and disinfected prior to storage and / or transport of potable water or recycled water of higher quality.

- User must maintain a log recording details of all recycled water deliveries (date, location, volume, and end use).

- Any storage facility containing recycled water for reuse applications shall be managed in a manner to control odor.

- Sites shall be designed and operated using Best Management Practices (BMPs) as stated below, or as revised by the District to prevent recycled water spray, mist, or surface flow from either leaving the site or reaching:

    1. Any storm drain or surface water with year-round flow located adjacent to the site;

    2. Areas with public access (e.g., dwellings, designated outdoor earing areas, or food handling facilities); and

    3. Drinking fountains, unless specifically protected with a shielding device.

4.7 Use Area Design

Sections 2 and 3 of the Recycled Water Standards describe how the domestic potable water distribution system shall be protected from recycled water in accordance with regulations relating to cross-connections and the California Waterworks Standards. In addition, these sections describe how the recycled water facilities shall be designed to minimize the potential for recycled water leaving a designated use area.

4.8 Use Area Inspection and Monitoring

4.8.1 Existing Spray Field (Van Vleck Ranch)

Monitoring and reporting requirements specific to the Van Vleck Ranch are contained in WDR R5-2007-0109. In addition, District operators visually monitor the spray fields on a daily basis during the application of recycled water for run-off, ponding, or over spray. As part of the daily visual inspection, each spray field that was irrigated is assessed for ponding. In addition, each low point of the spray field is visually inspected for potential run-off from the designated use areas.

4.8.2 Existing Golf Courses

Monitoring and reporting requirements for the use of recycled water for golf course irrigation are contained in WDR 5-01-124 and in Section 4 of the *Delivery and Use of Recycled Water at the Rancho Murieta Country Club* (May 2010). As described in the later document, RMCC staff monitors the recycled water storage lakes (e.g., Bass Lake, and Lakes 10, 11, 16, and 17) and golf course irrigation to ensure that excessive runoff or ponding is not occurring.

4.8.3 Proposed Use Areas and Landscape Irrigation Uses

Proposed District monitoring and inspection activities for the expanded recycled water program include:

- As the Producer, recycled water quality characteristics shall be routinely monitored by the District,
- As the overall administrator, the District shall monitor recycled water production, distribution, and use within its service area for each respective development and/or use area:
    - Volume of recycled water (acre-feet),
    - Total number of use areas per development,
    - Total area of application (acres),
    - Nitrogen application rate (lb/acre-month), and
    - Salinity application rate (lb/acre-month).

  Monitor sampling shall occur on a monthly basis whereas reporting to the RWQCB shall occur on an annual basis.

- Each month the District shall verify that the recycled water has been filtered and disinfected consistent with criteria for disinfected tertiary recycled water. The District shall continuously track turbidity and disinfection parameters.[4] Exceedances of turbidity or disinfection standards shall be documented and explained.[5]

- The District shall retain records of all monitoring information including all calibration and maintenance records and copies of all pertinent reports. Records shall be maintained for a minimum of three years from the date of sampling, measurement, or submission. This period may be extended during the course of any unresolved investigation or litigation regarding the recycled water operation or when requested by the Executive Officer of the RWQCB.

- The District shall report priority pollutants to the RWQCB semiannually, in accordance with paragraph 7(b) (4) of the Recycled Water Policy.

Administrator Reporting

- The District shall compile information for each development and/or use area within its service area and annually submit the compilation to the RWQCB. The compilation shall also contain the following items:

    - Summary and discussion of the compliance record for the reporting period. If violations have occurred, the report shall also discuss the corrective actions taken and plans to bring the discharge into full compliance with the WDR and MRP, and

    - A description of the measures employed by the District during the reporting period to conduct periodic inspections of the developments and/or Use Areas. The description shall include the following elements: date of inspections, description of any violations identified during the reporting period including any indications of unauthorized cross-connections, and all actions taken or planned for correcting violations, such as operation or facility modifications.

      Periodic inspections shall also include an evaluation verifying that the application of recycled water to the developments and Use Areas occurs at reasonable agronomic rates. The agronomic rate evaluation shall consider all applied nutrients demand from all sources (directly applied and as contained in the recycled water) the seasonal nutrient demand for the specific plants being grown, soil, and climate. If the agronomic rate evaluation determines that exceedances of the agronomic rates may be occurring, the District shall implement corrective actions to ensure recycled water use occurs at reasonable agronomic rates. If the District has previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory.

    - A description of approved amendments to the Title 22 Engineering Report, if any.

[4] Nephelometric Turbidity Units (NTU), chlorine residual (mg-L), and CT (mg-min/L).
[5] Title 22, Sections 60301.320, 60301.230 (a), and 60301.230 (b)

- A description of the new Use Areas approved by the CDPH. The description shall include information necessary for the CDPH to evaluate proposed Use Areas pursuant to the Title 22 Requirements. Examples of necessary information may include location of backflow prevention devices, drinking fountains, groundwater wells, etc.

- Copies of approved letter(s) prepared by CDPH regarding such amendments to the Title 22 Engineering Report.

All reports submitted to the RWQCB shall comply with the signatory requirements. Monitoring data and / or discussions submitted concerning WWRP performance must also be signed and certified by the District's Director of Field Operations.

Spill Reporting

The District shall ensure that RMCC, or any other Distributor, reports any noncompliance that may endanger human health or the environment. The District shall immediately report orally or electronically if available, information of the noncompliance as soon as (1) the District has knowledge of the discharge, (2) notification is possible, and (3) notification can be provided without substantially impeding cleanup or other emergency measures, to the RWQCB.

A written report shall also be provided to the RWQCB within five (5) business days of the time the District becomes aware of the incident. The written report shall contain a description of the noncompliance and its cause, the period of noncompliance, the anticipated time to achieve full compliance, and the steps taken or planned, to reduce, eliminate, and prevent recurrence of the noncompliance.

The unauthorized discharge of 50,000 gallons or more of disinfected tertiary recycled water shall be reported. The unauthorized discharge of 1,000 gallons or more of disinfected tertiary recycled water shall be reported to the RWQCB as soon as possible, but no later than seventy-two (72) hours after becoming aware of the unauthorized discharge.

All application reports or information to be submitted to the RWQCB shall be signed and certified by the District's General Manager and shall make the following certification:

> *I declare under the penalty of law that I have personally examined and am familiar with the information submitted in this document, 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 a fine and imprisonment for knowing violations.*

4.9 Employee Training

4.9.1 District Training

District employees are certified wastewater operators trained and educated in the treatment, distribution, and use of wastewater and recycled water. Recycled water production and use training for the District operators is conducted annually prior to the startup of the tertiary treatment processes in March for irrigation of the two golf courses. The training provided at that time is applicable to all of the recycled water uses proposed by the District.

4.9.2 RMCC Training

Training is given to all employees of the RMCC who work or may come in contact with the recycled water system. Golf course employees participate in group training sessions which include at a minimum the following elements:

- Recycled water use regulations and guidelines including avoidance of bodily contact and acceptable uses of recycled water;
- Golf course irrigation inspection procedures including the identification and communication process for alerting technicians of areas with ponding, excessive run-off, or over spray outside of irrigation areas; and
- Golf course technicians are providing training in sprinkler adjustment with emphasis on minimizing recycled water contact with residential areas, and the prevention of ponding and / or excessive run-off.

4.9.3 Site Supervisor Training

All potential recycled water use area customers are required to have a designated Site Supervisor. Specific Site Supervisor requirements are to:

- Receiving training by attending a District-sponsored Recycled Water Orientation or be able to demonstrate knowledge of the application and maintenance of recycled water systems.
- Be aware and familiar with the District's Recycled Water Standards.
- Be knowledgeable about the practices and procedures of using recycled water.
- Be available to the District and have the authority to carry out any requirements of the District relating to their recycled water irrigation system.

The Recycled Water Orientation will be designed to explain the District's recycled water guidelines, uses, requirements, and the process by which recycled water service can be obtained. Potential recycled water customers, as well as Recycled Water Plan designers and

contractors working in dual-plumbed developments, are required to attend a District orientation. All designers and contractors are required to attend the orientation every 24 months.

A schedule of the upcoming Recycled Water Orientations will be posted on the District's website.

Appendix A – Contact List

Contact Agencies and Information

Rancho Murieta Community Services District

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Edward Crouse, General Manager
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Regional Water Quality Control Board, Central Valley

Phone No: (916) 464-3291
Fax No: (916) 464-4645

Address: 11020 Sun Center Drive #200
Rancho Cordova, CA 95670-6114

California Department of Public Health, Sacramento District

Phone No: (916) 449-5600
Fax No: (916) 449-5655

Address: 1616 Capital Avenue
PO Box 997377, MS 7407
Sacramento, CA 95899-7377

Appendix B – Recycled Water Standards

Adopted by the District's Board of Directors on October 16, 2013

RECYCLED WATER STANDARDS

RANCHO MURIETA COMMUNITY SERVICES DISTRICT

October 2013

TABLE OF CONTENTS

1.0 Introduction and General Guidelines

The Rancho Murieta Community Services District (District or RMCSD) is expanding its recycled water program in response to District Policy No. 2011-07. This policy requires the use of recycled water in all future residential and commercial developments where determined to be cost-effective. The District falls within the jurisdiction of the Central Valley Regional Water Quality Control Board (Regional Board), whose mission is to preserve, enhance, and restore the quality of California's water resources and to ensure their proper allocation and efficient use for the benefit of present and future generations. A specific goal of the Regional Board is to promote and expand the beneficial use of recycled water. In an effort to support this goal, the District has chosen to offer recycled water to future customers to protect, preserve, and conserve ground and surface water resources in the District and Sacramento County. To achieve this goal, the District is pursuing a master reclamation permit to allow for distribution and use of recycled water within its service area on land owned by various entities including individual homeowners for landscape irrigation as defined in Table 1. In response, the District will be expanding the existing recycled water system to serve recycled water for landscape irrigation of new residential homes located within future developments and existing and future parks, athletic fields, commercial landscaping, etc.

1.1. Purpose

The purpose of this document is to establish minimum standard procedures, specifications and limitations to ensure the health, safety, and general welfare of the citizens of Rancho Murieta when installing infrastructure for, and the use of, recycled water, consistent with the laws and regulations of the State of California. The Recycled Water Standards (Standards) have been developed to ensure uniformity in design, format, methodology, construction materials, and quality of work products of the facilities associated with the expanded recycled water system. These Standards are intended to assist Applicants, Authorized Contractors, Customers, and Design Consultants with the planning, design, repair, and construction of the expanded recycled water system.

It is the intent of this document to be consistent and ensure compliance with the District's Recycled Water Code[1] and other governing policies, instructions, and regulations related to the use of recycled water. These Standards do not limit the responsibility of the Applicants, Authorized Contractors, Customers, and Design Consultants, but assist in providing professionally sound, efficient, uniform, and workable criteria and requirements for recycled water improvements. These Standards do not address all aspects of a complete design. For areas not addressed in these Standards, the Applicants, Authorized Contractors, Customers, and Design Consultants must use good engineering judgment and practices compliant with the most recently adopted State and Federal regulations.

The Applicants, Authorized Contractors, Customers, and Design Consultants responsibilities include 1) submitting a written request for approval of procedures, specifications, design

[1] Chapter 17, The Recycled Water Code, adopted by Ordinance No. 2011-05 on January 18, 2012.

concepts, etc. that differ from these Standards, 2) performing calculations or studies as requested by the District, and 3) coordinating and resolving issues with appropriate regulating agencies, departments, or divisions, if necessary.

This document is organized into the following chapters:

- Chapter 1 – Introduction and General Guidelines
- Chapter 2 – System Design and Construction Standards
- Chapter 3 – Standard Details

1.2. Definitions

The following are definitions of service terms used throughout this document.

Table 1. Definitions

Air Gap Separation	A physical separation between the free flowing discharge end of a recycled water supply pipeline and an open or non-pressurized receiving vessel such as a storage tank.
Applicant	Owner or agent of the owner of the property for which recycled water service is being requested.
Authorized Contractor	District-approved contractor who has completed all appropriate education requirements in order to perform work associated with the District's or User's recycled water system.
ASTM	American Society for Testing and Materials
AWWA	American Water Works Association
BMP	Best Management Practice. Method or technique found to be the most effective and practical means of achieving an objective.
Board	Board of Directors of the Rancho Murieta Community Services District.
CDPH	California Department of Public Health
Contract Documents	Agreement, general and supplementary conditions, addenda, drawings, and specifications describing the scope of a

	particular project.
Cross Connection	Any physical connection between any part of a water system used or intended to supply water for drinking purposes and any source or system containing water or substance that is not or cannot be approved for human consumption. This includes direct piping between the potable water and recycled water systems, regardless of the presence of valves, backflow prevention devices, or other appurtenances.
CSI	Construction Specifications Institute
Customer or Recycled Water Customer	Owner or agent of the property owner receiving recycled water service.
Disinfected Tertiary Recycled Water	Wastewater that has been oxidized, filtered and subsequently disinfected in accordance with Section 60301.230, Chapter 3 (Water Recycling Criteria), Title 22, California Code of Regulations.
District	Rancho Murieta Community Services District and/or its representative.
Dual Plumbed System	A system that utilizes completely separate piping systems for recycled water and potable water within a facility and where the recycled water is used to either serve plumbing outlets within a building or outdoor landscape irrigation at individual residences.
General Manager	General Manager of the Rancho Murieta Community Services District
Inspector	Any person authorized by the District or local health agencies to perform inspections on or off a Use Area before, during, or after construction and during operation.
Landscape Irrigation	The use of recycled water to irrigate: parks, greenbelts, and playgrounds; school yards; athletic fields; golf courses; cemeteries; residential landscaping, common areas;

	commercial landscaping; industrial landscaping; and freeway, highway, and street landscaping.
Offsite Facilities	Recycled water system up to (e.g., upstream of) and including the Point of Connection (recycled water meter).
Onsite Facilities	User's or Customer's recycled water system located downstream of the Point of Connection.
Point of Connection	The location of the recycled water meter located adjacent to the curb, where downstream is the Customer-owned recycled water line and upstream is the District-owned infrastructure. The Point of Connection is the recycled water meter for residential landscape irrigation which is provided to each residential home served with recycled water by the District.
Record of As-Built Drawings	Engineering plans that correctly show (1) all onsite and/or offsite recycled water facilities as constructed or modified and (2) all potable water and sewage pipelines as constructed or modified.
Recycled Water Permit	The District's written approval or authorization for recycled water service. A Recycled Water Permit may only be issued by the District upon completion of the appropriate District application form, payment of all applicable fees and charges, and compliance with all applicable District ordinances, rules and regulations, as well as local, state, and federal law.
Recycled Water Service Connection	Pipe, valves, and other appurtenances by which recycled water is conveyed from the recycled water main to the premises, and includes the tap, corporation stop, curb stop or shut-off valve, recycled water meter, and valve box.

Regional Board	Central Valley Regional Water Quality Control Board
Runoff	Flow of water along the surface of the ground or other natural or manmade surfaces, including but not limited to, pedestrian walkways, streets, playground surfaces, and grassy slopes. Runoff can be caused by over irrigation or overspray.
Ponding	Retention of piped water on the surface of the ground or manmade 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. Ponding can be caused by over irrigation.
Site Supervisor	A qualified person designated by the User and approved by the District who shall be responsible for the installation, operation and maintenance of the onsite recycled water facilities, the prevention of Cross-Connection and compliance with the District Standards and other regulations.
Supplemental Water	Potable water used to increase recycled water production in order to satisfy recycled water demands.
User	Any individual or entity issued a Recycled Water Permit by the District. They may be the property owner, tenant, or property manager as appropriate.
Use Area	A site with well-defined boundaries designated, on a District-approved Recycled Water Plan, to receive recycled water.
Violation	Noncompliance with any condition of the Recycled Water Permit by any person, action or occurrence, intentional or unintentional.
Windblown Spray	Dispersed, airborne particles of water transmitted through the air to a location other than that for which the direct application of

	recycled water is approved. Windblown spray can be caused by over spray or irrigating during windy conditions.

1.3. General Requirements

On July 20, 2011, the District adopted Policy 2011-07 which mandates the use of recycled water for irrigation purposes, wherever economically and physically feasible as determined by the District's Board of Directors (Board). In general, the lands subject to this policy are defined as future residential parcels located within the District's service area and existing parks, median landscaping, and commercial landscaping areas. All recycled water systems must be metered separately from the potable water supply system and must have no Cross-Connections to the potable water supply system.

The design of offsite facilities, including the preparation of Contract Documents, is to be prepared under the supervision of a responsible Professional Engineer registered in the State of California. The District shall review and approve Contract Documents prior to construction and shall inspect all public water, sewer, and recycled water pipelines and infrastructure. The design of onsite facilities that will use recycled water for landscape irrigation shall be prepared under the direct supervision of a responsible registered landscape architect or civil engineer in the State of California. Due to the nature of recycled water use requirements, including identification and periodic onsite inspections, the District will provide onsite recycled water permitting and inspection. The recycled water system, including offsite and onsite facilities, shall be separate and independent of any potable water system.

1.3.1. Protection of Public Health and the Environment

The District and regulatory agencies reserve the right to take any action necessary, with respect to the operation of the recycled water system, to safeguard the public health. If real or potential hazards are evidenced any time during construction or operation of the recycled water system serving a particular User, the District reserves the right and has the authority to terminate recycled water service to that particular User immediately, without notice. These hazards include, but are not limited to, Cross-Connections with the potable water system and any other water system, improper tagging, signing, or marking, or unapproved/prohibited uses, including irrigation practices that result in runoff, particularly where such runoff flows to a surface water body.

Application of recycled water to the landscape irrigation Use Areas shall be at reasonable agronomic rates and shall consider soil, climate, and nutrient demand. Application rates shall ensure that a nuisance is not created. Degradation of groundwater, considering soil, climate, and nutrient demand, shall be minimized consistent with applicable provisions of the State of

California's Recycled Water Policy.[2]

The seasonal nutritive loading of the landscape irrigation Use Areas including the nutritive value of organic and chemical fertilizers and of the recycled water, shall not exceed the nutritive demand of the landscape.

1.3.2. Approved Uses of Recycled Water

Recycled water may be used for a variety of uses approved by the California Department of Public Health (CDPH). In Rancho Murieta, approved recycled water uses are for irrigation of the two local golf courses, Van Vleck Ranch, and in the future, irrigation of parks; greenbelts; playgrounds; athletic fields; residential front and backyard landscaping; common areas; commercial, freeway, highway, and street landscaping; and dust control once approved in a master reclamation permit. Each residential home using recycled water for front and backyard irrigation must obtain a Recycled Water Permit prior to use. The State of California regulates the use of recycled water, as directed under the California Code of Regulations Title 22. The District, Regional Board, and CDPH, at their discretion, can require or specify what sites and/or uses of recycled water are to be utilized in the service area, so long as they comply with State requirements. Sites must use recycled water only for those uses approved by the District, Regional Board, and CDPH.

Certain uses are considered "dual plumbed" and thus, are required to undergo formal testing for Cross-Connection prior to receiving recycled water service and every four years thereafter (minimum) in accordance with Section 60316 (a) of the California Code of Regulations Title 22. Any site using separate piping systems for recycled water and potable water, including single family residences using recycled water for irrigation, is considered to be dual plumbed.

1.3.3. Recycled Water Permit

Each Use Area must obtain a Recycled Water Permit prior to receiving recycled water. Permits will describe the conditions of use, including the requirements that the User follow the rules and regulations of the most recently adopted District Code and the most recently adopted Standards. Typically, these conditions also include construction inspection, Cross-Connection certification, User monitoring and inspection requirements, and a schedule of the hours that recycled water can be utilized. Following Recycled Water Permit issuance, a Use Area may receive recycled water in accordance with the requirements set forth in the Recycled Water Permit. The District has the authority to revoke the Recycled Water Permit at any time or modify it to reflect requirements included in the District master reclamation permit.

If the User is found to be in violation of the Recycled Water Permit, the District has the authority to immediately terminate recycled water service. Alternatively, the District may direct the User to mitigate for these violations. A site inspection will be scheduled after a reasonable mitigation period to ensure compliance. Failure to comply will result in termination of recycled water

[2] State Water Resources Control Board Resolution Nos. 2009-0011 and 2013-0003.

service.

1.3.4. Procedures for Obtaining Onsite Recycled Water Service

An abbreviated description of the procedures for obtaining landscape irrigation recycled water service is provided below. A more detailed description of these procedures is provided in the next chapter.

1. Attend District-sponsored Recycled Water Orientation.

2. Recycled Water Plan is developed and drawn in accordance with the District's Standards.

3. Three hardcopy sets of Recycled Water Plan, and one electronic version (in District approved software format), are submitted to the District for review and comment; the designer should retain a copy for the User.

4. District staff shall review the Recycled Water Plan; allow up to 15 working days for processing.

    a. If discrepancies are found, the Recycled Water Plan is returned to the designer and the User is notified by the District. Recycled Water Plan must be revised and corrected by the designer and resubmitted in accordance with Step 2.

    b. If Recycled Water Plan is approved, the District will mail notification to the designer and User.

5. Construction may begin by one of the contractors listed on the District's Approved Contractor List.

6. Open trench inspection is to be scheduled when irrigation pipe construction is ready. Please call (916) 354-3700 and allow a minimum of 48 hours of advance notice for inspection, excluding Saturdays, Sundays, and District holidays. Each site will be inspected to ensure prevention of any Cross-Connection between the potable and recycled water systems and that the pipeline separations, materials of construction, quality of work products, etc. conform to the standards described in this document. A written certification of open trench inspection shall be issued by the District to those that qualify.

7. Final inspection will be scheduled after the approval of open trench inspection, the landscape construction is completed, and irrigation timers are set. Please call (916) 354-3700 and allow a minimum of 48 hours of advance notice for inspection, excluding Saturdays, Sundays, and District holidays. Either the User or contractor is required to be present during Final Inspection. No facilities shall be connected to the District's recycled water system until the District has performed final testing and has determined that that the new construction is satisfactory.

8. Two hardcopy sets and one electronic version (in District approved software format) of As-Built Recycled Water Plan shall be submitted to the District. Once as-built drawings have been filed and final inspection successfully completed, a certification of final inspection shall be issued in writing by the District along with a Recycled Water Permit. The User may now initiate recycled water service.

1.4. System Responsibilities

The District is responsible for production, distribution, operation, and maintenance of its recycled water system up to the Point of Connection. In addition, the District must conduct periodic Cross-Connection, backflow prevention, and coverage inspections of the recycled water system. The District reserves the right to control and schedule the use of recycled water to maintain acceptable working conditions within the District's recycled water system. These and other recycled water distribution conditions will be administered by the District at its discretion.

It is the responsibility of the User to maintain its recycled water system downstream of the Point of Connection. The User is responsible for ensuring that the recycled water is used on its site according to all the rules and regulations regarding such use. Specifically, the User is responsible for the following:

- Obtaining all permits and payment of all fees required for the establishment, operation and maintenance of the User's recycled water system.

- Ensuring that all materials used during the design, construction and maintenance of the system are approved or recommended for recycled water use.

- Routinely monitoring and inspecting the recycled water system for any situation that may not be in conformance with the regulatory requirements. Problems such as irrigation controller malfunctions, irrigation schedule adjustments, excessive ponding or runoff of recycled water, broken or out-of-adjustment sprinkler heads, etc. must be corrected as soon as they become apparent.

- Maintaining the Use Area's recycled water system downstream of the Point of Connection.

- Reporting all violations and emergencies to the required local governing agencies. A listing of these agencies is provided in Appendix A.

- Obtaining prior written authorization from the District and any required regulatory agency before making any modifications to an approved recycled water system, or the potable water system if it is in close proximity to the recycled water system.

1.5. Applicable Codes, Policies, and Regulatory Requirements

Rules and regulations for the end use of recycled water are established and/or enforced by the Regional Board, CDPH and the local county Health Department. These rules and regulations will be contained in Waste Discharge Requirements (WDR) and a Master Reclamation Permit

(MRP) that will be issued to the District, the Rancho Murieta Country Club, and the Van Vleck Ranching and Resources, Inc. in the future. All Use Areas must be designed, constructed, operated, and maintained to meet the most recently adopted standards of the Federal, State and local governing codes, rules and regulations.

District Code, Chapter 17 (Recycled Water Code) sets forth rules and regulations regarding the use of recycled water in Rancho Murieta. The Recycled Water Standards is defined in the District Code as the document that describes "all procedures, design, work, materials, capacities, facilities and other improvements on recycled water facilities or connections." Together the Recycled Water Code and Recycled Water Standards establish, and provide the means to enforce, rules and regulations for recycled water users, design and construction of recycled water facilities, and the use of recycled water in accordance with the uniform statewide reclamation criteria.

The Recycled Water Standards have been prepared under the direction of the General Manager and can be updated as rules and regulations change over time through the modification/addition of either the standard details (Chapter 3) or design and construction standards (Chapter 2). As the industry becomes more experienced with recycled water use, there may be changes to existing regulations. These changes may be made without the consent of the User or the District and will be enforced upon their effective date.

This document draws from a number of references concerning the use of recycled water. Of primary importance are the California Code of Regulations Title 22 and Title 17, the California Health and Safety Code, the California Water Code, the Guidelines for Distribution of Nonpotable Water[3], and Chapter 16A of the 2010 California Plumbing Code. In the future, this document should be modified to draw upon the regulations contained in the Waste Discharge Requirements (WDR) and Master Reclamation Permit (MRP) issued by the Regional Board. Given that these particular requirements will be developed specifically for Rancho Murieta Users, the WDR and MRP take precedence over general guidelines where differences are noted.

The District does not assume any liability for errors in this document, as codes, laws, statutes and regulations can change without prior approval or knowledge. Within the Rancho Murieta service area, various Users may have site-specific requirements depending on their circumstances, which are usually set forth in their individual Recycled Water Permit. It is the responsibility of the User to check with the District before initiating any changes to their onsite recycled water system.

If any section, subsection, sentence, clause, phrase, part, or portion of these Standards is for any reason held to be invalid or unconstitutional, such invalidity shall not affect any of the remaining portions. These Standards shall be interpreted so as to comply with applicable Federal, State and local laws and regulations.

[3] Prepared by the California-Nevada Section of the American Water Works Association, 1992.

1.6. District Jurisdiction

The District is responsible for obtaining a Waste Discharge Requirements and Master Reclamation Permit and approval of plans and inspection of all recycled water systems and Use Areas within its service area. Where repairs, improvements, replacement of a service pipeline on the upstream side of the Point of Connection is required, it shall be the responsibility of the District, unless it is a system upgrade needed to serve a specific User or group of Users, in which case the owner(s) or customer(s) will be billed for the work. Conversely, the cost of repairs or replacement of components downstream of the Point of Connection shall be the responsibility of the User.

1.7. Developer's Engineer's Responsibility

These Standards establish uniform policies and procedures for the design and construction of the District's offsite recycled water system. They are not intended to be a substitute for engineering knowledge, judgment, or experience. These Standards shall be reviewed by the developer's engineer and applied as necessary to a project. Proposed deviations from these Standards shall be submitted to the District for approval, in writing, prior to tentative map and/or development project approval.

All plans, specifications, reports, or documents shall be prepared by a registered civil engineer licensed by the State of California or by a subordinate employee under the licensed civil engineer's direct supervision, and shall be signed and stamped with the civil engineer's seal to indicate responsibility for each plan, specification, report, or document.

A "Reviewed" and/or "Accepted" signature of the District on the plans does not in any way relieve the developer's engineer of responsibility to meet all of the District's requirements. The plans may be revised by change order. However, plans that are signed as being authorized for construction generally will not require revisions based upon subsequent revisions to these Standards, unless in the District's opinion, a change is necessary due to a significant change in the Standards, or unless a developer does not proceed to construction within a reasonable time.

The District will not recommend that a recycled water system or improvement be accepted until all applicable requirements of these Standards have been met. Acceptance by the Board shall be done in total with all other improvements of a development project.

1.8. Landscape Architect / Engineer Responsibility

These Standards establish uniform policies and procedures for the design and construction of onsite recycled water facilities. They are not intended to be a substitute for knowledge, judgment, or experience. The contained procedures shall be reviewed by the landscape architect/engineer and shall be applied as necessary to the project. Proposed deviations to these Standards shall be submitted in writing to the District in conjunction with the Recycled Water Plan review submittal. Plans shall be revised or supplemented at any time if it is determined that the District's requirements have not been met.

The design of the onsite landscape irrigation system shall be prepared by or under the direct supervision of a responsible registered landscape architect or civil engineer in the State of

California. In addition, all landscape architects/civil engineers are required to attend a District-sponsored Recycled Water Orientation every 24 months.

Before design, the landscape architect/civil engineer should obtain the following from the District:

- Approval to use recycled water for the proposed system.
- Verification of locations and size of proposed Point of Connection (recycled water meter).
- Design pressure for the proposed facilities.

1.9. User Liability and Responsibility

The User assumes all liability and responsibility for all phases of construction, operation, and maintenance of the recycled water system downstream of the Point of Connection (onsite facilities), unless such responsibility is otherwise clearly outlined in the Recycled Water Permit. The District is responsible for water quality and operation and maintenance of the recycled water system upstream of the Point of Connection (offsite facilities).

The District shall not be liable for any water or other damage caused by the User due to defective or broken plumbing or faulty service, nor shall the District be liable for damage caused by the User's recycled water system.

All Users are required to have a designated Site Supervisor. Specific Site Supervisor requirements are to:

- Receive training by attending a District-sponsored Recycled Water Orientation or be able to demonstrate knowledge of the application and maintenance of their recycled water system.
- Be aware of, and familiar with, this document.
- Be knowledgeable about the practices and procedures of using recycled water.
- Be available to the District and have the authority to carry out any requirements of the District relating to the onsite recycled water system. At a minimum, the Site Supervisor shall participate in the following inspections:
    - Backflow prevention testing to be conducted annually in accordance with Section 7605 of the California Code of Regulations Title 17.
    - Cross-Connection testing to be conducted every four years and at change of ownership in accordance with Section 60316 (a) of the California Code of Regulations Title 22.

    - Coverage testing to be conducted annually to verify that system has not been modified and that the irrigation system is being maintained in the proper manner and that overspray, ponding and runoff are being controlled.

- Be responsible for the installation, operation and maintenance of the recycled water and potable water systems, and for the prevention of potential hazards.

- Maintain irrigation system records.

- Be familiar with the basic concepts of backflow and Cross-Connection prevention, system testing, and related emergency procedures.

- Immediately inform the District of any failures, violations and emergencies so that appropriate measures may be taken.

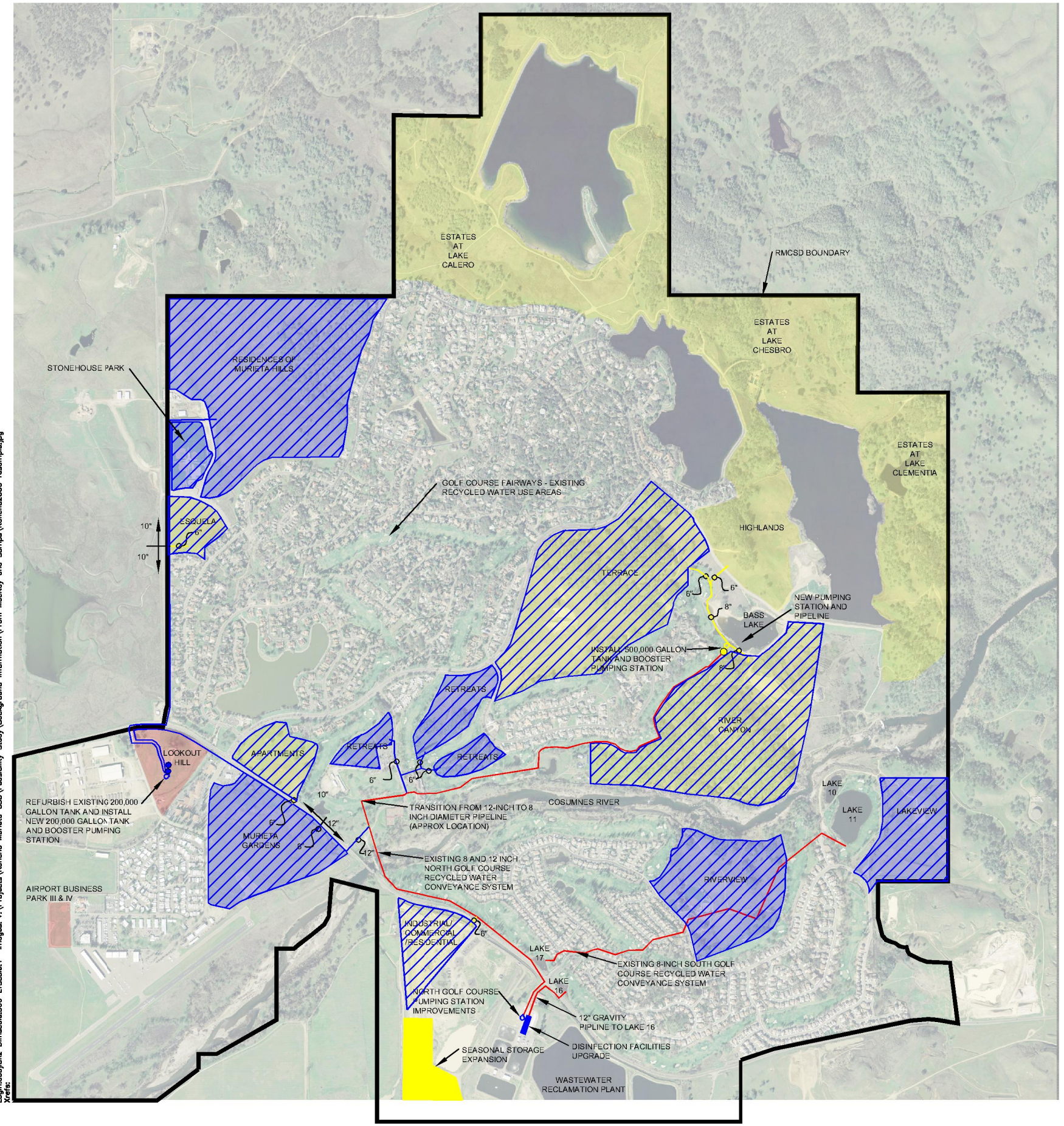
For single-family residences which have a recycled water service connection, the owner shall be considered to be the Site Supervisor unless otherwise indicated on the application for recycled water service. In the event that someone other than the owner is designated as the Site Supervisor and this person is no longer associated with the property, the owner shall again be considered the Site Supervisor until written notification is made to the District.

1.10. Rates, Fees, and Other Charges

The District shall determine all recycled water rates, fees, and charges concerning recycled water service. These may be changed at the discretion of the District and may be subject to the same, or similar, conservation pricing levels as potable water to encourage the efficient use of this resource. The rates, fees, and charges shall be determined by Board Resolution.

1.11. Recycled Water Infrastructure and Service Areas

Figure 1 shows the existing and planned recycled water distribution systems, most likely residential landscape irrigation Use Areas, location of the Wastewater Reclamation Facility and the approximately alignments of existing and proposed recycled water transmission and distribution pipelines.



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LOCATION MAP

HORIZONTAL GRAPHIC SCALE
500 250 0 250 500
1 inch = 500 ft.

NOTE: RMCSD INTENDS TO SERVE RECYCLED WATER WITHIN ITS SERVICE AREA BOUNDARY FOR THE IRRIGATION OF PARKS; GREENBELTS; PLAYGROUNDS; ATHLETIC FIELDS; COMMON AREAS; COMMERCIAL, FREEWAY, HIGHWAY, AND STREET LANDSCAPING; AND DUST CONTROL. IT IS LIKELY THAT RESIDENTIAL LANDSCAPE IRRIGATION WILL BE LIMITED TO THOSE SPECIFIC PHASE 1 AND 2 DEVELOPMENTS DESCRIBED IN THE LEGEND AND MAP.

LEGEND:
- EXISTING RECYCLED WATER PIPELINES
- PHASE 1 RECYCLED WATER IMPROVEMENTS
- PHASE 2 RECYCLED WATER IMPROVEMENTS
- PROPOSED PHASE 1 RESIDENTIAL LANDSCAPE IRRIGATION USE AREA
- PROPOSED PHASE 2 RESIDENTIAL LANDSCAPE IRRIGATION USE AREA
- PHASE 2 DEVELOPMENT (NO RECYCLED WATER SERVICE)

Figure 1. Recycled Water Distribution System and Proposed Service Areas

2.0 Design and Construction Standards

The recycled water system (both offsite and onsite facilities) shall be completely separate and independent from the potable water system. Cross-Connection between potable water and recycled water facilities is strictly prohibited along with the following:

- Recycled water hose bibs, quick connections, etc. are prohibited.
- Fire hydrants are not allowed to be connected to the recycled water system.
- Spray, mist, or runoff of recycled water shall not enter dwellings, designated outdoor eating areas, or food handling facilities.
- Drinking fountains located within recycled water Use Areas shall be protected from the spray of recycled water in a manner approved by the District prior to construction.
- Recycled water overspray, ponding and runoff will be prevented using Best Management Practices (BMPs) as approved by the District prior to construction.
- Potable and recycled water pipelines shall never be installed in the same trench and shall adhere to specific horizontal and vertical separation requirements.
- Recycled water will not be used for any other purposes except as those approved uses described in Section 1.3.2.

To protect the public water supply system, a double check valve assembly (see RW-27) shall be installed on each potable water service line serving a recycled water customer. Where potable water is served using the recycled water system for a prolonged period of time, the recycled water service line shall also be equipped with a double check valve assembly as well (see RW-23 and RW-24).

Design and construction standards for recycled water facilities have been separated into two categories – offsite and onsite facilities. Offsite recycled water facilities typically consist of those recycled water facilities which are, or will be, owned, operated and maintained by the District such as transmission or distribution mains located in public rights-of-way and relatively large landscape irrigation facilities for greenbelts, parks, common areas, etc. Onsite recycled water facilities typically consist of facilities that will be owned, operated and maintained by a User or Customer, and are located downstream of the recycled water meter or Point of Connection.

2.1. Offsite Recycled Water Facilities

All offsite recycled water facilities, to the extent determined by the District, required to serve specific developments in the District's service area, shall be provided by the applicant, owner, or customer at their expense, unless the District determines it is appropriate to construct these capital facilities. Plans and specifications for all offsite recycled water facilities shall be submitted to and approved by the District in advance of construction.

The District will assume responsibility for providing recycled water service to the Point of Connection of such developments upon title transfer to the District of all offsite recycled water systems and all necessary easements. Easements shall be in a form acceptable to the District and not subject to outstanding obligations to relocate such facilities or any deeds of trust, except as approved by the District.

The property owner, proponent, or developer may request that the District enter into a reimbursement agreement for the portions of a system which are required to be oversized with respect to hydraulic capacity to supply more recycled water than the property owner, proponent or developer requires in accordance with District Code Chapter 17. The decision to enter into a reimbursement agreement shall be made by the District.

2.1.1. Pipe Size and Maximum Velocity

Flow of recycled water in the delivery system may not be constant and may continually vary from no flow to a maximum rate depending on demand and other conditions. Due to these varying conditions, transmission and distribution mains will be subject to cyclic surging. Its magnitude shall be minimized to keep the stress of the pipe, due to water hammer effects, within the design strength of the pipe by limiting the allowable operating velocity of the mains. Recycled water transmission and distribution mains shall be sized in accordance with the District's preliminary design of the expanded recycled water system shown in Figure 1. Variation from this preliminary design will require special permission from the District. Recycled water mains shall be sized based on a peaking factor of 11.5[4] applied to the annual average recycled water demand rate, and a maximum pipeline velocity of 7 feet per second. Recycled water transmission and distribution mains shall be 6-inches in diameter or greater unless otherwise approved by the District.

Flow and sizing of offsite facilities shall be performed under the direction of the District. Substantiating engineering calculations for demands and pressures shall be prepared on a project-by-project basis. Application of recycled water on landscape areas using spray irrigation shall be typically limited to a period of 10 p.m. to 6 a.m. during irrigation seasons. Recycled water drip irrigation systems may be operated at any time.

2.1.2. Pressure Criteria

The District shall determine residential service pressure requirements and the responsible engineer shall design offsite facilities to meet these requirements. The operating pressure of the offsite recycled water system is anticipated to be in the range of 40 to 200 pounds per square inch (psi).

When reasonable recycled water service pressure is not available, the property owner,

[4] This peaking factor is based on the irrigation schedule (10 p.m. to 6 a.m.) and 31 percent of the annual average recycled water demand (in acre-ft per day) occurring during the 30-day peak month irrigation demand season.

proponent, or developer is responsible for providing booster pumps to increase the pressure. A pressure regulator located downstream of the recycled water meter shall be installed by the owner, proponent, or developer to maintain the correct pressure for landscape irrigation at all times.

Recycled water pipelines shall be sized to deliver recycled water within the required pressure range at a minimum diameter of 6-inches or larger.

2.1.3. Depth of Pipeline Cover

The top of recycled water transmission pipelines should be a minimum of 36 inches below the finished street grade and one foot lower than potable water pipelines, unless otherwise approved by the District.

Typical water distribution system depths are described in Section SS-93 of the District's Standard Construction Specifications. In general, depths of cover are to range between 30 and 60 inches within roads of from the finished grade of roadway areas, unless specifically shown in Contract Drawings.

For areas that do not have public access or do not contain potable water or sewer pipelines (e.g., conveyance and distribution pipelines serving the Van Vleck Ranch), the recycled water transmission and distribution pipelines may be laid on the ground surface.

2.1.4. Pipeline Separations and Easement Requirements

Offsite recycled water mains shall typically be located in streets a minimum of three (3) feet from the curb face and on the opposite side of the street from the potable water mains. A minimum ten (10) foot horizontal separation and one (1) foot vertical separation shall be maintained at all times between a potable water pipeline and a parallel recycled water pipeline. If the required horizontal separation is not possible, the special construction requirements described in the District's Recycled Water Standard Drawing No. (Standard Detail) RW-3 (see Chapter 3) shall apply.

At crossings of potable water, recycled water, and/or sewer pipelines, pipelines should be located from the ground surface in the order of descending quality, with potable water above recycled water and recycled water above sewer pipelines. The minimum vertical separation should be one (1) foot between outside top and bottom surface of pipes and the full standard pipe length should either be centered over the crossing or the recycled water pipelines is installed in a sleeve which extends a minimum of ten (10) feet on either side of the potable water pipe.

If a one (1) foot vertical separation is not possible, the special construction requirements described in Standard Detail RW-3 apply.

Location within Easement

1. All recycled water mains not located within the public right-of-way shall be provided

within a minimum of a twenty (20) foot wide recycled water easement. In some cases a wider easement may be required; size shall be determined by the District.

2. Where recycled water and sewer mains are located within the same easement, the minimum easement size shall be thirty (30) foot wide.

3. Where potable water, sewer, and recycled water mains are located within the same easement, the minimum easement shall be forty (40) foot wide.

4. Easements shall be easily accessible to District maintenance equipment. Access shall be unobstructed with all-weather driveways.

5. No trees, plantings, structures or building overhang shall be located within the easement.

6. Homeowners who purchase property containing a District easement will be responsible for the maintenance and accessibility of that easement property.

2.1.5. Identification

All new recycled water pipe shall be permanently marked to identify that it contains recycled water by labeling either using purple-colored (Pantone 512) adhesive Mylar PVC tape along the entire length of the pipe or using non-metallic pipe manufactured with purple integral to the material. For either method, the identification system shall be installed so the wording below is clearly visible.

Purple-colored pipe shall be embossed with the words: “CAUTION: RECYCLED WATER -- DO NOT DRINK -- AVISO -- NO ES PARA BEBER” on opposite sides of the pipe and repeated every three feet. Piping must be laid in the trench with wording facing upwards. All marking and coloring shall be durable enough to be easily recognizable and legible for the design life of the pipe.

If tape is used to label the pipe, it shall have black printing on a purple field (Pantone 512 or equivalent) with the words: “CAUTION: RECYCLED WATER -- DO NOT DRINK -- AVISO -- NO ES PARA BEBER” in one (1) inch minimum lettering. The overall width shall be a minimum of three (3) inches. The tape shall be installed on the top of the pipe longitudinally and centered. The tape shall be continuous in its coverage of the pipe and fastened to each pipe section no more than ten (10) feet apart. Taping attached to sections of pipe before being placed in the trench shall have overlaps sufficient for continuous coverage.

When potable water is being supplied to an area which is also being supplied with recycled water, the new potable water transmission or distribution pipelines, including service pipelines, shall also be identified. A color-coded tape, as determined by the District, with the words ‘Drinking Water Line” shall be fastened directly to the top of the potable water pipe and run continuously the entire length of the pipe. This tape shall be at least three (3) inches in width. The color code for potable water shall be determined by the District to differentiate it from recycled water.

Valve boxes shall be heavy-duty traffic rated and of a size and type designed for the appropriate type and size of valve. Valve boxes for traffic service shall be of precast concrete, and shall have a cast iron triangular face and a cast iron triangular traffic lid. Valve boxes out of traffic areas shall also be of precast concrete, with a cast iron triangular lid. All new recycled water valve covers shall have a recognizable "RW" inscription cast or otherwise permanently marked on the top surface as shown on Standard Detail RW-5. All riser pipes for recycled water valves and blow-off assemblies shall be purple piping.

All new exposed or above-ground equipment, such as valves, blow-off assemblies, and other appurtenances shall be color-coded purple (Pantone 522) and identified using recycled water identification tags. Tags shall be UV resistant and weatherproof plastic, 3-inch by 4-inch, purple in color with the words: "CAUTION: RECYCLED WATER – DO NOT DRINK," on one side and "AVISO -- NO ES PARA BEBER" on the other. Imprinting shall be permanent and black in color. One tag shall be attached to each valve as follows:

1. Attach to valve stem directly or with plastic tie wrap; or

2. Attach to solenoid wire directly or with plastic tie wrap; or

3. Attach to valve cover with existing valve cover bolt.

Where curb and gutter exists, or is to be constructed concurrently with the improvements, the location of each service shall be permanently indicated by stamping the letters "RW" in the curb directly above the pipeline where the service is perpendicular to the street centerline. Otherwise, the "RW" mark for a skewed or angling service shall be placed at a right angle to the end of the service. When recycled water services are installed in street with existing curb, the curb mark shall be placed at the time the service is installed to assure proper location. In new subdivisions when the services are installed before the curb is constructed, it shall be the Contractor's responsibility to establish the exact location of each service and to furnish this information to the curb and gutter subcontractor, if any, in order that he or she may place the "RW" in the curb after it is poured. In no case shall the "RW" be placed more than 6" from the service.

The Contractor shall also furnish this information to the Inspector. The Contractor may arrange with the Consulting Engineer for the subdivision, to resurvey and reestablish the end of each service before the curb and gutter is placed in lieu of the above requirements to insure that the "RW" is properly placed.

Cross-country mains must be isolated with valves in the public right-of-way and must be identified with locating posts at 500 foot intervals, at any angle point, and at the entrances to easements.

All runs of non-metallic recycled water pipe, including services, shall have a No. 10 gauge solid, soft drawn copper wire laid along the pipe to facilitate locating the pipe at a later date once it has been buried. The wire shall be stubbed up inside each valve box, and be placed as shown in the standard details. Continuity testing shall be conducted on each splice at all locations.

2.1.6. Pipeline Materials

Recycled water pipeline materials shall be either polyvinyl chloride (PVC) or ductile iron pipe and comply with the District's Standard Construction Specifications for potable water except as noted below.

A newly installed recycled water main or recycled water main that has been taken out of service for maintenance or repair shall be disinfected and sampled for bacteriological quality in accordance with American Water Works Association Standard C651-02. Samples from new mains shall be negative for coliform bacteria prior to the new mains being placed into service.

2.1.6.1. Certa-Loc Pipe and Fittings

The following material requirements apply specifically to those recycled water Use Areas that do not have public access or contain potable water or sewer pipelines (e.g., recycled water conveyance and distribution pipelines serving the Van Vleck Ranch).

- 6- through 12-inch diameter: SDR 32.5 Mainline Irrigation Pipe
- 4-inch diameter: SDR 21 Mainline Irrigation Pipe
- 3-inch diameter: SDR 17 Mainline Irrigation Pipe
- Fittings (3- through 12-inch): SDR 32.5 Mainline Irrigation and Schedule 80 PVC
- 40 mm K-Line portable lines with 8 sprinklers and pods per distribution line
- Nelson R2000WF Sprinklers
- Nelson Mini Regulator Drain Check Valve

2.1.6.2. Polyvinyl Chloride (PVC) Pipe and Fittings

2.1.6.2.1. PVC Pipe

PVC pipe shall conform to the requirements of AWWA C900, which covers PVC pipe in diameter sizes between four (4) and twelve (12) inches, or AWWA C905, which covers PVC pipe in diameter sizes fourteen (14) inches and larger. Outside diameter shall be manufactured to cast iron pipe equivalent. Each length of pipe shall be clearly marked with the following:

- Nominal size and O.D. base (e.g., 8" cast iron pipe size)
- Material code (e.g., "PVC 1120");
- Dimensional ratio (e.g., DR 14 where DR is equal to outside diameter divided by thickness);
- AWWA pressure class (e.g., PVC 200);

- AWWA designation (e.g., “AWWA C900” or “AWWA C905”);
- Manufacturer’s trade name and production record code, and
- Seal (mark) of testing agency.

The standard laying length shall be twenty (20) feet (plus or minus 1 inch) in all classes and sizes. A maximum of fifteen (15) percent may be furnished in random lengths of not less than ten (10) feet each.

One (1) gasket shall be furnished with each length of elastomeric-gasket bell-end pipe and two (2) gaskets shall be furnished with each coupling where couplings are used.

Pipe surfaces shall be free from nicks, scratches and other blemishes. The joining surfaces shall be free from gouges or other imperfections that might cause leakage.

2.1.6.2.2. Joint Mechanisms

The joints shall be either of the following:

- Integral wall – thickened bell end (bell and spigot with rubber gasket)
- Integral sleeve reinforced bell end
- Elastomeric gasket coupling

PVC solvent cement joints shall <u>not</u> be used on offsite pipelines or fittings.

2.1.6.2.3. Couplings and Fittings

Where couplings are used, they shall meet the requirements of AWWA C900 for PVC pipe sizes less than fourteen (14) inches in diameter or AWWA C905 for PVC pipe sizes fourteen (14) inches in diameter or larger. All testing shall be done by a certified testing laboratory with such testing available for inspection by the District. If requested by the District, the manufacturer shall supply a letter of certification attesting to their pipe meeting these specifications.

All fittings for PVC pipe twelve (12) inches in diameter and smaller shall be ductile iron compact fittings conforming to AWWA C153 Class 350. Fittings for PVC pipe fourteen (14) inches in diameter and greater shall be standard mechanical joint connections conforming to AWWA Standard C110 or restrained to the satisfaction of the District.

2.1.6.2.4. Physical Test Requirements

Inspection and testing by the manufacturer shall be in accordance with AWWA C900 for PVC pipe twelve (12) inches in diameter or less or AWWA C905 for PVC pipe fourteen (14) inches in diameter or larger. All testing shall be done by a certified testing laboratory with such testing available for inspection by the District. If requested by the District, the manufacturer shall supply a letter of certification attesting to their pipe meeting these specifications.

2.1.6.3. Ductile Iron Pipe and Fittings

- Pipe shall conform to AWWA C151 for both quality and strength. Each pipe shall include the letter “DI” or word “DUCTILE” to indicate the pipe material.

- Joints shall be of the rubber gasket push-on type conforming to the requirements of AWWA C111 and being of the “tyton” type designed for a working pressure of 250 to 350 psi.

- Fittings shall conform to AWWA C110.

- Unless otherwise approved by the District, the internal surfaces shall be lined with a uniform thickness of cement mortar and then sealed with a bituminous coating in accordance with AWWA C104. With the approval of the District, ductile iron fittings can be coated with fusion-bonded epoxy in accordance with AWWA C116.

- The outside pipe surface shall be protected with a polyethylene encasement furnished and installed in accordance with AWWA C105.

2.1.6.4. Service Lines

Except for identification (e.g., marking and embossing) service pipelines for recycled water shall confirm to District standard specifications for potable water, SS-89.

2.1.7. Valving

Valves shall be located in the main distribution system to facilitate repair, maintenance, servicing, and extension of the recycled water system. Valves are also used to isolate sections where serious leakage or pipe breakage may occur that may cause property damage and loss of a large volume of recycled water, if not repaired promptly.

Valves shall be located on all branches of the transmission and distribution mains. As a minimum, valves shall be installed on all new recycled water mains within the distribution system as follows:

1. No farther than 1,320 linear feet apart for all mains.

2. At each tee or crossing connection between mains. Valving shall be located within 100 feet of the tee or crossing connection with the primary main.

Dead ends for future expansion shall be provided with a valve and temporary two (2) inch blowoff. All taps to existing recycled water mains shall be provided with tapping valves.

All recycled water valves shall comply with the District’s Standard Construction Specification SS-86 except as noted below:

- All valves shall be located within a valve box as shown in Standard Detail RW-5 and have a recognizable “RW” inscription case or otherwise permanently marked on the top

of the surface.

- Valve box shall be installed over each buried valve stem to aid in locating and operating the valve.

- For valves buried in trenches greater than five feet below finished grade, either a valve stem riser to permit the use of a normal key or a notation on valve records indicating that a long key will be required shall be provided.

All valves and valve boxes shall be raised to grade within forty-eight (48) hours of final paving.

2.1.8. Blow-off Assemblies

In-line and end-of-line blow-off assemblies shall be installed to remove water or sediment from recycled water pipelines. At a minimum, blow-off assemblies shall be installed on low points of the recycled water pipeline; on all permanent dead-end runs, including cul-de-sacs; or at other locations required by the District. Recycled water blow-off drains shall be located within twenty-five (25) feet of sewer manholes. Preferably, recycled water blow-offs shall be aligned in the same traffic lane as the sewer manhole. The pipeline tap for the assembly shall be no closer than eighteen (18) inches from a valve, coupling, joint, or fitting unless it is at the end of the pipeline. The discharge from blow-off assemblies shall be designed to drain into a sewer. Discharge of recycled water to storm drains, natural drainages, water bodies, etc. is restricted.

Wherever possible, the blow-off assemblies shall be installed in the street right-of-way, a minimum distance of three (3) feet from the lip of the gutter. In no case shall the location be such that there is a possibility of back-siphonage into the recycled water distribution system.

See Standard Details RW-6A, RW-6B, RW-7A, and RW-7B for blow-off assembly materials, configurations, and other requirements. Typically, a two (2) inch blow-off assembly can be provided for recycled water pipelines up to twelve (12) inches in diameter, depending on the distance between assemblies. Larger diameter pipelines typically require a four (4) inch or six (6) inch blow-off assembly depending of the pipeline diameter and distance between assemblies.

All below ground appurtenances for blow-off and air and vacuum assemblies shall be consistently color-coded purple (Pantone 522) and marked to differentiate recycled water facilities from potable water and/or wastewater facilities.

Blow-off assemblies shall be installed as shown on Standard Details RW-6A, RW-6B, RW-7A, and RW-7B. The developer/contractor shall locate the blow-off vaults in a suitable location with respect to the adjacent properties. This shall include locating the vaults closer to property lines rather than in the middle of a property where there could be future objections from the property owner. The service line to the assembly shall have a positive grade to prevent the accumulation of air.

Dielectric connections with PVC tape wrap shall be provided at all connections between steel, brass, or bronze.

2.1.9. Combination Air and Vacuum Valves

Air valve assemblies are used to provide adequate ventilation during filling and draining of a pipeline, to permit the release of small quantities of air that would otherwise accumulate at high points in the pipeline, and to protect the pipeline from vacuum pressures caused by surge conditions or a pipe break. The location of air valves are generally determined by the topography of the pipeline system and, accordingly, should be installed at high points and at long downsloping gradients. Air valves should also be installed on the low side of the pipeline. These valves allow for air intake and release from that portion of the pipeline. Combination air and vacuum valves should also be placed down slope of a permanently closed valve separating two different pressure zones.

At a minimum, combination air and vacuum valves shall be placed at high points and/or at other locations required by the District for recycled water pipelines twelve (12) inches in diameter and larger. For recycled water pipelines on very steep slopes and for pipelines twelve (12) inches in diameter and larger, calculations to determine the size of combination air and vacuum valves are required. Air valve assemblies for pipelines twelve (12) inches in diameter and smaller may be excluded if a manual air release is located near the high point. In general, a one (1) inch combination air and vacuum valve, automatic type, is adequate for recycled water pipelines up to twelve (12) inches in diameter.

Combination air and vacuum valves shall be sized for the air evacuation rate associated with maximum recycled water discharge rates at affecting blow-offs in accordance with the valve manufacturer's recommendations. However, in no case may the design differential pressure for air entering the pipeline being greater than 5 psi or the differential pressure which could collapse the pipeline using the factor of safety recommended in AWWA M11. The drawings and specifications must state the design pressure range for each combination air and vacuum valve.

Combination air release assemblies shall be installed as shown on Standard Detail RW-9. The developer/contractor shall locate air release vaults in a suitable location with respect to the adjacent properties. This shall include locating the vaults closer to property lines rather than in the middle of a property where there could be future objections from the property owner. Each new air-release, air vacuum, or combination valve, and any such valve installed shall be:

1. Installed such that its vent opening is above the calculated 100-year flood water level and, if recorded data are available, above the highest recorded water level.

2. Readily accessible for inspection, maintenance, and replacement.

3. Constructed and designed to prevent exposure to rainwater or runoff, vandalism, and birds, insects, rodents, or other animals.

4. Fitted with a downward-facing screened vent or a domed and screened cap.

5. Installed pursuant to American Water Works Association Standard C512-04 and Manual M51 (2001).

Dielectric connections with PVC tape wrap shall be provided at all connections between steel, brass, or bronze.

2.1.10. Design for Proper Flushing

Proper flushing of recycled water transmission and distribution mains and the prevention of sediment buildup are important aspects of the District's maintenance program. Therefore, the following criteria apply:

- Low points in the pipelines shall be eliminated wherever possible to prevent sediment accumulation.
- Piping systems shall be looped wherever possible. Dead-end pipelines may be approved by the District on a case-by-case basis.

2.1.11. Booster Pumping Stations

Booster pumping stations are required to increase the operating pressure downstream of recycled water storage tanks shown in Figure 1. These stations must be clearly identified as recycled water and designed to avoid the release of recycled water in an uncontrolled manner while providing proper drainage of the packing seal water. All pumps used to distribute recycled cycled water shall be capable of automatically shutting down in case of over-current to minimize the potential for recycled water spills. For example, in the event of a pipe failure, the pump will run outside its curve, setting an over-current alarm which will subsequently shut down the pump.

At least one sign must be posted on the booster pump station premises. The signage must be readily seen by all operations personnel that are in the working area (see Standard Detail RW-18). The District may require backflow prevention assembly to protect the recycled water distribution system from back pressure that may be caused by using booster pumps. Any potable water used as seal water for the recycled water pumps must be adequately protected against backflow.

Recycled water booster pumping stations are considered to be specialized facilities. The design of a booster pumping station must be reviewed and approved in writing by the District prior to construction.

2.1.12. Storage Tanks

Storage tanks may be required to supplement recycled water supply during the peak month irrigation season and provide backup supply. Recycled water storage tanks may have a potable water connection for supplementation. In all cases and under all circumstances, an approved air gap separation must be provided between the storage tank and the potable water discharge point (see Standard Detail RW-17). A copy of the proposed air gap assembly plans shall be submitted to the District review and approval prior to construction.

Each recycled water storage tank must be clearly identified as recycled water with the words: "RECYCLED WATER – DO NOT DRINK" as shown in Standard Detail RW-18.

A newly installed recycled water storage tank or recycled water storage tank that has been taken out of service for repair or inspection shall be disinfected and sampled for bacteriological quality in accordance with American water Works Association Standard C652-02. If the results of the bacteriological sampling are positive for coliform bacteria, the storage tank shall be resampled for bacteriological quality and the test results shall be submitted to the Department for review and approval before the storage tank is placed into service.

Where potable water is to be used for makeup to a recycled water storage tank, the flow must be controlled from the remote supervisory control and data acquisition (SCADA) system. Flow and pump run, stop, and/or fail status information, where applicable, must be available at the remote SCADA system. In addition, the water level in each recycled water storage tank must be monitored continuously and made available to the SCADA system.

Recycled water storage tanks are considered to be specialized facilities. The design of a recycled water storage tank must be reviewed and approved in writing by the District prior to construction.

2.1.13. Temporary/Emergency Connections to the Potable Water System

Prior to recycled water being available, potable water will be supplied in lieu of recycled water via the recycled water distribution system and service pipelines until golf course irrigation demands are completely satisfied by recycled water. Once the District has sufficient recycled water supply, all parcels connected to the recycled water system shall accept recycled water. The District shall notify in advance their schedule for furnishing the recycled water subsequent to the applicant's construction.

If, in the opinion of the District an emergency exists, or is threatened to occur, whereby all or a portion of the recycled water system is not available, the District may approve a temporary connection to the potable water system. Such a temporary connection shall be made in accordance with these Standards. The decision to allow temporary service to the potable water system shall be at the sole discretion of the District and the District shall maintain and operate all such connections.

Before such temporary connection is made, the portion where potable water is to be supplied 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 offsite system, as determined by the District. An approved backflow prevention device shall be installed on the potable water lines in accordance all applicable regulations. The emergency connection shall be removed before connection is re-established to the recycled water system. Re-establishment of recycled water service must be inspected and approved by a District inspector prior to resuming delivery of recycled water.

2.1.14. Swivel Ell Connections

When the recycled water supply is temporarily unavailable, potable water may be used as an emergency source of supply. This is acceptable only in cases where there is an unplanned, short-term interruption of recycled water service. No concurrent use of the potable water supply

and the recycled water supply will be allowed. In areas where a storage tank with an appropriate air gap from potable water supplementation is not provided for the recycled water system, a swivel connection could potentially be used to allow augmentation with potable water. The potable water supply must never be directly connected to the recycled water supply. To ensure that this requirement is achieved, a swivel ell connection (see Standard Detail RW-20) could be used on a temporary basis to preclude connecting both water and recycled water sources to the distribution system or Use Area at the same time.

CDPH Policy Memo 2003-03, dated May 7, 2003 describes the requirements for swivel ell connections (see Appendix B). The design, maintenance, and operation of swivel ell connections shall be in compliance with the Policy Memo 2003-03. A copy of the swivel ell connection detail shall be submitted to the District for review and approval.

Swivel ell connections and details are illustrated in Standard Detail RW-20. In an emergency, the swivel ell is switched from the normal recycled water connection to the potable connection. This procedure is reversed once recycled water service is restored. The potable water supply must be protected by a reduce pressure principle backflow preventer. In no case will it be acceptable for the potable supply to be directly connected to a recycled water supply.

2.1.15. Materials, Installation and Testing

All pipe used in the construction of the offsite recycled water system shall be the regular product of a firm which has successfully manufactured comparable pipe for at least 3 years. The District will maintain a listing of approved materials for the various recycled water system components which establish a standard of quality. Materials used shall be limited to those on this listing. Alternative materials may be added to this list upon review and/or testing by the District.

All pipes, valves, fittings and appurtenances shall be installed and tested in accordance with District's Standard Construction Specification SS-93 Water Systems Installation. Recycled water piping shall be tested using potable water with an approved backflow prevention device. Disinfection is not required for recycled water mains unless the pipelines will be temporarily used as a potable water main as determined by the District.

After completion of the testing, the Contractor shall thoroughly flush all water from the pipeline to remove debris from the pipeline in accordance with the District's flushing procedures. The Contractor is responsible for proper disposal of the flush water in a manner that will not cause damage and/or nuisance to the environment and is in compliance with Federal, State, and District regulations.

2.2. Onsite Recycled Water Facilities

Onsite recycled water facilities are defined as those facilities which are owned and operated by private or public entities. All potential onsite uses of recycled water shall be reviewed and approved by the District. If recycled water is to be used, the facilities shall be designed and constructed in accordance with the provisions set forth herein. Where a unique situation exists that is not covered by onsite specifications, offsite specifications may apply as determined by the District in addition to Federal, State, and local regulations regarding recycled use.

Recycled water landscape irrigation areas shall be constructed pursuant to the California State Building Codes otherwise known as the "CalGreen Code" and equipped with District-approved water efficient irrigation controllers and equipment pursuant to the CalGreen Code and be USEPA WaterSense labeled products.

2.2.1. Temporary Potable Water Service

Where recycled water is not immediately available for use when the onsite Use Area is completed, and if the District has determined that recycled water will be supplied in the future, the onsite facilities shall be designated to use recycled water and designed and constructed to the District Standards set forth herein. Provisions shall be made as directed by the District to allow for recycled water service when it becomes available. In the interim, potable water will be supplied to the recycled water facilities through a temporary potable water connection. A backflow prevention device (see Standard Details RW-23 and RW-24), approved by the District, will be required as long as the onsite facilities serve potable water. The backflow prevention device shall be located downstream of the recycled water meter and be a part of the onsite facilities. When recycled water becomes available, the backflow prevention device will be removed by the User, with coordination and approval of the District, and the onsite facility reconnected to the recycled water meter.

2.2.2. Depth of Pipeline Cover and Vertical Separation

On new systems, potable water, recycled water, and sewer pipelines 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 (1) foot between top and bottom surfaces of crossing pipes. Exceptions to this general rule are as follows:

- On landscape irrigation systems where intermittently pressurized recycled water pipelines (laterals) serve sprinkler heads, crossing potable water pipeline(s) may be placed under the recycled water laterals. No special construction requirements are necessary provided that one (1) foot vertical separation is maintained.

- On sites using pressurized irrigation laterals with valve-in-head sprinklers, crossing potable water pipeline(s) may be placed under the recycled water laterals if additional protection is provided for the potable pipeline. Common practices include sleeving (see Section 2.1.4) or automatic flow control/shut off devices installed and functioning properly on each lateral that crosses a potable pipeline.

Drip lines shall be installed four (4) inches below finished grade unless otherwise specified and approved by the District.

2.2.3. Horizontal Pipe Separations

Recycled water pipelines shall be installed with the greatest possible horizontal separation from potable water pipelines. A ten (10) foot separation of the recycled water pipeline shall be maintained at all times between potable water or sanitary sewer pipelines. If a ten (10) foot separation is not possible, the approval for special construction requirements shall be obtained from the District prior to commencement of construction. In any event, a horizontal separation

less than 4 feet shall not be allowed. Common trench construction shall not be permitted.

2.2.4. Identification

New onsite pipelines shall be identified as recycled water pipes by using a purple color code (Pantone 512) differentiating them from potable water piping. All recycled water valves and appurtenances must also be appropriately labeled.

All subdivisions approved for recycled water use shall be posted with precautionary signs as shown on Standard Detail RW-16.

When converting an existing water service to recycled water usage, the affected water pipelines shall be located and tested in coordination with the District to ensure isolation from the potable water system. All necessary actions will be taken to bring the water pipelines into compliance with these Standards. It is not necessary to provide identification of all existing buried pipelines, unless verification of isolation from the potable water system cannot be confirmed by the Cross-Connection test. Any existing buried pipelines that are uncovered shall be identified prior to use. The existing water facilities must have the approval of the District prior to initiating recycled water service.

The use of purple colored pipe (Pantone 512), with the words “CAUTION: RECYCLED WATER-- DO NOT DRINK – AVISO -- NO ES PARA BEBER” embossed or integrally stamped/marked on new pipe is the preferred method of identification. Continuous sleeve is an acceptable alternative to the colored pipe. This warning shall be stamped/marked on opposite sides of the pipe, repeated every three feet.

A continuous polyethylene sleeve shall be installed on all new recycled water pressure and/or non-pressure pipelines if purple colored pipe is not available. A purple sleeve with black lettering stating “CAUTION: RECYCLED WATER-- DO NOT DRINK – AVISO -- NO ES PARA BEBER” shall run continuously the entire length of the pipe. Each sleeve should overlap the next section a minimum of twenty (24) inches and should be secured at each sleeve joint.

All connections, temporary and permanent, to a recycled water system shall be identified in such a manner as to differentiate them from connections to a potable water system.

When potable water is being supplied to an area which is also being supplied with recycled water, new potable water pipelines shall also be identified. A color-coded tape, as determined by the District, with the words ‘DRINKING WATER LINE” shall be fastened directly on the top of the potable water pipe and run continuously the entire length of the pipe. This tape shall be at least three (3) inches in width. The color code for potable water shall be determined by the District to differentiate it from recycled water.

All backflow prevention devices and gate, manual control, electrical control, and pressure reducing valves for onsite recycled water systems shall be installed below grade in an approved purple valve box. All valve boxes shall have a warning label permanently molded into or affixed onto the lid. A tag reading “CAUTION: RECYCLED WATER-- DO NOT DRINK – AVISO -- NO ES PARA BEBER” shall be installed on each valve or device as shown in Standard Detail RW-

21.

All irrigation rotors, sprays, drip heads, spray heads and drip lines shall be easily recognized as being used in a recycled water system as shown in Standard Detail RW-31. All sprinklers shall be equipped with purple identifier caps or collars.

2.2.5. Pipeline Materials

All onsite irrigation piping materials shall be in accordance with the latest edition of the California Plumbing Code and all other local governing codes except as noted below.

All piping shall be continuously and permanently marked with the manufacturer's name or trademark, nominal size, and schedule or class indicating the pressure rating. All onsite irrigation piping shall be purple PVC pipe in accordance with the requirements specified herein.

The minimum class or schedule of purple PVC piping and fittings shall be as follows:

- PVC constant pressure piping 2 inch diameter and larger: Solvent weld joint, PVC Class 315. PVC pipe shall conform to CSI 256 and ASTM D 2241 in accordance with Section 20 of the County of Sacramento Standard Construction Specifications.

- PVC constant pressure piping 1-1/2 inch diameter and smaller: Solvent weld joint, PVC Schedule 40. PVC pipe shall conform to CSI 256 and ASTM D 2241 in accordance with Section 20 of the County of Sacramento Standard Construction Specifications.

- PVC intermittent pressure piping: Solvent weld joint, PVC Class 200. PVC pipe shall conform to CSI 256 and ASTM D 2241 in accordance with Section 20 of the County of Sacramento Standard Construction Specifications.

- PVC fittings: PVC Schedule 40 solvent weld and factory manufactured or Schedule 40 with rubber-ring joint.

Minimum marking requirements for constant pressure piping in pounds per square inch (psi) at 73 degrees; ASTM designations such as 1785, 2241, 2672, 3139; and printing shall be placed continuously on opposite sides of the pipe.

2.2.6. Service Pressure and Pressure Reducing Valve Requirements

The District's recycled water system is designed to provide recycled water at pressures between 40 (minimum) and 200 psi depending on where the recycled water service connection is located. Landscape irrigation designers should contact the District to determine the pressure available at their specific Point of Connection. Onsite facilities shall include a recycled water pressure reducing valve (PRV) to protect the system against excess pressures that may occur during the daily operations of the District's system. The size of the PRV shall be the same size as the meter that provides recycled water service. The PRV shall be installed immediately downstream of the recycled water meter in accordance with Standard Detail RW-25. Exceptions must be approved in writing by the District prior to installation.

Irrigation operating pressures should be maintained near 30 psi, or per manufacturer's specifications, to eliminate misting and run-off potential.

All recycled water customers shall hold the District harmless from any and all damages and liabilities caused in whole or in part by pressure conditions, recycled water quality variations, or interruptions in service.

2.2.7. Strainers

Depending on the quality of the recycled water and type of storage utilized, strainers may be required at the User's recycled water meter. Strainers of the following types are generally satisfactory:

- Wye Strainers: Not recommended for below ground (in vaults) installations.
- Basket Strainers: Suitable for above or below ground (in vaults) installations.
- Filter Strainers: Normally used above ground on drip irrigation systems.

Strainers are normally the same size as the pipeline and should generally be installed downstream of the meter.

- Before Meter Installation: Installation before the recycled water meter should only be used where protection of the meter as well as the onsite system is necessary, as determined by the District.
- After Meter Installation: Installation may be provided after the meter to benefit the onsite system, and maintenance in this case is the responsibility of the User, not the District. However, it should be determined in advance whether there is a potential for debris in the recycled water that would plug the meter.

Strainers can range in mesh size from 20 to 325. A mesh of 80 is the minimum allowable. An analysis of potential debris will aid in prescribing the optimum size. In order to reduce maintenance requirements, material that will not plug onsite landscape irrigation equipment and spray nozzles should normally be allowed to pass.

2.2.8. Backflow Prevention and Cross-Connection

Backflow prevention devices are not normally required on recycled water systems, but shall be installed for temporary potable water service as described in Section 2.2.1 or on a case-by-case basis as required by the District if a potential for back-siphonage or backpressure of recycled water exists.

Backflow prevention devices are required on potable water connections for all landscape irrigation systems. A double check valve assembly (DC) is required to be installed on the potable water system downstream of the water meter in accordance with Standard Details RW-

23, RW-24, and RW-27 for all residential recycled water customers. Other types of backflow prevention devices, such as reduced pressure principal backflow prevention device (RP) and air gap separations, may be required for other landscape irrigation uses. Regulations governing backflow prevention devices are intended to protect the District's potable water supplies and are not intended to protect users from potential hazards of Cross-Connections in onsite Use Areas.

Backflow prevention devices for potable water supply shall be provided by the User and comply with the current version of the County of Sacramento Standard Construction Specifications (see Section 50-43.25). Provision, installation, maintenance, and inspection of backflow prevention devices shall be the sole responsibility and duty of the User, and at the User's expense. Inspection of backflow prevention devices shall be performed at least once a year in accordance with Title 17 of the California Code of Regulations, or more often in those instances where successive inspections indicated repeated failures.

Provided that the District has personnel who are certified to perform annual testing of the backflow prevention device, upon the User's request, the District will perform the annual testing on a time-and-material basis charged to the User and collectible as any other District fee. Otherwise, the annual backflow testing shall be performed by a certified third party vendor.

2.2.9. Control of Runoff, Ponding, and Overspray in Application Areas

Conditions that directly or indirectly cause runoff or windblown spray to pass outside of approved recycled water Use Areas or cause ponding or overspray of recycled water whether by design, construction practice, or system operation shall be eliminated or controlled to the greatest extent possible through the use of the following Best Management Practices (BMPs):

- Proper design, selection, operation, and maintenance of sprinkler heads.[4]
- Implementation of operations and management plans that provide for detection of leaks, and correction within 72 hours of learning of a leak or prior to the release of 1,000 gallons.[5]
- Refraining from application during precipitation events.[4]
- Management of any impoundment such that no discharge occurs unless the discharge is a result of a 25-year, 24-hour storm event or greater. In the event of an unauthorized discharge, the Executive Officer of the appropriate Regional Board shall be notified in writing within thirty (30) days.[4]

Areas irrigated with recycled water shall be managed to prevent ponding and conditions conducive to the proliferation of mosquitos and other disease vectors, and to avoid creation of a public nuisance or health hazard. The following practices shall be implemented, at a minimum:

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[5] One of the four required Administrator BMPs as required by Recycled Water Specification B. 15 of WQO No. 2009-0006-DWQ

1. Irrigation water must infiltrate completely within a 48-hour period.

2. Ditches receiving irrigation runoff, not serving as wildlife habitat, shall be maintained free of emergent, marginal and floating vegetation.

3. Low-pressure and unpressurized pipelines and ditches that may be accessible to mosquitos shall not be used to store recycled water.

For control of runoff and control of the areas to which recycled water is applied, the design of the irrigation system shall conform to the following:

1. No irrigation with recycled water shall take place within fifty (50) feet of any domestic water supply well unless specific conditions have been met as per Title 22, Section 60310 (a) of the California Code of Regulations.

2. No impoundment of recycled water shall occur within one hundred (100) feet of any domestic water well.

3. In conformance with Title 22 of the California Code of Regulations, all piping and irrigation shall be designed so that spray or runoff shall not enter a dwelling or food handling facility and shall not contact any drinking water fountain. Drinking water fountains shall not be located in landscaped areas irrigated by recycled water spray-type irrigation devices. Concrete patios, walls, shrubbery irrigated by drip or bubbler systems, or other barriers shall be used to physically separate drinking fountains from areas irrigated with recycled water by spray-type devices.

4. All piping and irrigation shall be designed so that spray or runoff shall not enter a pool. A five foot (minimum) setback shall be provided between the edge of a pool and irrigation system using recycled water.

5. Onsite facilities shall be designed not to exceed the evapo-transpiration requirements for the types of plants used, with standard and reasonable allowances for irrigation inefficiencies and storage of moisture in the soil column. The use of automatic weather- or soil moisture-based irrigation system controllers to automatically adjust the amount of applied irrigation water is mandated in accordance with the CalGreen Code.

6. Onsite recycled water facilities shall be designed to prevent discharge of recycled water outside of the designated Use Area. Part circle sprinklers shall be used adjacent to pools, roadways, and property lines to confine the discharge from sprinklers to the Use Area.

7. The design of onsite recycled water irrigation facilities shall provide for watering periods that minimize the potential for human contact. Spray irrigation is prohibited between the hours of 10:00 p.m. and 6:00 a.m. Additional prohibitions shall be as directed by the District.

8. Where practical, drip irrigation and/or bubblers should be used instead of spray irrigation to reduce drift.

9. Recycled water shall not be allowed to escape from the designated Use Areas as surface flow that would either pond and/or enter waters of the State.

10. The peak rate at which recycled water is applied shall not exceed the infiltration rate of the soil. Where varying soil types are present, the design of the peak rate of application of recycled water shall be compatible with the lowest infiltration rate present. Copies of the Applicant's soil test reports shall be made available to the District upon request. No recycled water shall be applied to the irrigation area during periods when soils are saturated.

11. No onsite facilities shall use or install hose bibs or quick connectors on a recycled water system regardless of style, construction, or identifications.

12. Fire hydrants or other connections for fire services shall not be installed on any onsite system.

2.2.10. Prohibitions and Limitations

Design of onsite recycled water residential irrigation facilities shall conform to the following:

1. The recycled water system shall be separate and independent of any potable water system. Cross-Connections between potable water facilities and recycled water facilities are prohibited.

2. Hose bibs or quick connectors on recycled water facilities are prohibited. Where potable water is used onsite, potable water hose bibs must be attached to the house.

3. Patios, swimming pools, spas, etc. shall be protected from the spray of recycled water.

4. Overspray and runoff shall be limited or prevented. Irrigate in a manner that will minimize runoff, pooling, and ponding.

5. Potable and recycled water pipelines must maintain required separation at all times.

6. Recycled water shall not be used for any other purposes other than landscape irrigation.

7. The system shall be designed to irrigate the onsite turf areas within the hours of 10:00 p.m. and 6:00 a.m. Drip systems may operate at any time.

2.2.11. Permit Procedure for Recycled Water Service

Every site where recycled water is to be used for landscape irrigation must obtain a Recycled Water Permit prior to receiving service from the District. Permits will be issued after the applicant has met the following permit requirements:

1. Attendance at District-sponsored Recycled Water Orientation

2. Submission of Application for Recycled Water Permit and Recycled Water Plan

3. Recycled Water Plan preparation and approval by the District

4. Installation of recycled water irrigation system consistent with District Standards

5. District inspection and approval of exposed landscape irrigation system

6. Construction completion and successful completion of District final site inspection including backflow prevention device, coverage, and Cross-Connection testing

7. Submission of as-built Recycled Water Plan

Following Recycled Water Permit issuance, a site may receive recycled water in accordance with these Standards. If the system is found to be inconsistent with these Standards, the District will advise the applicant on corrective actions. A site inspection will be scheduled after a reasonable period to ensure compliance.

2.2.11.1. Recycled Water Orientation

A potential customer must attend an orientation prior to initiating landscape design or installation. This orientation is designed to explain the District's recycled water guidelines, uses, requirements, and the process by which recycled water service can be achieved. Applicants as well as designers and contractors working in dual-plumbed subdivisions are required to attend a District orientation. All designers and contractors are required to attend the orientation every 24 months.

A schedule of the upcoming recycled water orientations will be posted on the District's website.

2.2.11.2. Application of Recycled Water Permit

Applicants meeting the requirements for recycled water service shall file an application for recycled water service with the District on a standard form provided by the District for that purpose (see Appendix C for sample Application for Recycled Water Permit).

The application form shall contain detailed information concerning the application as follows:

1. The name of the property or development that will be irrigated with recycled water.

2. The applicant's relationship to the property for which recycled water service is requested. In cases where the applicant is not the legal owner of the property, the legal owner shall consent to the application on a supplemental notarized form.

3. The address, legal description, and parcel number of the property covered by the application.

4. The proposed use of recycled water within defined designated Use Area on the property.

5. The current source of irrigation water (if any).

6. The estimated service requirements for recycled water (i.e. pressure and flow).

7. The designation of a proposed applicant's Site Supervisor.

8. Any special condition for service pursuant to these Standards.

2.2.11.3. Recycled Water Plan

Completed construction drawings for all recycled water landscape irrigation systems must be submitted to the District for review and approval prior to construction. Each application for a Recycled Water Permit shall be accompanied by three (3) hardcopy sets and one (1) electronic set of the irrigation plan and specifications depicting the proposed onsite landscape irrigation system and Use Area. Plans shall be 8 ½" by 11" or 11" by 17" in size. The design of the onsite landscape irrigation system shall be prepared under the direct supervision of a responsible registered landscape architect or civil engineer in the State of California.

The District will review the submittal and will return one set with a description of the required corrections (if needed) within fifteen (15) working days.

The irrigation plan shall delineate the proposed recycled water Use Area, recycled water meter location, size and type of all recycled water service connections and onsite facilities. The plans shall include the layout of existing and proposed potable water and sewer pipelines and facilities including any areas in which recycled water must be specifically excluded.

2.2.11.3.1. Information on Recycled Water Plans

The following information shall be provided on the plans for every customer applying for recycled water service:

1. Information specified in the standard application form provided by the District for that purpose (see Appendix C for sample Application for Recycled Water Permit)

2. Standard notes as defined below in Section 2.2.11.3.4

3. Recycled water meter size (inch diameter). The size of the recycled water meter serving a premise shall be approved by the District in advance of service. The standard size recycled water meter serving a townhouse lot, or equivalent, shall be a 5/8 inch or 3/4 inch meter, for all other residential lots, it shall be a 3/4 inch or 1 inch meter

4. Irrigated area to be served through the recycled water meter (square feet or acres)

5. Peak flow through the recycled water meter (gpm)

6. Estimate of the yearly recycled water requirement (acre-ft or hundreds of cubic feet)

7. Service pressure required at the recycled water meter as provided by the District in

pounds per square inch (psi)

8. Topographic contours of the Use Area, or if not available, sufficient information to determine elevation differences within the Use Area served by the recycled water meter

9. Direction of overland drainage pattern

10. Location and description of wells (if applicable)

11. Boundary location of 100 year flood plain (if applicable)

12. Vertical and horizontal location of potable water and storm drain pipelines, fire hydrants, pools, drinking fountains, and sanitary sewers within recycled water metered service area

2.2.11.3.2. Information Required for Recycled Water Irrigation Systems

The following information regarding the materials used for the landscape irrigation system shall be included on the Recycled Water Plan:

1. A pipe schedule listing pipe sizes and materials of construction

2. Valve types and/or sizes

3. The following information for each type of sprinkler head:

    a. Sprinkler radius (feet)

    b. Operating pressure (psi)

    c. Flow [gpm or gallons per hour (gph)]

    d. Sprinkler pattern

    e. Manufacturer, model number and all pertinent information

4. Drip irrigation information and all pertinent information

5. Estimate of application rate, acres to be irrigated, soil texture and soil infiltration rate, and information on pressure requirement, hourly delivery rate, and the wetting pattern of sprinklers

2.2.11.3.3. Information to Be Called Out On Plans

Exterior drinking fountains, pools, and potable water hose bibs shall be shown and called out on the plans. If no exterior drinking fountains or pools are located in the Use Area, then it shall be explicitly stated on the plans that none exist.

2.2.11.3.4. Standard Notes for Inclusion on Recycled Water Plans

As a minimum, provide the following notes as applicable on the Recycled Water Plan under the heading "*Recycled Water General Notes – Rancho Murieta Community Services District:*"

1. All work shall be done in accordance with Rancho Murieta Community Services District's Recycled Water Standards and Standard Construction Specifications. The installation of the landscape irrigation recycled water system shall be accomplished under the approval, inspection, and to the satisfaction of the Rancho Murieta Community Services District (District).

2. The District will inspect the construction of recycled water landscape irrigation installations prior to backfilling. The District shall be provided forty-eight (48) hours advance notice, excluding Saturdays, Sundays, and District holidays, of the desired inspection date by the owner or the owner's representative at (916) 354-3700. In no case shall landscape irrigation pipelines be backfilled before inspection by the District.

3. After installation of the recycled water and potable water service, backflow prevention, Cross-Connection, and coverage tests and final inspection of the irrigation system shall be performed as directed by the District. The Applicant shall arrange with the District for testing and final irrigation system inspection. The District shall be provided forty-eight (48) hours advance notice, excluding Saturdays, Sundays, and District holidays, of the desired inspection date at (916) 354-3700.

4. An annual inspection shall be performed by the District. These inspections may include:

    a. Site inspection and record check to determine if significant changes to the irrigation system have occurred since the last inspection and establish that the Use Area is still in compliance with the Standards.

    b. Irrigation system coverage test and functional operation test to verify that the irrigation system is being maintained in the proper manner and that overspray, ponding and runoff are being controlled.

    c. Verification that Site Supervisor certification is current and that backflow device certifications are also current.

5. The User shall be responsible for providing access to and cooperation with the District inspector to perform all testing and inspections.

6. Recycled water shall not be used for any purpose other than landscape irrigation.

7. There shall be no direct connections between the potable and recycled water systems.

8. Hose bibs and quick connectors are prohibited on the recycled water system. Water used in hose bibs shall be potable water and hose bibs shall be attached to the house.

9. The potable water system shall be protected by a District approved backflow prevention device.

10. The recycled water landscape irrigation system shown on these plans may use potable water until the District makes recycled water available to this site. In these instances, a District approved backflow prevention device has been provided on the recycled water system to protect the potable water system.

11. A minimum of ten (10) feet horizontal separation must be maintained at all times between pressurized recycled and potable water pipelines. A minimum of one (1) foot vertical separation must be maintained at all times between the pressurized recycled and potable water pipelines with the recycled water pipeline below the potable water pipeline. If a pressurized recycled water pipeline must be installed above a potable water pipeline or less than one (1) foot below a potable water pipeline, then the recycled water pipeline shall be installed in a protective sleeve. The sleeve shall extend ten (10) feet from each side of the centerline of the potable water pipeline, for a total of twenty (20) feet.

12. Recycled water piping shall be purple (Pantone 512) and identified as recycled water pipes by continuous marking on opposite sides. The markings shall include the following: “CAUTION: RECYCLED WATER -- DO NOT DRINK -- AVISO -- NO ES PARA BEBER”, nominal pipe size, pressure rating, and ASTM and/or AWWA designations. All recycled water piping shall be installed with stenciling oriented toward the top of the trench.

13. All recycled water sprinkler control valves, isolation valves, regulators and other devices shall be tagged. Identification tags shall be weatherproof purple plastic, 3-inches by 4-inches with the words: “CAUTION: RECYCLED WATER -- DO NOT DRINK -- AVISO -- NO ES PARA BEBER”. Imprinting shall be permanent and black in color. Use tags manufactured by T. Christy Enterprises or approved equal.

14. All spray heads shall be identified with weatherproof purple plastics rings or equivalent identification. Contractor shall adjust sprinkler heads to prevent overspray onto adjacent hardscapes (e.g., sidewalks, patios, walkways, streets, etc.) or into pools.

15. The hours for sprays irrigation with recycled water shall be from 10:00 p.m. to 6:00 a.m., unless otherwise approved by the District.

16. Failure to comply with any of the District’s Standards may result in termination of recycled water and/or potable water service.

2.2.11.4. District Review of Recycled Water Plans

The submission of a Recycled Water Plan is required to ensure that the proposed use of recycled water conforms to the approved uses and Standards. Fifteen (15) working days should typically be allowed for review and processing. If the Recycled Water Plan is approved, the District will mail notification to the designer and Applicant.

Upon approval of the recycled water plan, an open trench inspection may be scheduled by contacting the District at (916) 354-3700. A minimum of forty-eight (48) hours advance notice, excluding Saturdays, Sundays, or District holidays is required.

2.2.11.5. Irrigation System Installation

Upon approval of the Recycled Water Plan, the contractor may proceed with the installation of the proposed irrigation system in accordance with the District's Standards and the approved Recycled Water Plan.

If the landscape irrigation system is installed prior to Recycled Water Plan approval and/or open trench inspection, all or any portion of the system must be exposed and corrected as directed by the District. Failure to comply may result in termination of service as provided for in the District's Water Code (Chapter 14) and Recycled Water Code (Chapter 17).

2.2.11.6. Open Trench Inspection

The District shall conduct an open trench inspection to verify that no Cross-Connection between the recycled and potable water systems exist and that the materials of construction, quality of work products, etc. conform to the Standards. In addition, all dual plumbed residences are required to have the potable water pipeline between the water meter and the home inspected by the District.

A written certification of open trench inspection shall be issued by the District upon successful completion.

Upon approval of the open trench inspection, the final inspection may be scheduled by contacting the District at (916) 354-3700. A minimum of forty-eight (48) hours advance notice, excluding Saturdays, Sundays, or District holidays is required.

2.2.11.7. Complete Installation

Upon successful completion of the open trench inspection, installation of both the potable water and recycled water systems may be completed.

2.2.11.8. Final Inspection

Final inspection may be scheduled following the successful completion of open trench inspection, the landscape construction is completed, and irrigation timers are set. Initially, before activation of recycled water service, and annually thereafter, the District will inspect both the exterior potable and recycled water landscape irrigation systems. Cross-Connection and coverage tests shall be performed as part of final inspection of the recycled water landscape irrigation system. The District will perform a Cross-Connection shutdown test initially, once every four (4) years, and at changes of ownership in accordance with the procedure described in Appendix D. Additional Cross-Connection tests shall be performed by the District if deemed necessary. In the event that a Cross-Connection is discovered, both systems shall be shut down and the recycled water system drained immediately and the following procedure shall be carried out in the presence of the Inspector:

1. The Cross-Connection shall be uncovered and disconnected.

2. The recycled water landscape irrigation system shall be retested in accordance with the procedures described in Appendix D.

3. The potable water system shall be chlorinated with 50 parts per million (ppm) chlorine for 24 hours, minimum.

4. The potable water system shall be flushed after 24 hours, and standard bacteriological tests shall be performed by the Inspector. If test results are acceptable, the potable water system may be recharged.

The irrigation system shall be pressure tested at a minimum of 50 psi above the rating of its pipe class or as required by the District and shall be maintained for a minimum of two (2) hours.

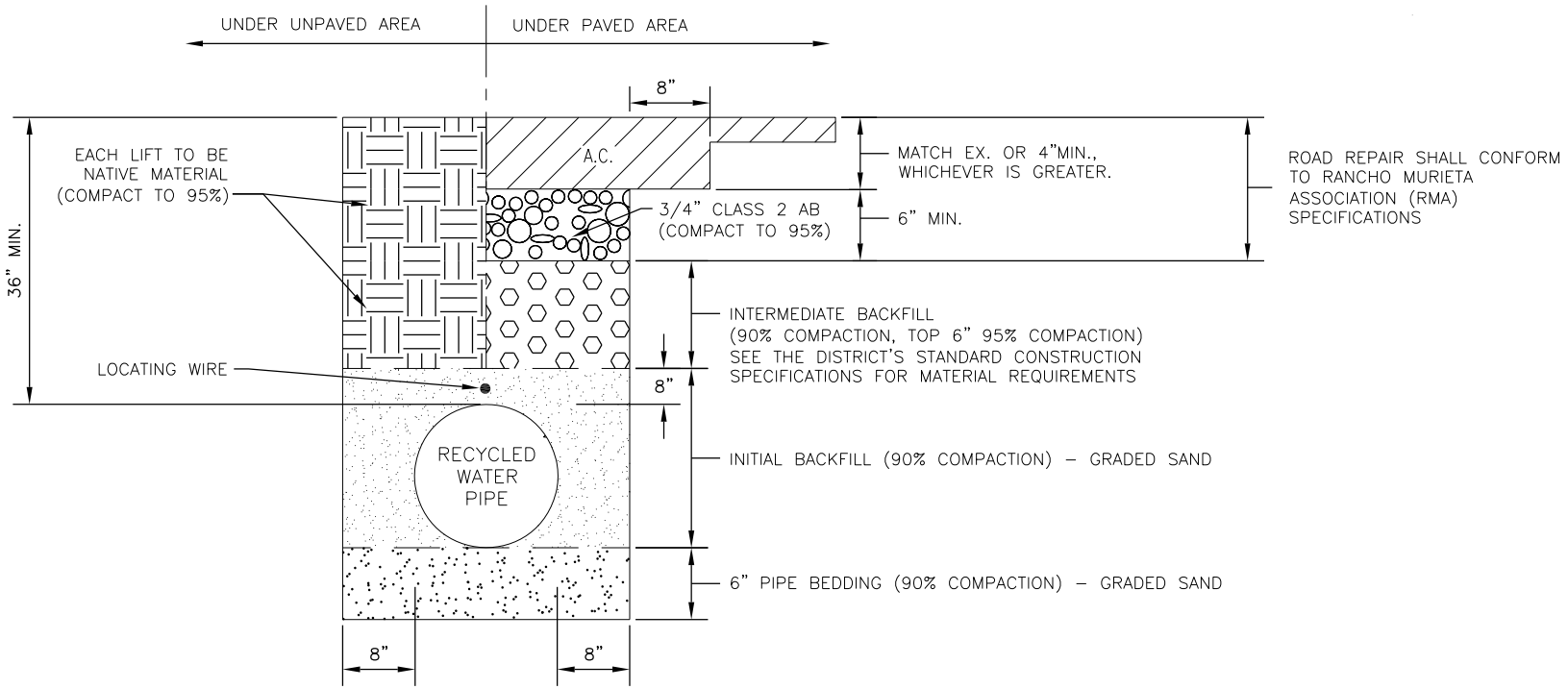
Owners, applicants, or customers shall be responsible for controlling overspray and runoff from recycled water landscape irrigation systems. To ensure that overspray or runoff is in accordance with all federal, state, and local regulations, inspection by District staff prior to recycled water service is required.

The owner, applicant, or customer is responsible for controlling overspray, ponding and runoff of the system. To ensure the limitation of overspray and runoff, an inspection of the completed onsite irrigation system shall be conducted by the District as part of final inspection. The owner or owner's representative must be in attendance and have persons capable of making system adjustments. If modifications to the system are required, other than minor adjustments, the owner will be notified in writing of the changes required. To avoid termination of service, system modifications must be made within 72 hours of learning of a potential recycled water leak or excessive runoff or ponding event, or prior to the release of 1,000 gallons. All modifications to the system are the responsibility of the owner, applicant, or customer and said owner, applicant, or customer shall pay all costs associated with such modifications.

2.2.11.9. As-Built Recycled Water Plans

Record drawings or an as-built Recycled Water Plan shall be prepared and submitted to the District prior to receiving recycled water service. These plans shall correctly show all onsite recycled water, potable water, and sewer facilities as constructed or modified.

3.0 Standard Details



NOTES:

1. SEE DISTRICT DESIGN AND CONSTRUCTION STANDARDS FOR OTHER REQUIREMENTS.
2. ALL PIPING, INCLUDING SERVICE LINES, SHALL BE PURPLE PVC OR SHALL BE INSTALLED WITH PURPLE IDENTIFICATION TAPE SECURED TO PIPE EVERY 10 FEET. PURPLE PVC PIPE TO BE LAID WITH LABEL UP.
3. SEWER, WATER, OR STORM DRAIN UTILITIES ARE NOT PERMITTED WITHIN 10' HORIZONTALLY AND/OR 1' VERTICALLY OF RECYCLED WATER PIPE.
4. INSTALL #10 TRACER WIRE ON ALL APPURTENANCES. SECURE TO PIPE WITH PLASTIC ADHESIVE TAPE EVERY 10 FEET. INSTALL A PULL BOX EVERY 1000 FEET INTERVAL OF TRACING WIRE ALONG THE PIPE MAIN.
5. 6" & 8" DIMENSIONS SHALL INCLUDE DISTANCE BETWEEN PIPE BELL AND TRENCH WALL.
6. PLACE INITIAL SAND BACKFILL TO TOP OF PIPE, SPRAY WITH WATER TO COMPACT. THEN PLACE INITIAL SAND BACKFILL TO AT LEASE 8" ABOVE TOP OF PIPE, SPRAY WITH WATER TO COMPACT. AFTER SPRAYING WITH WATER, USE MECHANICAL COMPACTION METHODS IF NEEDED.
7. COORDINATE COMPACTION TESTS WITH DISTRICT INSPECTORS.
8. JETTING WILL NOT BE ALLOWED FOR COMPACTION OF BACKFILL OR PIPE BEDDING MATERIAL.
9. IN UNPAVED AREAS, PIPE BEDDING MATERIAL, AND INITIAL BACKFILL MATERIALS SHALL BE COMPACTED THE SAME AS IN PAVED AREAS.

RANCHO MURIETA COMMUNITY SERVICES DISTRICT

TRENCH DETAIL

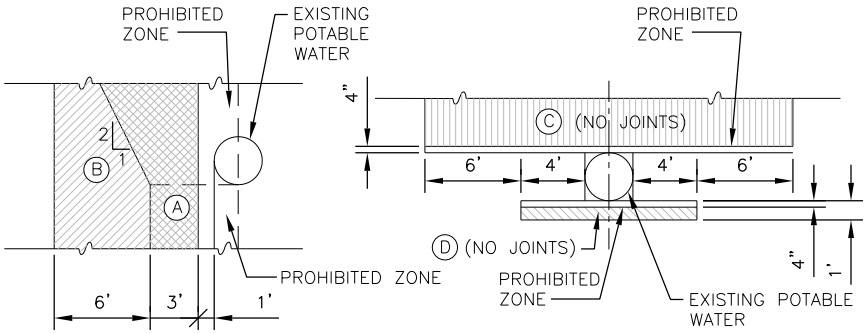
DRAWN BY	SCALE	REVISION	DATE	BY	STANDARD DRAWING NO.
E. BULLOCK	NONE				
APPROVED	DATE				*RW–1*
K. KENNEDY	08/19				

RW-2 *Not Used*

BASIC SEPARATION STANDARDS:

1. PARALLEL CONSTRUCTION: THE HORIZONTAL DISTANCE BETWEEN PRESSURE DOMESTIC WATER AND RECYCLED WATER MAINS AND SEWER LINES SHALL BE AT LEAST 10 FEET.
2. PERPENDICULAR CONSTRUCTION (CROSSING): PRESSURE WATER MAINS SHALL BE AT LEAST ONE FOOT ABOVE RECYCLED WATER LINES WHERE THESE PIPELINES MUST CROSS.
3. SPECIAL PROVISIONS: ALTERNATIVE CONSTRUCTION CRITERIA WHERE THE BASIC SEPARATION STANDARDS CANNOT BE ATTAINED ARE SHOWN BELOW:

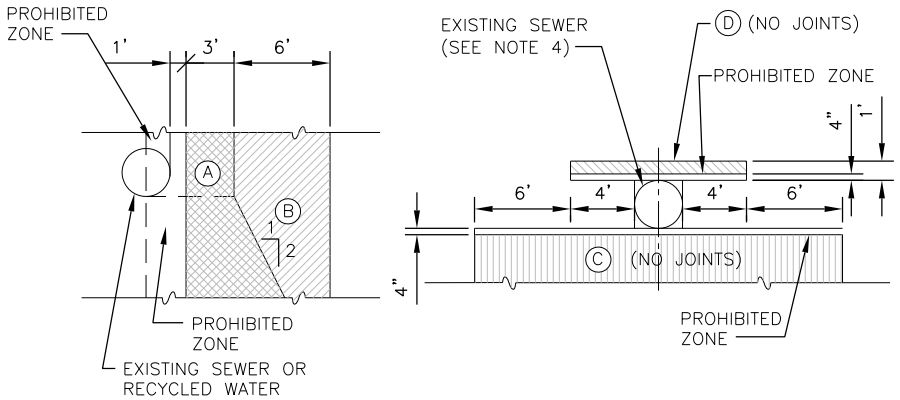
NEW RECYCLED WATER PIPELINE NEAR EXISTING POTABLE WATER PIPELINE



PARALLEL CONSTRUCTION *PERPENDICULAR CROSSING*

IF A NEW RECYCLED WATER PIPELINE IS TO BE CONSTRUCTED WITHIN ANY OF THE ABOVE INDICATED ZONES. SPECIAL CONSTRUCTION SHALL BE REQUIRED AS DESCRIBED BELOW.

NEW RECYCLED WATER PIPELINE NEAR EXISTING SEWER AND/OR RECYCLED WATER PIPELINE



PARALLEL CONSTRUCTION *PERPENDICULAR CROSSING*

IF A NEW RECYCLED WATER PIPELINE IS TO BE CONSTRUCTED WITHIN ANY OF THE ABOVE INDICATED ZONES. SPECIAL CONSTRUCTION SHALL BE REQUIRED AS DESCRIBED BELOW.

ZONE	REQUIREMENT
1	DO NOT LOCATE ANY PARALLEL RECYCLED WATER LINE IN THE AREA WITHOUT STATE AND LOCAL HEALTH DEPARTMENT APPROVAL
2	USE CLASS 200 D.I.P. OR CLASS 200 P.V.C. – AWWA C900
3	USE D.I.P. OR CLASS 200 P.V.C. – AWWA C900
4	USE D.I.P. OR CLASS 200 P.V.C. – AWWA C900

NOTES:

1. NO PIPE JOINTS SHALL BE PERMITTED WITHIN ZONES C AND D.
2. ALL D.I.P. MUST HAVE HOT DIP BITUMINOUS COATING AND ALL CLASS 200 P.V.C. MUST MEET DR–14 PER AWWA C900 OR EQUILAVENT.
3. SEWER FORCE MAINS SHALL NOT BE PERMITTED IN ZONES A THROUGH D.
4. THIS CRITERION DOES NOT APPLY FOR A RECYCLED WATER LINE CROSSING ANOTHER RECYCLED WATER PIPELINE.
5. THE CONSTRUCTION CRITERIA SHOULD APPLY TO THE HOUSE LATERALS THAT CROSS ABOVE A PRESSURE WATER MAIN BUT NOT TO THOSE HOUSE LATERALS THAT CROSS BELOW A PRESSURE WATER MAIN.

RANCHO MURIETA COMMUNITY SERVICES DISTRICT

SEPARATION REQUIREMENTS FOR RECYCLED WATER PIPELINES

DRAWN BY	SCALE	REVISION	DATE	BY	STANDARD DRAWING NO.
V. FELIX	NTS				*RW–3*
APPROVED K. KENNEDY	DATE 08/19				

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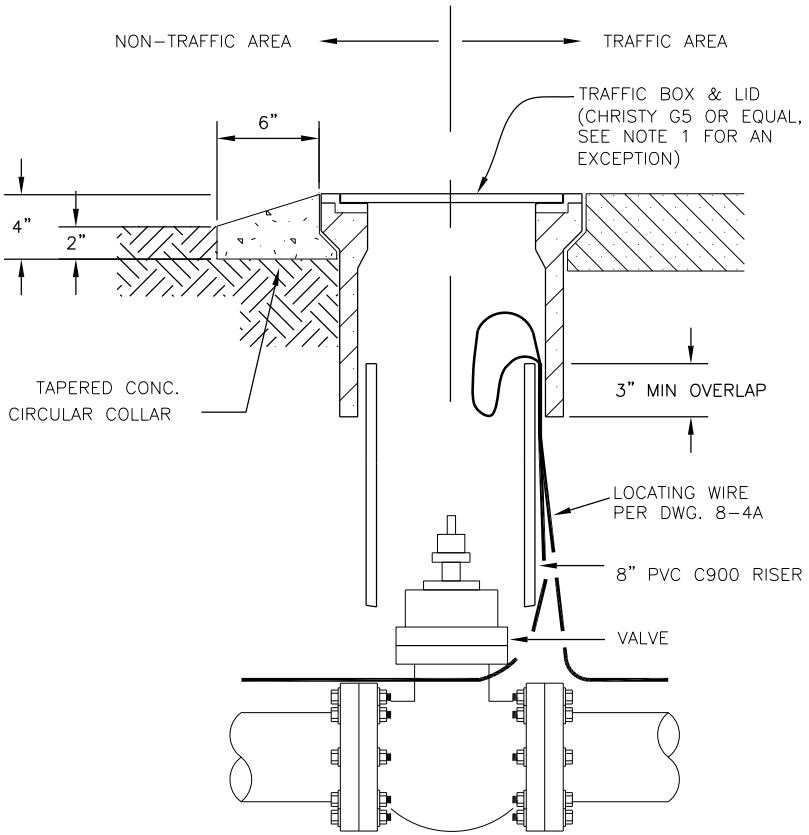
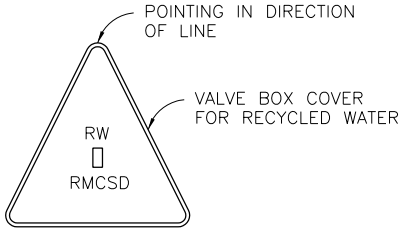
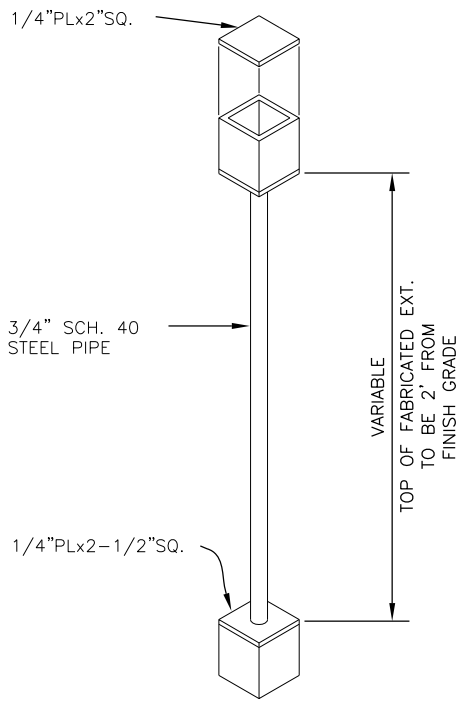
20130821.113634

RW-4 *Not Used*



TRAFFIC VALVE BOX





VALVE OPERATING NUT EXTENSION

REQUIRED WHERE VALVE NUT IS IN EXCESS OF 10 FEET BELOW FINISH GRADE.

* FINAL AS-BUILT PLANS TO DENOTE LOCATION WHERE INSTALLED.

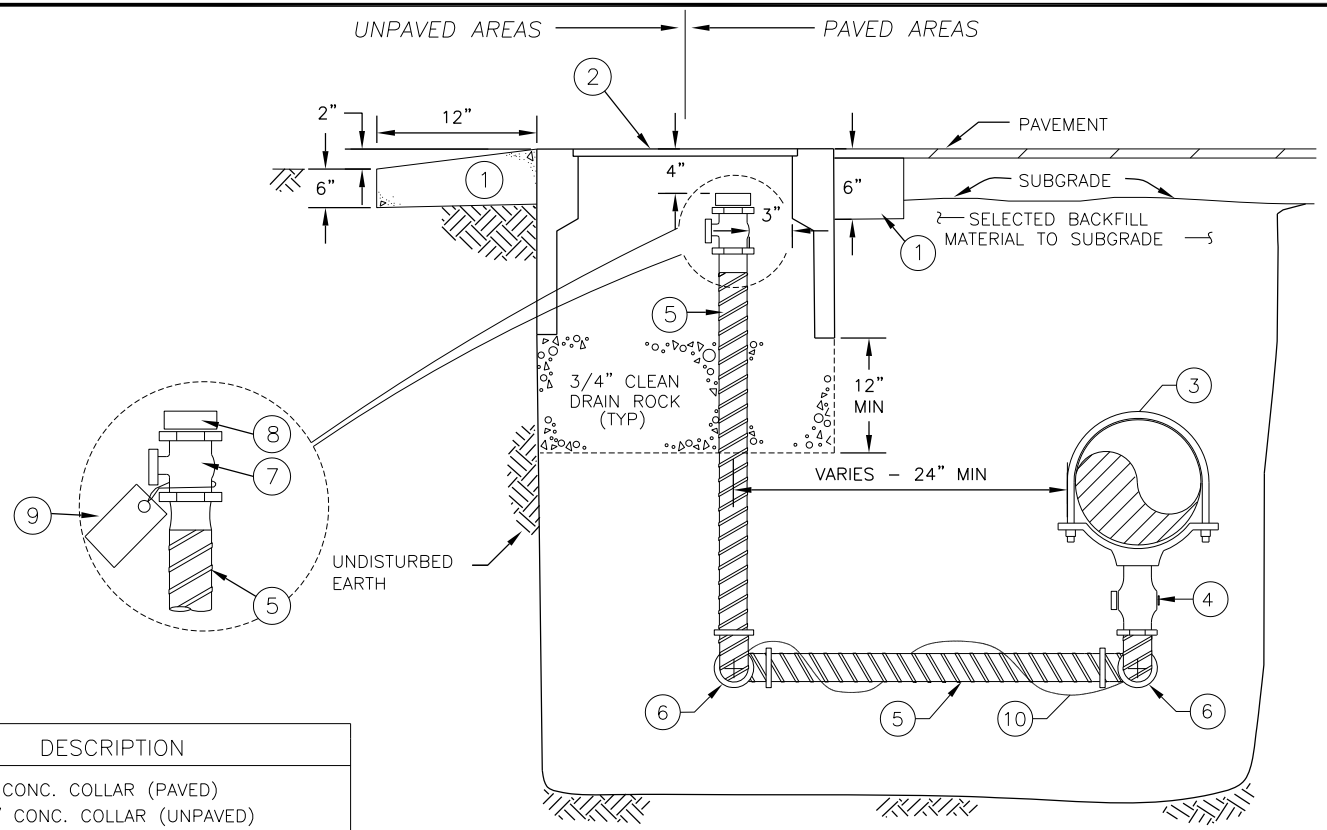
NOTES:

1. VALVE BOX AND RISER SHALL BE SET PLUMB AND CENTERED OVER VALVE NUT.
2. SET VALVE BOX TO FINAL FINISH GRADE. IN AREAS WHERE FINISH GRADE HAS NOT BEEN DEFINED, PLACE 4"X4" LOCATING POST WITHIN 1 FOOT OF VALVE BOX. POST SHALL BE 6 FEET IN LENGTH AND BURIED 3 FEET. PAINT POST PURPLE FOR RECYCLED WATER.
3. RISER PIPE SHALL BE PURPLE FOR RECYCLED WATER.
4. LIDS SHALL BE LABELED WITH CAST OR BEAD WELDED LETTERS: "RECYCLED WATER" FOR RECYCLED AND NONPOTABLE WATER.
5. PAVEMENT TO COMPLY WITH JURISDICTIONAL AGENCY PERMIT CONDITIONS AND SPECIFICATIONS.
6. AS-BUILT PLANS TO SHOW ALL LOCATIONS WHERE VALVE BOXES ARE INSTALLED.

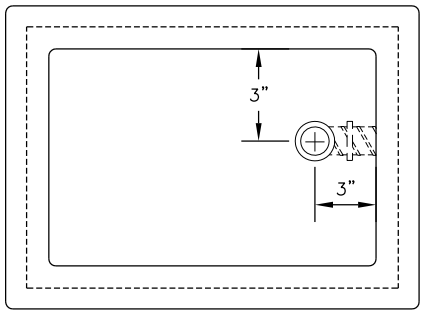
RANCHO MURIETA COMMUNITY SERVICES DISTRICT

VALVE BOX INSTALLATION

DRAWN BY	SCALE	REVISION	DATE	BY	STANDARD DRAWING NO.
E. BULLOCK	NONE				
APPROVED	DATE				*RW-5*
K. KENNEDY	08/19				



ELEVATION



PLAN

ITEM #	DESCRIPTION
1	6"x6" CONC. COLLAR (PAVED) 6"x12" CONC. COLLAR (UNPAVED)
2	PRECAST CONCRETE METER BOX WITH STEEL COVER MARKED RECYCLED WATER. (SEE RW–5)
3	2" SERVICE SADDLE, AWWA I.P.T.
4	2" CORPORATION STOP, AWWA I.P. INLET x FIP OUTLET
5	2" SCH. 40 BRASS OR POLYETHELYNE TUBING TYPE K, DOUBLE WRAPPED WITH 10 MIL. PURPLE PVC TAPE
6	"SWING JOINT" 2" 90° ELL & 2" 'STREET 90', AS REQUIRED
7	CURB STOP W/ LOCKWING–FIP x FIP
8	2" BRASS OR SCHEDULE 80 PVC PLUG
9	RECYCLED WATER TAG. (SEE RW–21)
10	#10 TRACER WIRE

NOTES

1. 2" BLOW–OFFS TO BE INSTALLED ON 8" MAINS AND SMALLER. FOR MAINS LARGER THAN 8", BLOW–OFF SIZE SHALL BE NOTED ON PLAN AND PROFILE.
2. BOXES FOR BLOW–OFF ASSEMBLY SHALL BE INSTALLED BEHIND CURB OR BACK OF WALK. BOXES CANNOT BE INSTALLED IN ROADWAY.

RANCHO MURIETA COMMUNITY SERVICES DISTRICT

2" BLOW–OFF VALVE ASSEMBLY

DRAWN BY	SCALE	REVISION	DATE	BY	STANDARD DRAWING NO.
E. BULLOCK	NONE				RW–6A
APPROVED	DATE				
K. KENNEDY	08/19				

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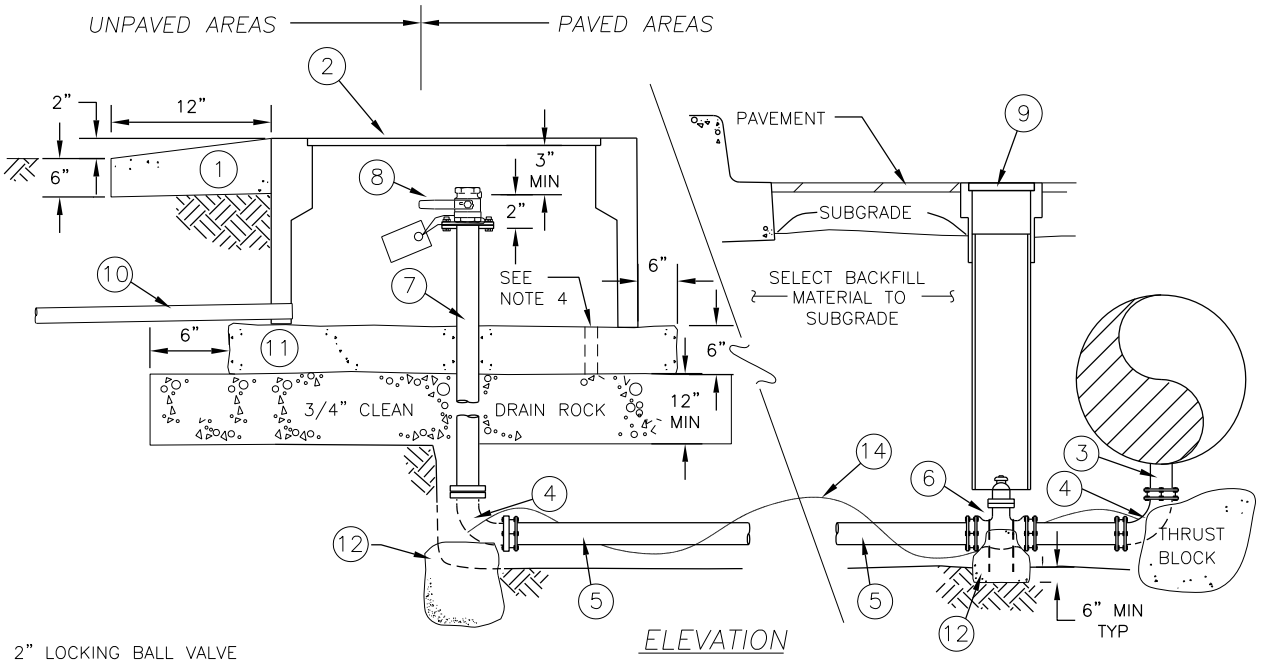
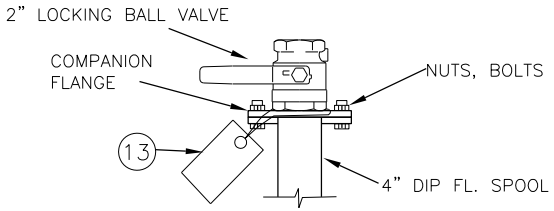
20130821.113838

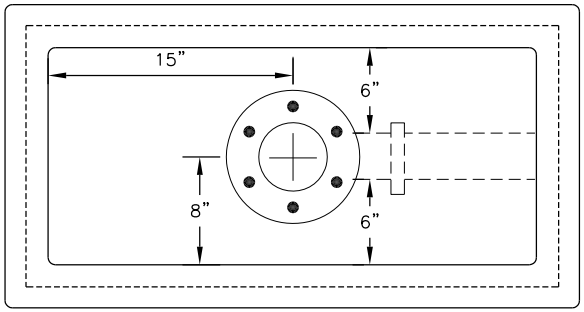
ITEM #	DESCRIPTION
1	6"x6" CONC. COLLAR (PAVED) 6"x12" CONC. COLLAR (UNPAVED)
2	PRECAST CONCRETE UTILITY BOX WITH STEEL COVER MARKED RECYCLED WATER (SEE RW-5)
3	M.J. x FL TEE
4	4" 90° BEND FL x MJ
5	4" PIPE, D.I.
6	4" M.J. GATE VALVE
7	4" D.I.P. FL SPOOL CONTAINED WITHIN A PURPLE SLEEVE
8	COMPANION FLANGE, NUTS, BOLTS & 2" LOCKING BALL VALVE
9	VALVE BOX PER RW-5
10	2" PVC DRAIN LINE TO SEWER. INSTALL WHERE SHOWN.
11	CONCRETE SLAB
12	THRUST BLOCK PER W-3
13	RECYCLED WATER TAG (SEE RW-21)
14	#10 TRACER WIRE



ELEVATION



NOTE: CENTER BLOW-OFF IN BOX.



PLAN

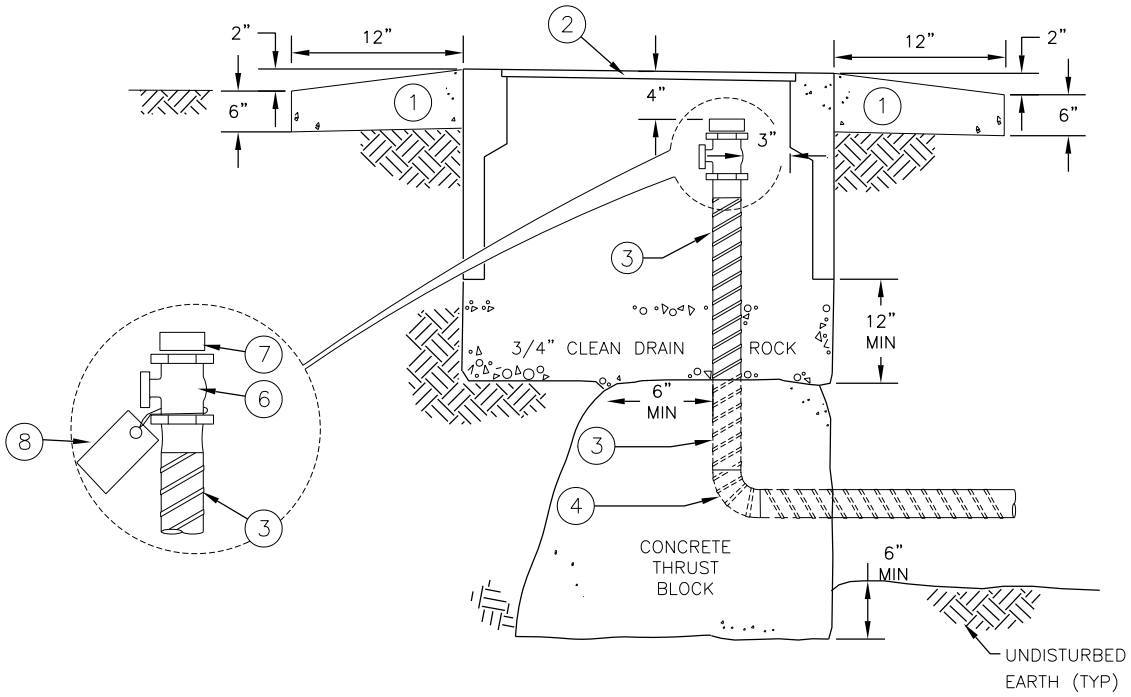
NOTES

1. 4" BLOW-OFF TO BE INSTALLED ON 10" MAINS AND LARGER.
2. LOCATION OF BLOW-OFF BOX TO BE SHOWN ON PLANS AND FIELD VERIFIED.
3. BLOW-OFFS LARGER THAN 4" SHALL HAVE PRIOR DISTRICT APPROVAL.
4. 2" DRAIN AND ROCK TO BE INSTALLED ONLY WHEN PVC DRAIN (#10) CANNOT BE INSTALLED, PRIOR DISTRICT AND REGIONAL BOARD APPROVAL REQUIRED.
5. BOXES SHALL BE INSTALLED BEHIND CURB OR BACK OF WALK. BOXES CANNOT BE INSTALLED IN ROADWAY.

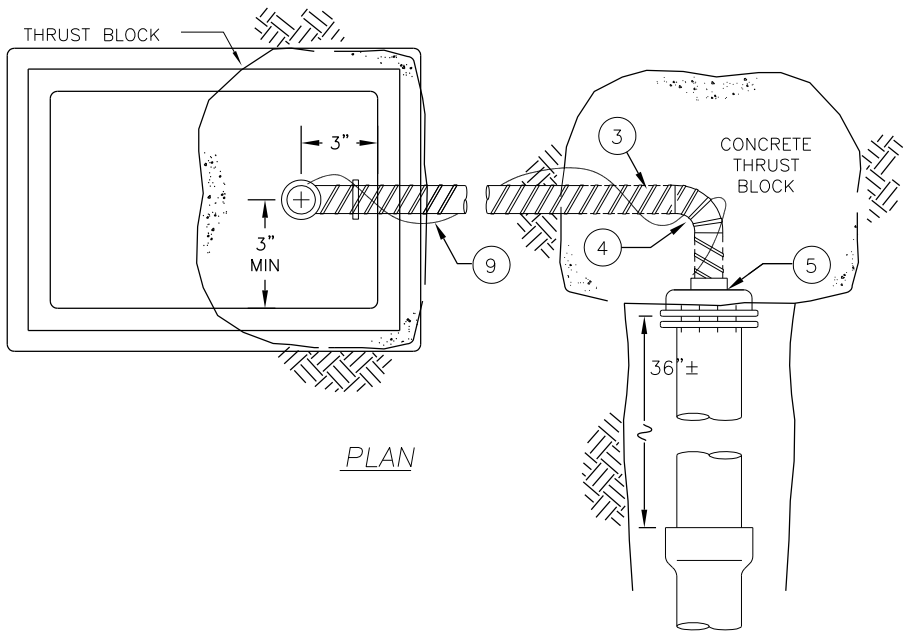
RANCHO MURIETA COMMUNITY SERVICES DISTRICT

4" BLOW-OFF VALVE ASSEMBLY

DRAWN BY	SCALE	REVISION	DATE	BY	STANDARD DRAWING NO.
E. BULLOCK	NONE				RW-6B
APPROVED	DATE				
K. KENNEDY	08/19				



ELEVATION



PLAN

ITEM #	DESCRIPTION
1	6"x6" CONC. COLLAR (PAVED) 6"x12" CONC. COLLAR (UNPAVED)
2	PRECAST CONCRETE METER BOX WITH STEEL COVER MARKED RECYCLED WATER (SEE RW-5)
3	2" SCH. 40 BRASS OR POLYETHYLENE TUBING TYPE K, DOUBLE WRAPPED WITH 10 MIL. PURPLE PVC TAPE
4	2"-90° THREADED BRASS ELBOW
5	M.J. TAPPED CAP
6	CURB STOP W/ LOCKWING-FIP x FIP
7	2" BRASS OR SCHEDULE 80 PVC PLUG
8	RECYCLED WATER TAG (SEE RW-21)
9	#10 TRACER WIRE

NOTES

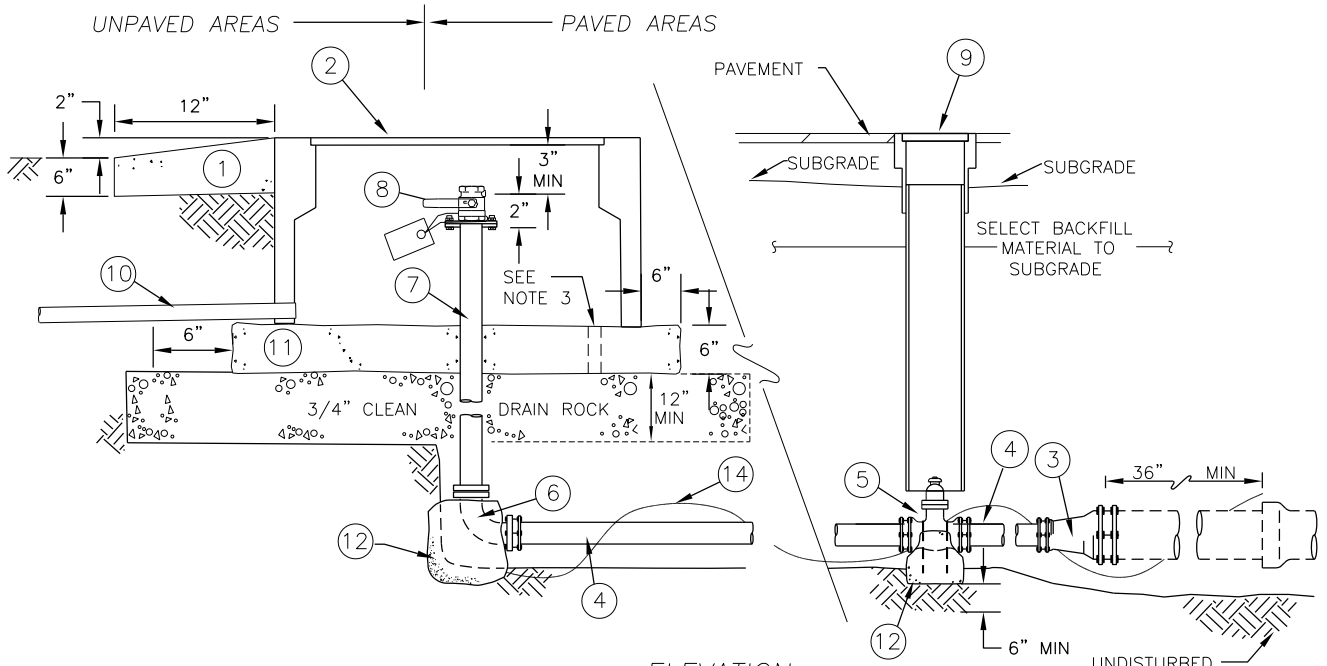
1. 2" BLOW-OFFS TO BE INSTALLED ON 8" MAINS AND SMALLER. FOR MAINS LARGER THAN 8", BLOW-OFF SIZE SHALL BE NOTED ON PLAN AND PROFILE.
2. BOXES FOR BLOW-OFF ASSEMBLY SHALL BE INSTALLED BEHIND CURB OR BACK OF WALK. BOXES CANNOT BE INSTALLED IN ROADWAY.

RANCHO MURIETA COMMUNITY SERVICES DISTRICT

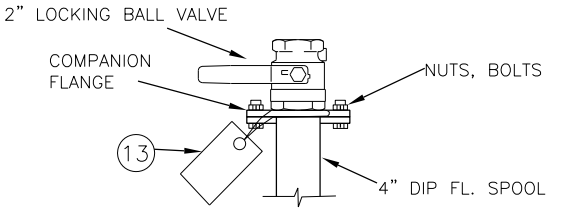
2" END OF PIPELINE BLOW-OFF VALVE ASSEMBLY

DRAWN BY	SCALE	REVISION	DATE	BY	STANDARD DRAWING NO.
E. BULLOCK	NONE				RW-7A
APPROVED K. KENNEDY	DATE 08/19				

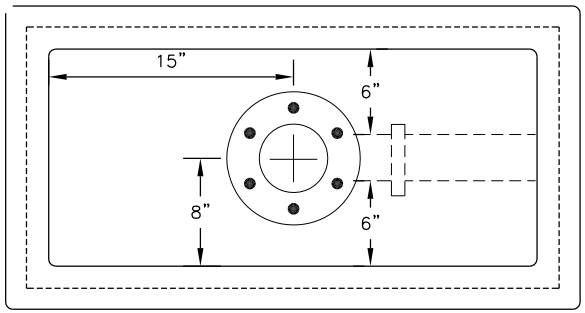
ITEM #	DESCRIPTION
1	6"x6" CONC. COLLAR (PAVED) 6"x12" CONC. COLLAR (UNPAVED)
2	PRECAST CONCRETE UTILITY BOX WITH STEEL COVER MARKED RECYCLED WATER (SEE RW-5)
3	M.J. REDUCER
4	4" PIPE, P.V.C. C-900 OR D.I.
5	4" M.J. GATE VALVE
6	4" 90° BEND M.J.xFL.
7	4" D.I.P. FL. SPOOL CONTAINED WITHIN A PURPLE SLEEVE
8	COMPANION FLANGE, NUTS, BOLTS & 2" LOCKING BALL VALVE
9	VALVE BOX PER RW-5
10	2" PVC DRAIN LINE TO SEWER. INSTALL WHERE SHOWN.
11	CONCRETE SLAB
12	THRUST BLOCK PER W-3
13	RECYCLED WATER TAG (SEE RW-21)
14	#10 TRACER WIRE



ELEVATION



NOTE: CENTER BLOW-OFF IN BOX.



PLAN

NOTES

1. LOCATION OF BLOW-OFF BOX TO BE SHOWN ON PLANS AND FIELD VERIFIED.
2. BLOW-OFFS LARGER THAN 4" SHALL HAVE PRIOR DISTRICT APPROVAL.
3. 2" DRAIN AND DRAIN ROCK TO BE INSTALLED ONLY WHEN PVC DRAIN (#10) CANNOT BE INSTALLED. PRIOR DISTRICT AND REGIONAL BOARD APPROVAL REQUIRED.
4. BOXES SHALL BE INSTALLED BEHIND CURB OR OR BACK OF WALK. BOXES CANNOT BE INSTALLED IN ROADWAY.
5. 4" BLOW-OFF TO BE INSTALLED ON 10" MAINS AND LARGER.

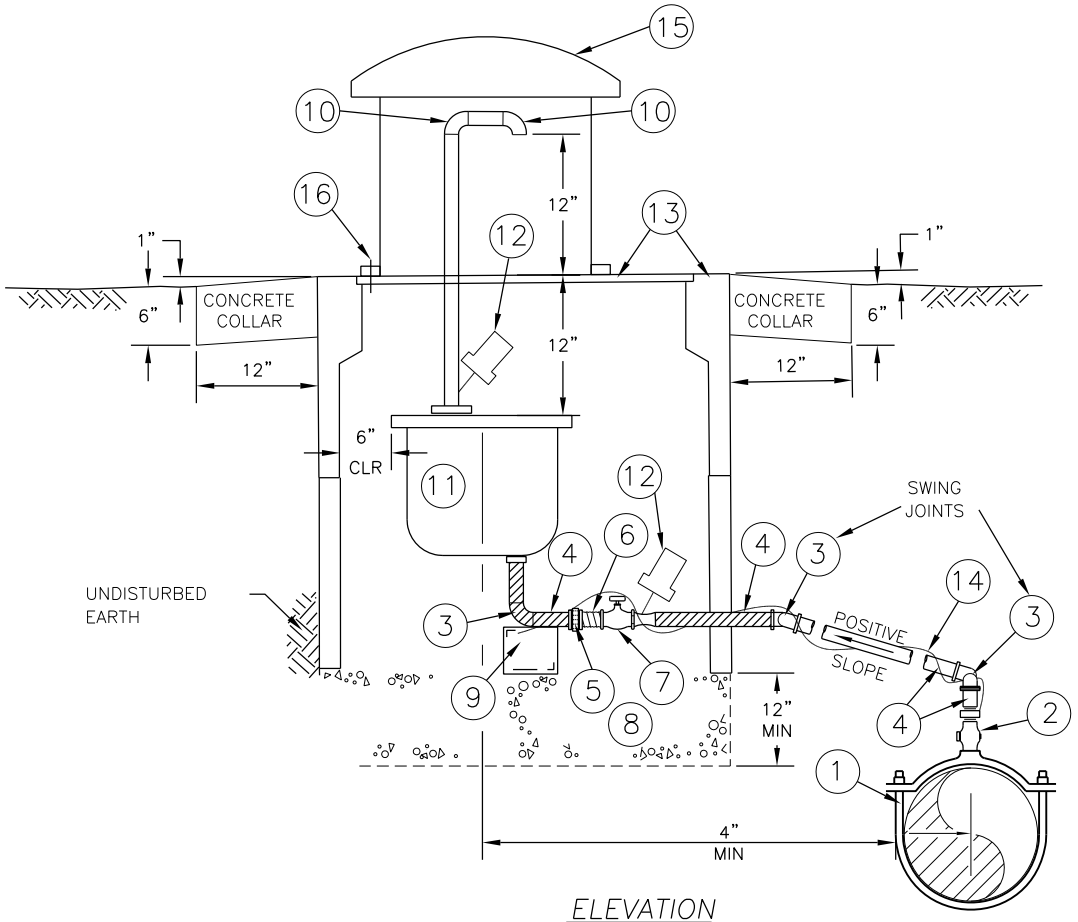
RANCHO MURIETA COMMUNITY SERVICES DISTRICT

4" END OF PIPELINE BLOW-OFF VALVE ASSEMBLY

DRAWN BY	SCALE	REVISION	DATE	BY	STANDARD DRAWING NO.
E. BULLOCK	NONE				RW-7B
APPROVED	DATE				
K. KENNEDY	08/19				

RW-8 *Not Used*

ITEM #	DESCRIPTION
1	BRASS SERVICE SADDLE
2	BRASS CORPORATION STOP AWWA I.P.T. x F.I.P.
3	FITTINGS SAME AS PIPE MATERIAL
4	SCH 40 BRASS W/PVC TAPE 20 MIL DOUBLE WRAP AND PURPLE SLEEVE
5	BRASS UNION
6	BRASS NIPPLE
7	BRASS BALL VALVE F.I.P. x F.I.P.
8	3/4" CLEAN DRAIN ROCK
9	SUPPORT BLOCK, BRICK
10	STREET ELBOW
11	COMBINATION AIR RELEASE/VACCUUM VALVE UNLESS OTHERWISE SPECIFIED ON PLANS
12	RECYCLED WATER TAG (SEE RW-21)
13	CONC. BOX & STEEL LID, SEE NOTE 6
14	#10 TRACER WIRE
15	PLACER WATER WORKS PW/AV 18-S OR EQUAL
16	ANCHOR BOLT



ELEVATION

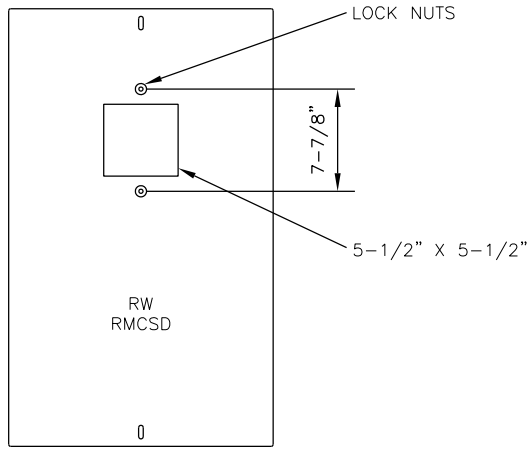
NOTES

1. SIZE OF PIPING SHALL MATCH SIZE OF AIR VALVE.
2. ENGINEER TO SPECIFY TYPE & SIZE OF VALVE.
3. AIR VALVES LARGER THAN 2" SHALL BE BY SPECIAL DESIGN.
4. AIR VALVE SHALL BE PLACED OUTSIDE OF TRAFFIC AREAS.
5. CENTER VALVE IN LONGITUDINAL DIRECTION IN BOX.
6. B36 FOR 1" ARV, B40 FOR 2" ARV, MARKED RECYCLED WATER ON LID. SEE RW-5.

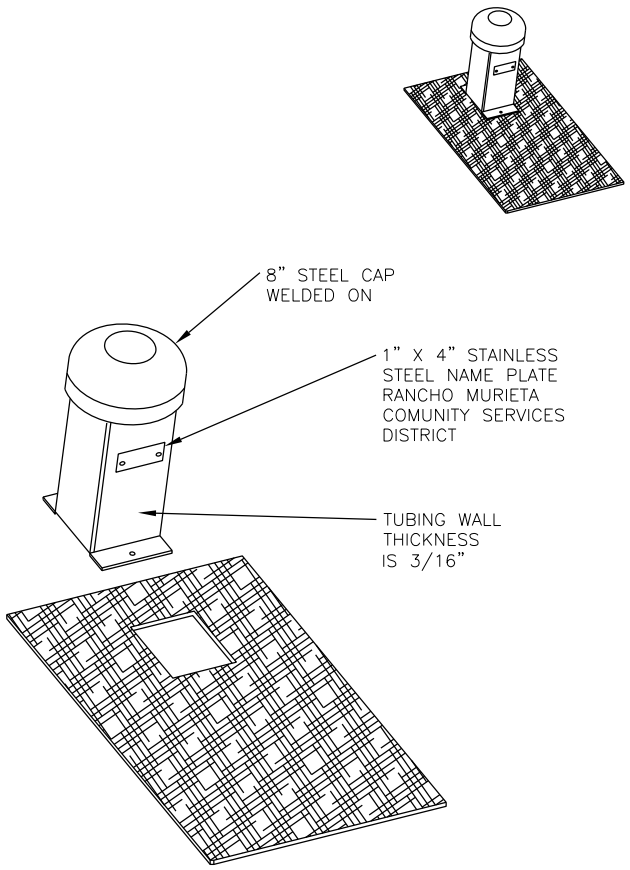
RANCHO MURIETA COMMUNITY SERVICES DISTRICT

COMBINATION AIR RELEASE AND VACCUUM VALVE INSTALLATION

DRAWN BY	SCALE	REVISION	DATE	BY	STANDARD DRAWING NO.
E.BULLOVK	NONE				RW-9
APPROVED K. KENNEDY	DATE 08/19				



(BOTTOM SIDE OF PLATE)



CAT# PWAE118M	16-3/8" X 27" X 1/4"
CAT# PWAE218M	20-1/4" X 33-1/4" X 3/8"

NOTES:

1. VALVE COVER TO BE PLACER WATERWORKS NO. PWAE118M/PWAE218M, OR APPROVED EQUAL.
2. CLEAN INTERIOR AND EXTERIOR OF STEEL WITH DEVPREP 88 METAL CLEANER, OR APPROVED EQUAL WATER-BASED CLEANER.
3. APPLY PRIMER 2-3 MILLS THICK WITH TWO PART EPOXY PRIMER 224HS CATALYZED POLYAMID EPOXY PRIMER (PURPLE PANTONE 512) OR APPROVED EQUAL PRIMER.
4. APPLY ALIPHATIC URETHANE FINISH TOP COAT OF DEVTANE 379, OR APPROVED EQUAL FINISH.
5. VALVE COVER TO BE PAINTED PURPLE PANTONE 512.

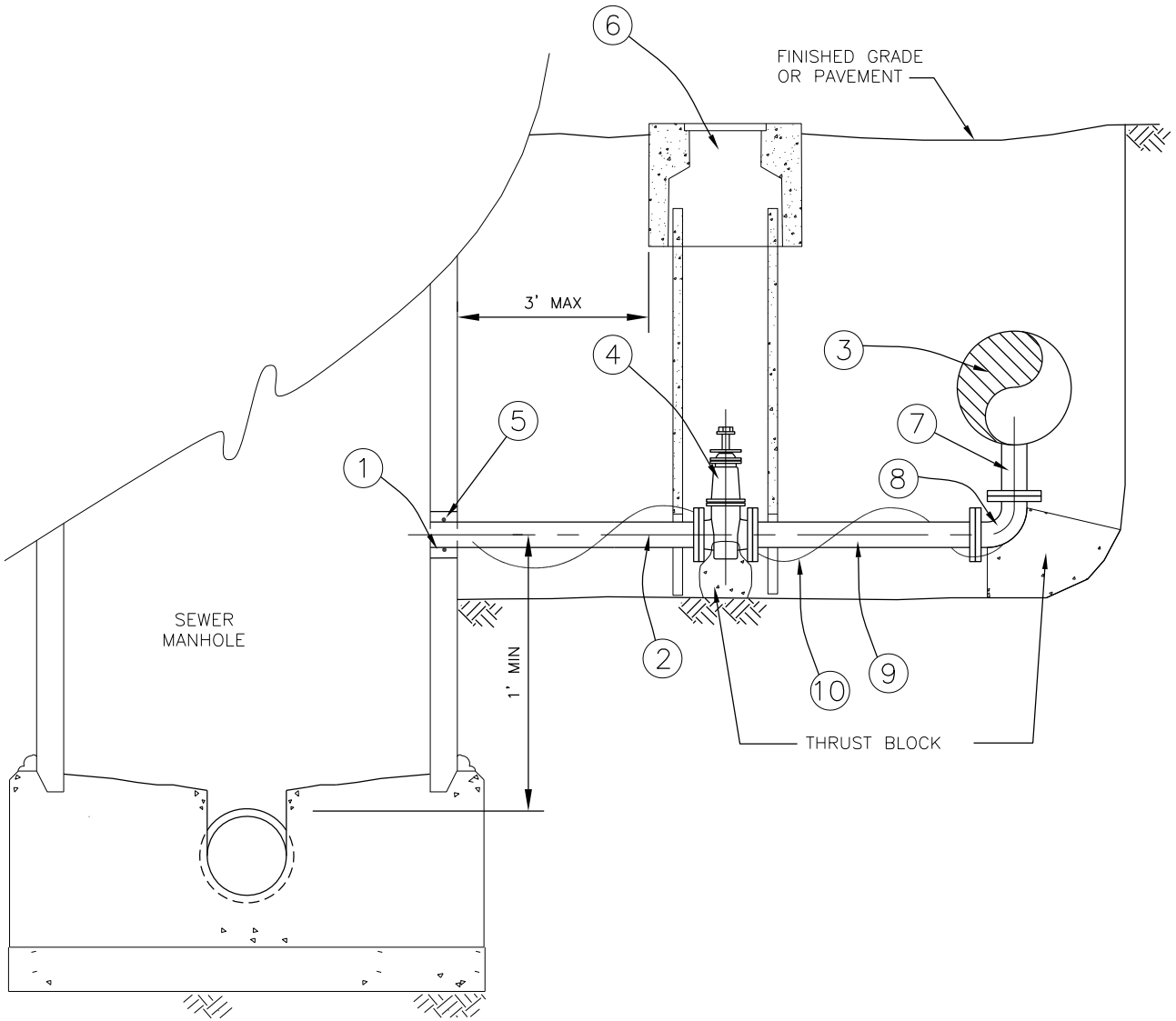
RANCHO MURIETA COMMUNITY SERVICES DISTRICT

AIR RELEASE & VACUUM RELIEF

DRAWN BY	SCALE	REVISION	DATE	BY	STANDARD DRAWING NO.
E. BULLOCK	NONE				
APPROVED	DATE				*RW-10*
K. KENNEDY	08/19				

RW-11 *Not Used*

RW-12 *Not Used*



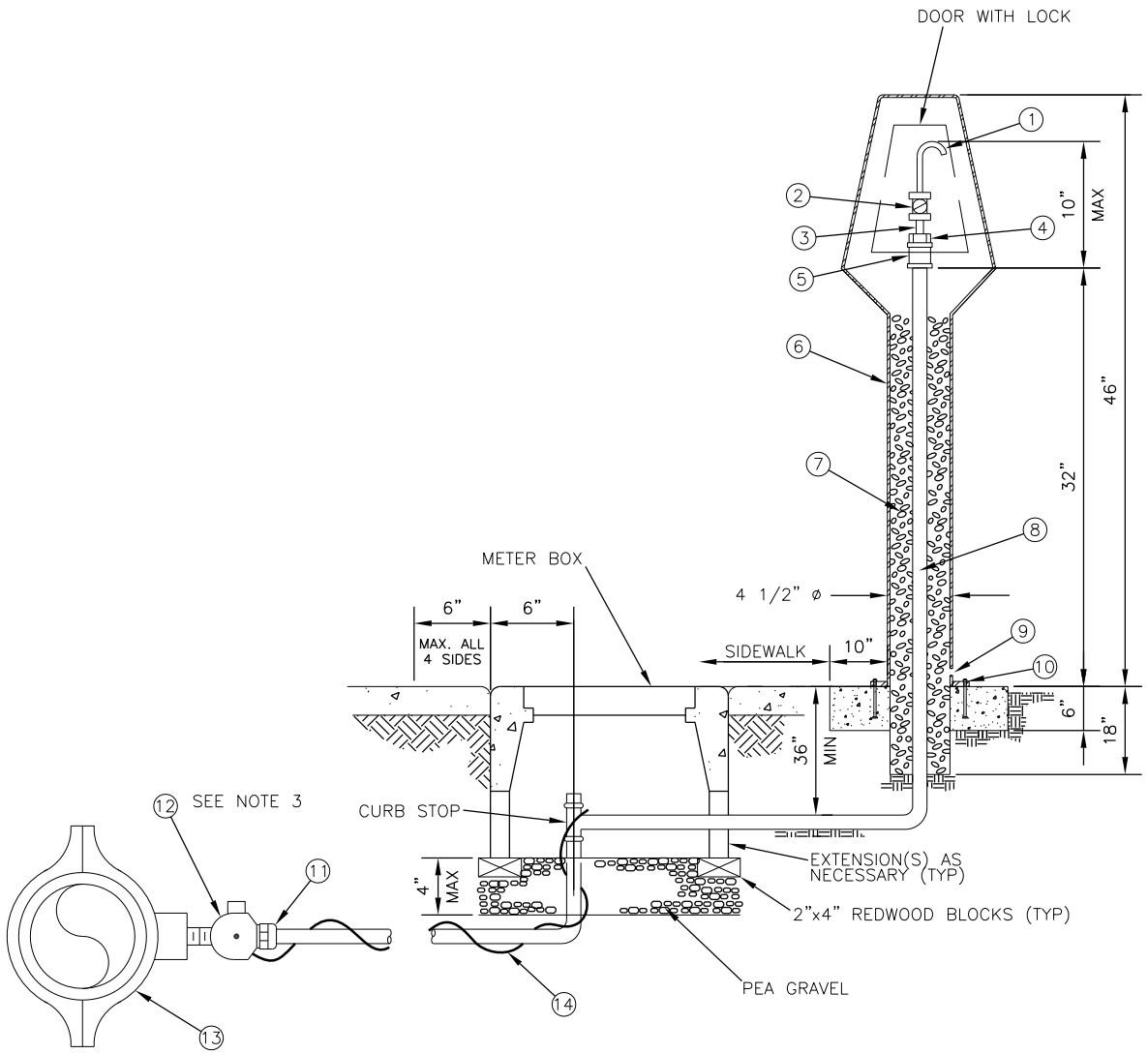
PLAN

ITEM #	DESCRIPTION
1	NON-SHRINK GROUT
2	4" PURPLE PVC PIPE, C-900
3	RECYCLED WATER MAIN
4	4" GATE VALVE FLxM.J
5	O-RING GASKET
6	VALVE BOX MARKED RECYCLED WATER FLUSH N/C SEE RW-5
7	M.J.xM.J.xFL TEE
8	4" D.I. 90° BEND FLxFL
9	4" D.I. SPOOL - FLxFL IN PURPLE SLEEVE
10	#10 TRACER LINE

RANCHO MURIETA COMMUNITY SERVICES DISTRICT

FLUSHING CONNECTION

DRAWN BY	SCALE	REVISION	DATE	BY	STANDARD DRAWING NO.
E.BULLOCK	NONE				
APPROVED K.KENNEDY	DATE 08/19				*RW-13*



SERVICE WITH 90° TAP
W/ POLYETHYLENE

ITEM	DESCRIPTION
1.	3/8" STAINLESS GOOSE NECK
2.	1/2" x 3/8" STAINLESS VALVE
3.	1/2" POLYETHYLENE TUBING
4.	1" x 1/2" BRASS BUSHING
5.	1" STRAIGHT BRASS COUPLING
6.	POWDER COATED EPOXY STEEL HOUSING
7.	PEA GRAVEL
8.	1" COPPER TUBING
9.	1/2"ø WEEP HOLE
10.	ANCHOR BOLT
11.	FLARE FITTING OR COMPRESSION JOINT
12.	CORPORATION STOP (MUELLER 300 SERIES OR EQUAL)
13.	SERVICE SADDLE – BRONZE (ROCKWELL 323, MUELLER 16100 OR APPROVED EQUAL)
14.	TW #10 TRACER WIRE

NOTES:

1. GRIND ALL CUTS SMOOTH
2. PROVIDE NECESSARY CLEARANCE TO ALLOW HASP TO SHUT. LOCKS TO BE KEYED TO DISTRICT KEY.
3. MINIMUM COVER FOR THE SERVICE LINE SHALL BE 36 INCHES.
3. MINIMUM BENDING RADIUS FOR THE POLYETHELENE TUBING SHALL BE 8 INCHES.
4. SERVICE LINE SHALL REST ON UNDISTURBED EARTH.

RANCHO MURIETA COMMUNITY SERVICES DISTRICT

SAMPLE STATION

DRAWN BY	SCALE	REVISION	DATE	BY	STANDARD DRAWING NO.
E.BULLOCK	NONE				
APPROVED	DATE				RW–14
K. KENNEDY	08/19				

RW-15 *Not Used*

SIGN, LETTER HEIGHTS, & SYMBOL SIZE SHOWN ARE IN REQUIRED PROPORTIONS

NOTES:

1. 6"x 12" ALUMINUM SHEET ALLOY 6061-T6 0.080" GAUGE, ROUNDED CORNERS (1" RADIUS).
2. LETTER HEIGHT & SYMBOL SIZE SHALL BE PROPORTIONAL TO SIGN SIZE.
3. THE BACKGROUND SHALL BE WHITE. THE LETTERING SHALL BE PURPLE. DISTRICT SYMBOL AND LETTERING SHAL BE BLUE.
4. LETTERING AND SYMBOL SHALL BE PRESSURE SENSITIVE VINYL. CLEAR COAT ENTIRE SIGN ONCE LETTERING AND SYMBOLS ARE ATTACHED.
5. 1"x1" SQUARE STEEL POST PAINTED WHITE TO MATCH SIGN BACKGROUND. CAP OFF POST AND FINISH CLEAN. PROVIDE REBAR AT END FOR CONCRETE INSTALLATION AT 24 INCH DEPTH.
6. 5/16"ø x 4-1/2" ZINC PLATED CARRIAGE BOLT WITH VANDAL PROOF NUTS. PAINT WHITE TO MATCH SIGN.

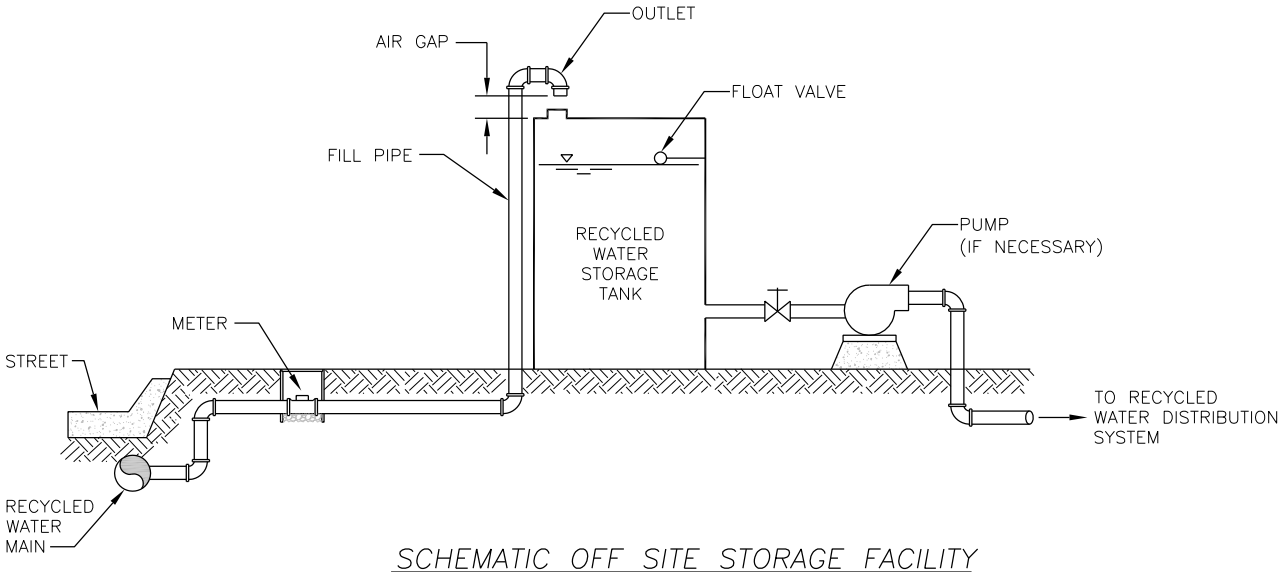
WHEN MOUNTING ON WALLS OR CHAIN LINK FENCE, PROVIDE 1/4 INCH HOLES IN ALL FOUR CORNERS.

3" x 4-1/2" PRESSURE SENSITIVE DECALS ARE REQUIRED FOR IRRIGATION CONTROLLERS AND OTHER ABOVE GROUND FACILITIES REQUIRING A WARNING SIGN. WHEN CONDITIONS AND/OR FACILITY CHARACTERISTICS RENDER THESE SPECIFICATIONS INAPPROPRIATE, ALTERNATIVE SIGNING MUST BE SUBMITTED FOR REVIEW AND APPROVAL BY THE DISTRICT.

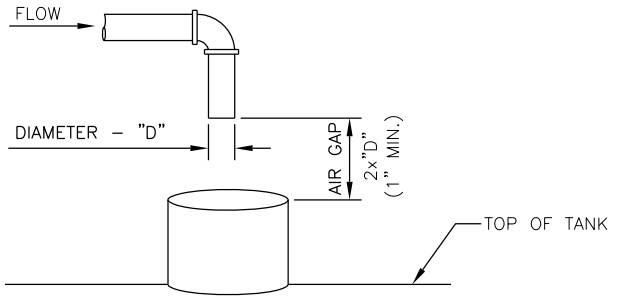
RANCHO MURIETA COMMUNITY SERVICES DISTRICT

RECYCLED WATER SIGN

DRAWN BY	SCALE	REVISION	DATE	BY	STANDARD DRAWING NO.
E. BULLOCK	NONE				
APPROVED	DATE				*RW-16*
K. KENNEDY	08/19				



SCHEMATIC OFF SITE STORAGE FACILITY



AIR GAP

NOTES:

1. THE TERM "AIR GAP" SHALL MEAN A PHYSICAL SEPARATION BETWEEN THE FREE FLOWING DISCHARGE END AND A RECYCLED WATER SUPPLY PIPELINE AND AN OPEN OR NON-PRESSURE RECEIVING VESSEL. AN "APPROVED AIR GAP" SHALL BE AT LEAST DOUBLE THE DIAMETER OF THE SUPPLY PIPE MEASURED VERTICALLY ABOVE THE OVERFLOW RIM OF THE VESSEL – IN NO CASE LESS THAN 1 INCH.

RANCHO MURIETA COMMUNITY SERVICES DISTRICT

AIR GAP SEPARATION

DRAWN BY	SCALE	REVISION	DATE	BY	STANDARD DRAWING NO.
V. FELIX	NTS				
APPROVED	DATE				RW-17
K. KENNEDY	08/19				

NOTES:

1. RECYCLED WATER NOTIFICATION DECAL TO BE OBTAINED BY DEVELOPER.
2. WARNING SIGN DECALS SHALL BE UV FADE RESISTANT das CURB MARKER (www.dasmanufacturing.com) OR APPROVED EQUAL DURACAST STYLE MARKERS PURPLE (PMS #2587) IN COLOR WITH WHITE TEXT. SIGN DECALS SHALL BE ALL-WEATHER AND SLIP RESISTANT.
3. SIGN SHALL STATE "RECYCLED WATER DO NOT DRINK" ACCORDING TO TITLE 22, ARTICLE 4, SECTION 60310(G) OF THE STATEWIDE REGULATION.
4. SURFACE MUST BE DRY AND FREE OF ANY LOOSE DEBRIS. FOLLOW THE ADHESIVE GUIDE. A BEAD OF ADHESIVE SHOULD BE SHOWN AROUND THE ENTIRE EDGE.
5. ADHESIVE SHALL BE CURB MARKER ADHESIVE OR APPROVED EQUAL.

RANCHO MURIETA
COMMUNITY SERVICES DISTRICT

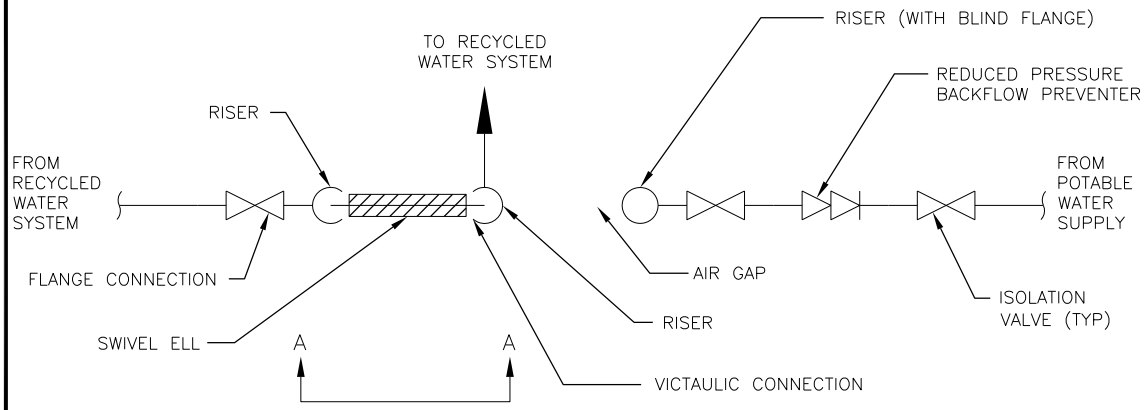
RECYCLED WATER DECAL

DRAWN BY	SCALE	REVISION	DATE	BY	STANDARD DRAWING NO.
E. BULLOCK	NONE				
APPROVED	DATE				RW-18
K. KENNEDY	08/19				

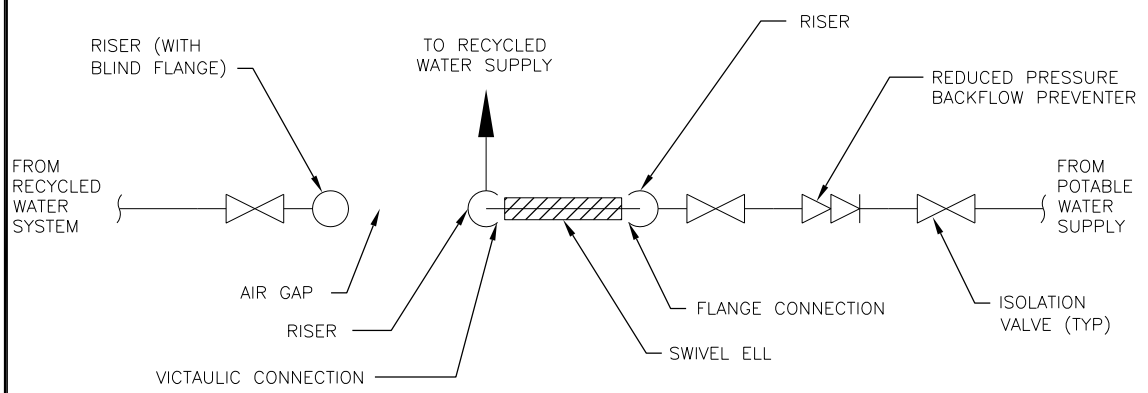
P:\60285298-RANCHOMURIETACSD\000_CAD\005_HYDROLOGY-DRAINAGE\SHEETS\RW-18.DWG

20131010.080411

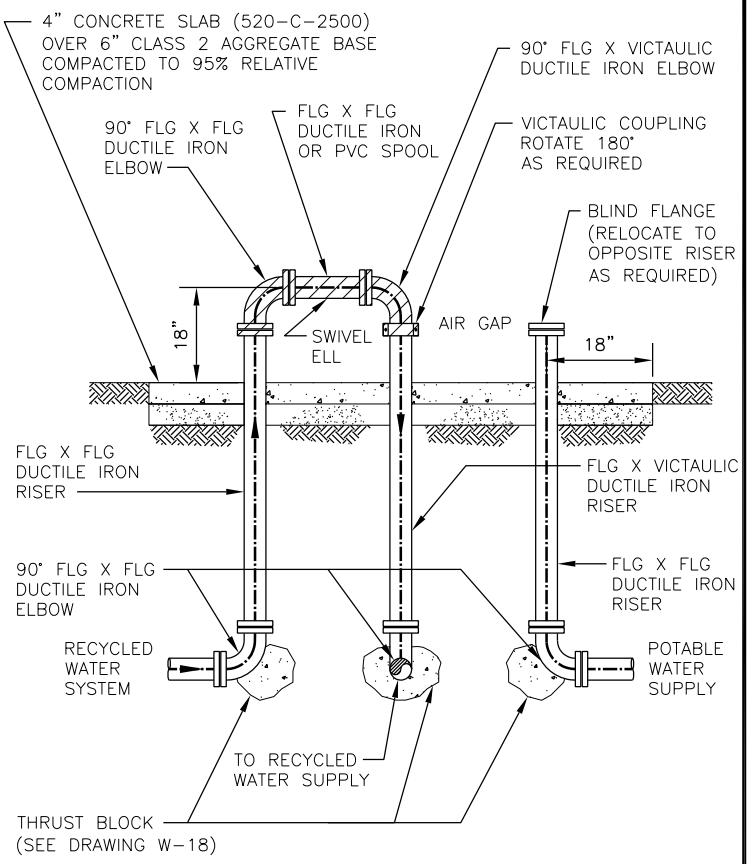
RW-19 *Not Used*



NORMAL RECYCLED WATER CONNECTION



SHORT-TERM POTABLE SUPPLY CONNECTION DURING
INTERRUPTION OF NORMAL RECYCLED WATER SOURCE



SECTION A-A

NOTE: SWIVEL ELL SHOWN IN NORMAL POSITION
(SUPPLY FROM RECYCLED WATER SOURCE)

SWIVEL ELL

SCHEMATIC — PLAN-NO SCALE

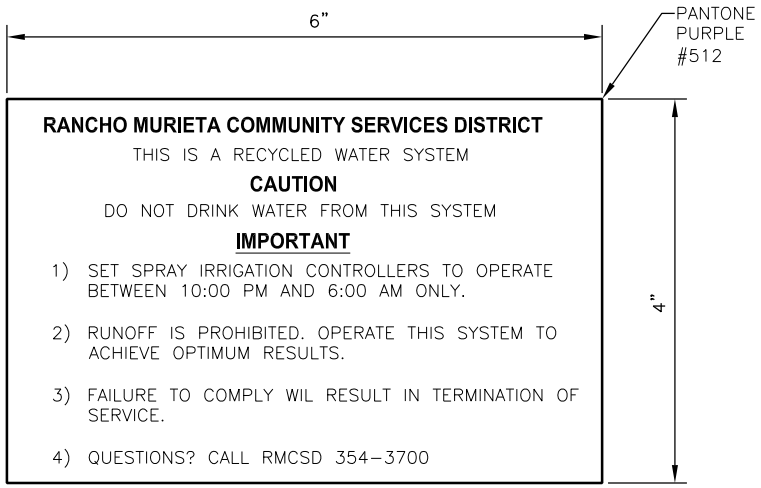
KEY:

- RISER WITH ELBOW
- RISER (WITH BLIND FLANGE)
- ISOLATION VALVE
- SWIVEL ELL
- REDUCED PRESURE BACKFLOW PREVENTER

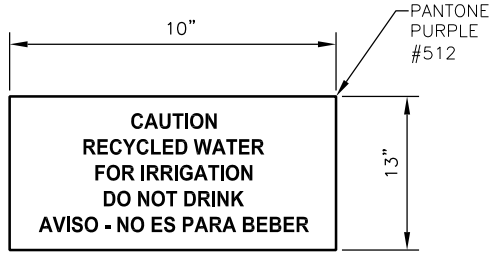
RANCHO MURIETA COMMUNITY SERVICES DISTRICT

SWIVEL ELL CONNECTION

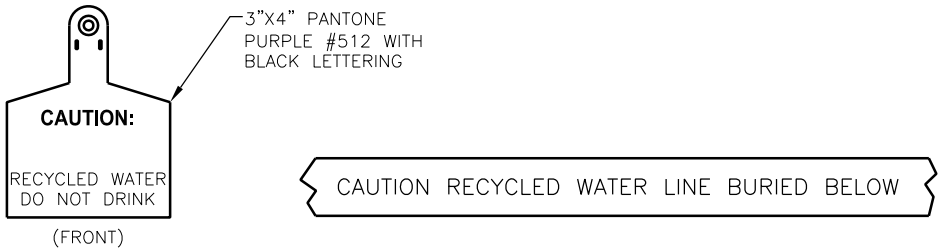
DRAWN BY	SCALE	REVISION	DATE	BY	STANDARD DRAWING NO.
E. BULLOCK	NONE				
APPROVED	DATE				RW-20
K. KENNEDY	08/19				



CONTROLLER ENCLOSURE LABEL (INTERIOR)



CONTROLLER ENCLOSURE LABEL (EXTERIOR)



RECYCLED WATER TAGS

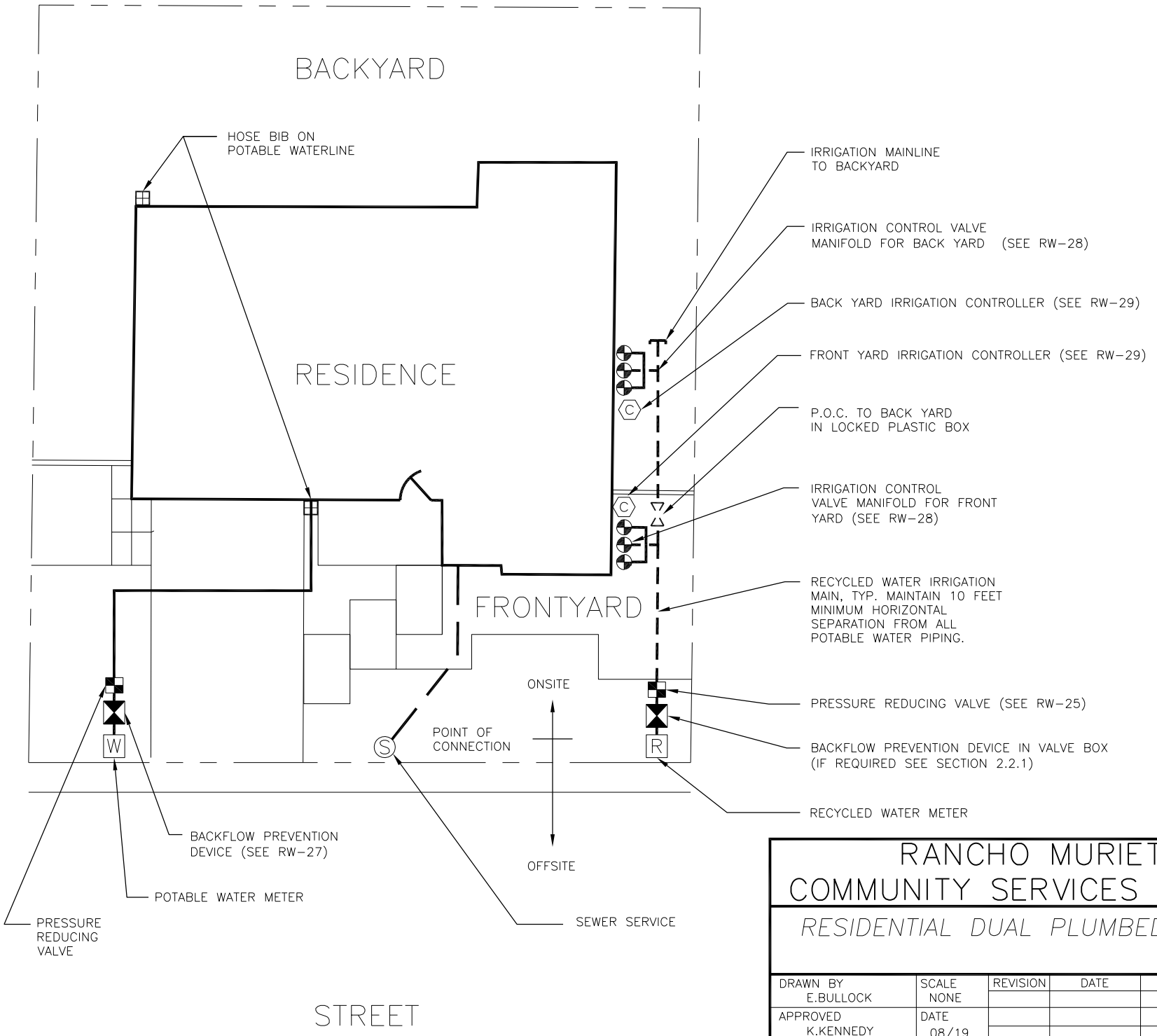
WARNING TAPE

RANCHO MURIETA COMMUNITY SERVICES DISTRICT

IDENTIFICATION TAGS AND LABELS

DRAWN BY	SCALE	REVISION	DATE	BY	STANDARD DRAWING NO.
V. FELIX	NTS				RW-21
APPROVED K. KENNEDY	DATE 08/19				

RW-22 *Not Used*



RANCHO MURIETA COMMUNITY SERVICES DISTRICT

RESIDENTIAL DUAL PLUMBED SERVICE

DRAWN BY	SCALE	REVISION	DATE	BY	STANDARD DRAWING NO.
E.BULLOCK	NONE				
APPROVED	DATE				*RW-23*
K.KENNEDY	08/19				

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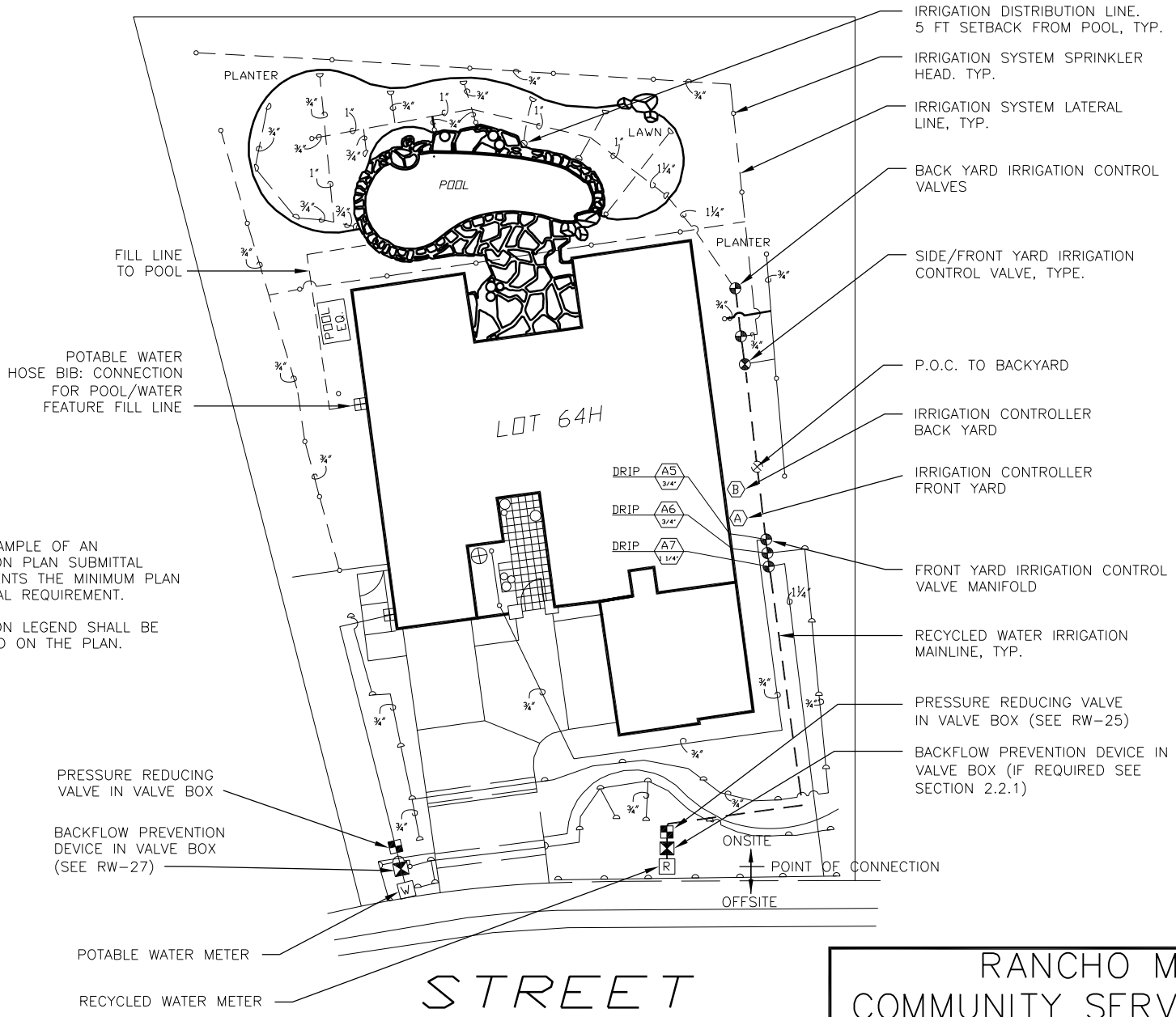
20131010.080603



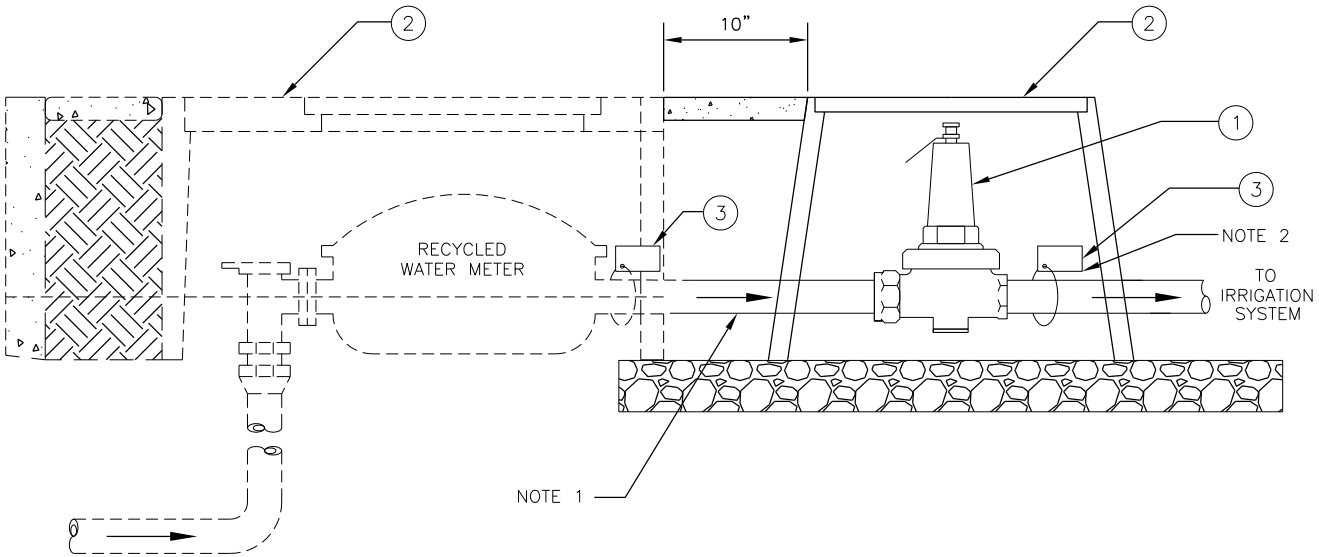
NOTES:

1. THIS EXAMPLE OF AN IRRIGATION PLAN SUBMITTAL REPRESENTS THE MINIMUM PLAN SUBMITTAL REQUIREMENT.
2. IRRIGATION LEGEND SHALL BE INCLUDED ON THE PLAN.

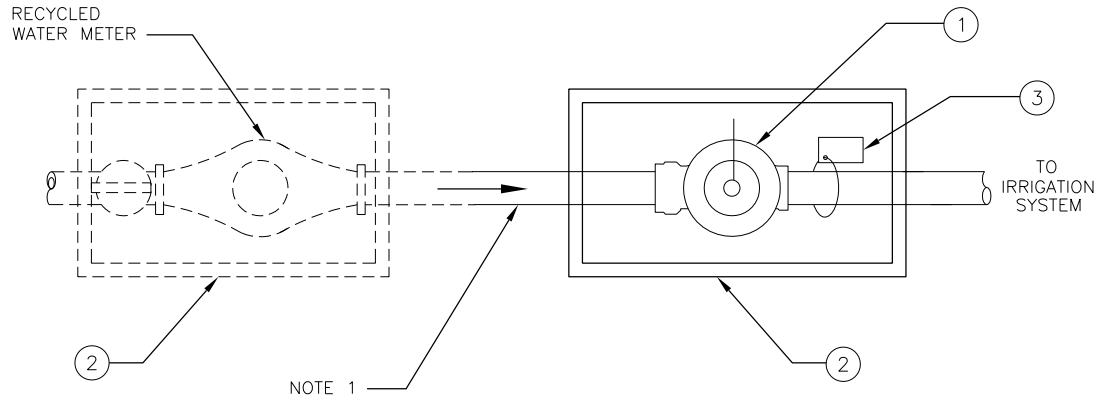
RANCHO MURIETA COMMUNITY SERVICES DISTRICT

RESIDENTIAL IRRIGATION LAYOUT

DRAWN BY	SCALE	REVISION	DATE	BY	STANDARD DRAWING NO.
E. BULLOCK	NONE				
APPROVED	DATE				*RW-24*
K. KENNEDY	08/19				



PRESSURE REDUCING VALVE



ITEM	DESCRIPTION
1	WILKINS MODEL 500HLR PRESSURE REDUCING VALVE OR EQUAL
2	CHRISTY PURPLE FL9 BOX
3	RECYCLED WATER WARNING TAG (SEE RW-21)

NOTES:

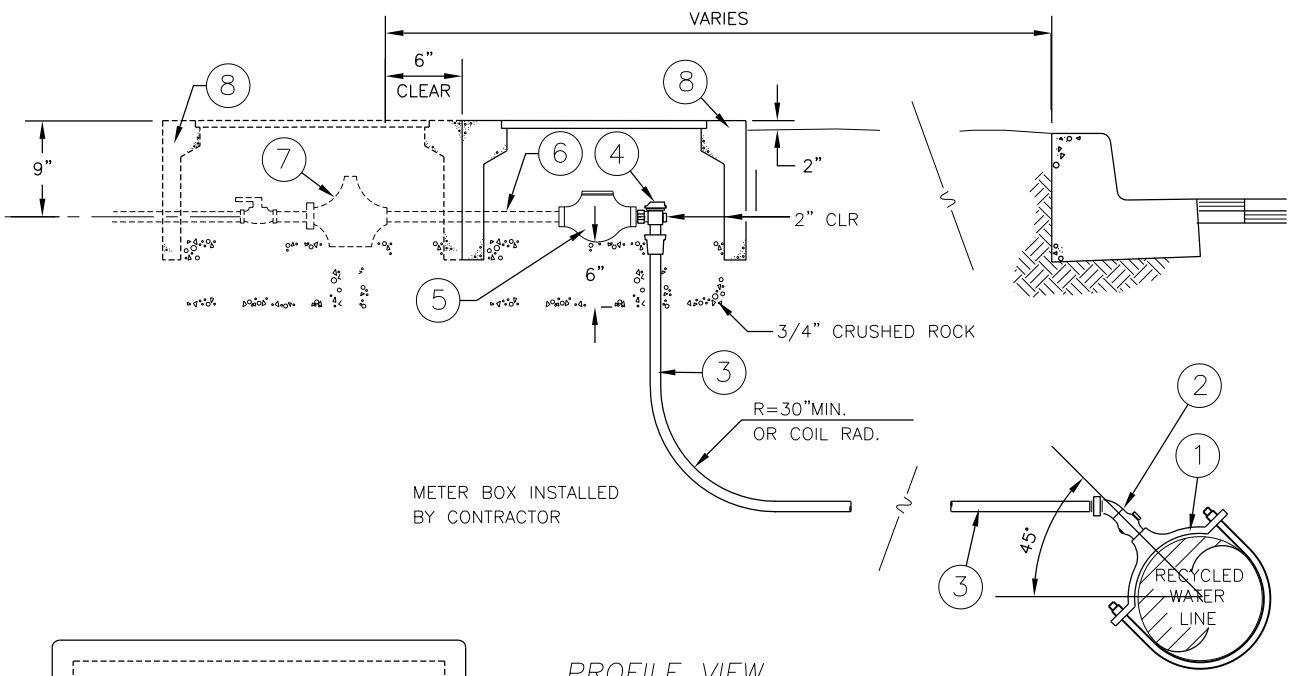
1. NO LINE CONNECTIONS BETWEEN METER & PRV. EXCEPT FOR BACKFLOW PREVENTION DEVICE (IF REQ'D.)
2. RW LABEL: T. CHRISTY 3150 OR EQUIVALENT.
3. PRV SIZE SHALL BE EQUAL TO METER SIZE.

RANCHO MURIETA COMMUNITY SERVICES DISTRICT

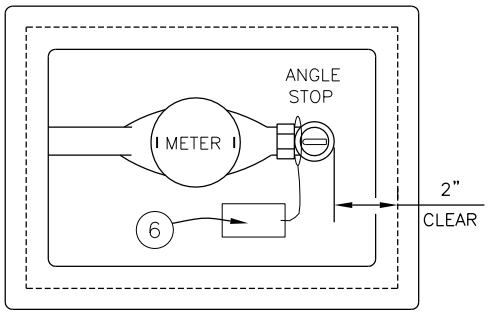
PRV INSTALLATION FOR DUAL PLUMBED SERVICE

DRAWN BY	SCALE	REVISION	DATE	BY	STANDARD DRAWING NO.
E. BULLOCK	NONE				RW-25
APPROVED	DATE				
K. KENNEDY	08/19				

SEE W22A FOR
CUT/FILL SLOPES



PROFILE VIEW



METER BOX PLAN

NOTES

1. SERVICE SADDLE SHALL NOT BE INSTALLED WITHIN 18" OF VALVE, JOINT OR FITTING.
2. SET TOP OF METER BOX FLUSH WITH SIDEWALK OR AS SHOWN.

ITEM #	DESCRIPTION
1	BRASS SERVICE SADDLE, 1" AWWA I.P.T.
2	1" CORPORATION STOP, AWWA I.P.T.x F.L.P. W/45° STREET ELBOW, COMPRESSION FITTING
3	1" PURPLE P.E. TUBING, CTS CONTINUOUS WITH TRACER WIRE
4	1" ANGLE METER STOP, METER CPLG NUT x STAB TYPE END
5	RECYCLED WATER METER MANUFACTURED BY SENSUS IPERL
6	RECYCLED WATER TAG (SEE RW-21)
7	PRV W/ RECYCLED WATER TAG. SEE RW-25 FOR MANUFACTURER REQUIREMENTS.
8	CHRISTY PURPLE FL9 BOX

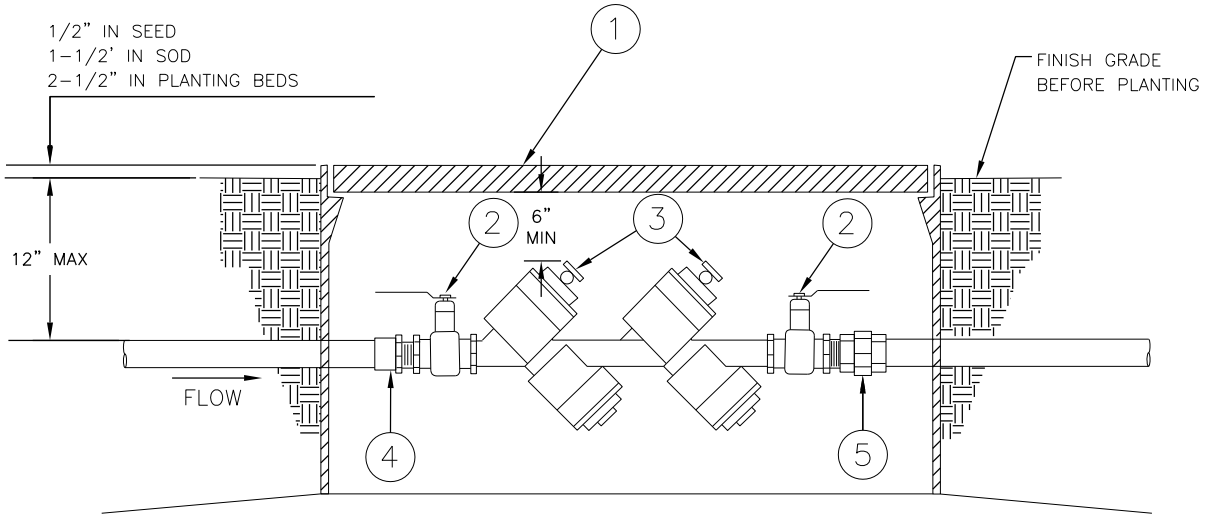
NOTES:

1. SERVICE SADDLE SHALL NOT BE INSTALLED WITHIN 18" OF VALVE, JOINT OR FITTING.
2. SET TOP OF METER BOX FLUSH WITH SIDEWALK OR AS SHOWN.
3. ALL TAPS SHALL BE MADE WITH MACHINE GUIDE OR PILOT TAP.
4. THE RECYCLED WATER SERVICE SHALL EXTEND PERPENDICULAR TO THE CENTERLINE OF THE STREET FROM THE RECYCLED WATER MAIN TO THE RECYLED METER STOP.
5. PURPLE P.E. TUBING SHALL BE CONTINUOUS WITH TRACER WIRE.
6. ALL FITTINGS SHALL BE BRASS.
7. METER TO HAVE PURPLE LID AND DIAL.
8. RECYCLED WATER METER SHALL BE INSTALLED WITH SENSUS IPERL METER SETTER OR APPROVED EQUAL.

RANCHO MURIETA COMMUNITY SERVICES DISTRICT

RECYCLED WATER SERVICE INSTALLATION

DRAWN BY	SCALE	REVISION	DATE	BY	STANDARD DRAWING NO.
E. BULLOCK	NONE				RW-26
APPROVED K.KENNEDY	DATE 08/19				



ITEM #	DESCRIPTION
1	METER BOX 12"x20" CONCRETE BOX & STEEL LID
2	BALL VALVE, SUPPLIED WITH BACKFLOW PREVENTER BY MANUFACTURER.
3	DOUBLE CHECK BACKFLOW PREVENTER
4	BRASS ADAPTOR, TYP.
5	BRASS UNION DOWNSTREAM OF VALVE

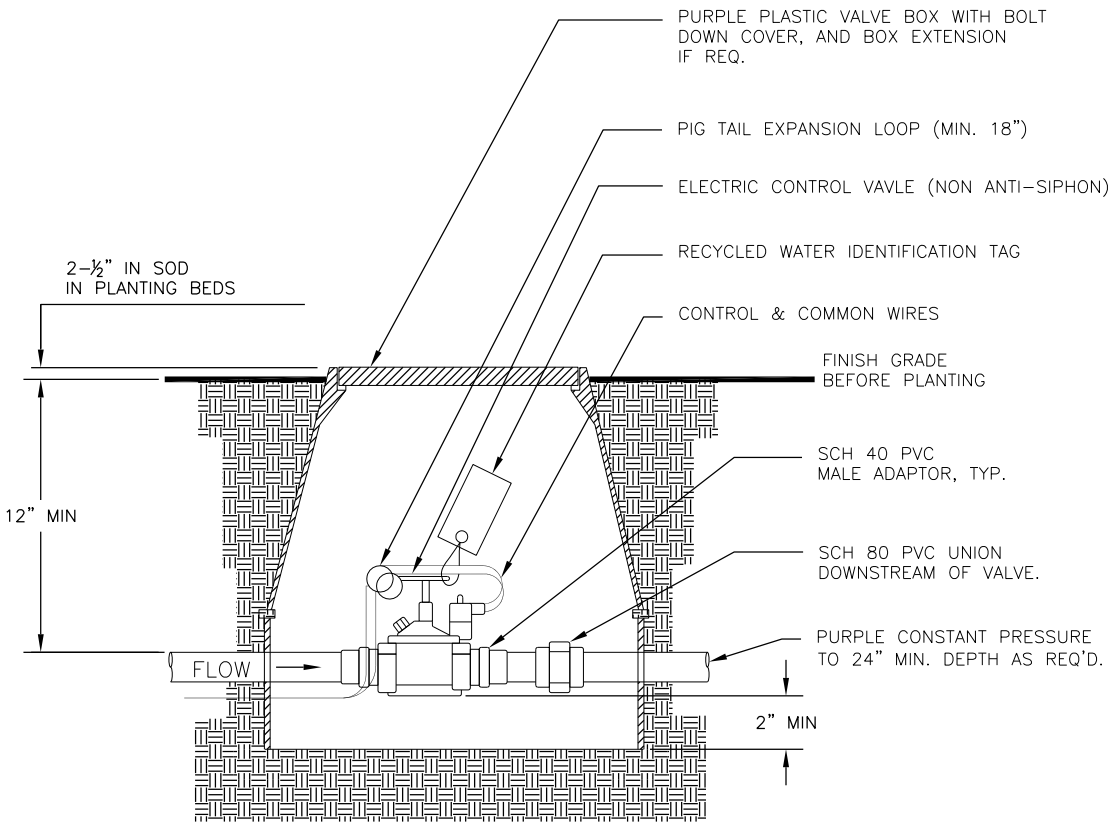
NOTES

1. PLACE VALVE BOX AT RIGHT ANGLES TO STRUCTURES OR HARDSCAPING
2. INSTALL VALVE BOX SO THAT TOP OF VALVE BOX IS FLUSH WITH ADJACENT HARDSCAPING.
3. GATE VALVE AND FITTINGS SHALL BE LINE SIZE UNLESS NOTED OTHERWISE.

RANCHO MURIETA COMMUNITY SERVICES DISTRICT

POTABLE WATER DOUBLE CHECK VALVE FOR DUAL PLUMBED RESIDENCES

DRAWN BY	SCALE	REVISION	DATE	BY	STANDARD DRAWING NO.
E. BULLOCK	NONE				
APPROVED	DATE				RW-27
K. KENNEDY	08/19				



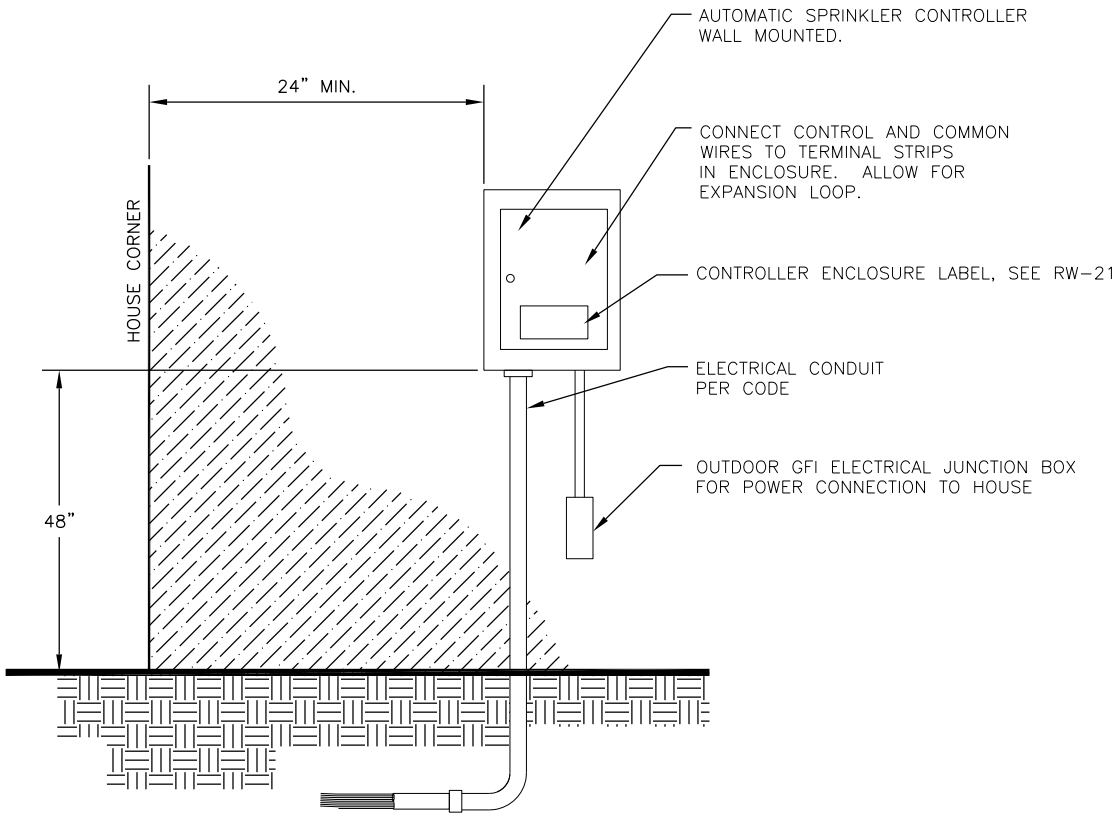
NOTE:

1. ATTACH DOUBLE SIDED IDENTIFICATION TAGS PER RW-21.

RANCHO MURIETA COMMUNITY SERVICES DISTRICT

ONSITE BURIED ELECTRIC REMOTE CONTROL VALVE

DRAWN BY	SCALE	REVISION	DATE	BY	STANDARD DRAWING NO.
E. BULLOCK	NONE				
APPROVED	DATE				*RW-28*
K. KENNEDY	08/19				



NOTES:

1. CONTROL WIRING (AWG. UF #14). SECURE TO TERMINAL STRIP PROVIDED IN ENCLOSURE.
2. COMMON WIRE TO BE WHITE & CONTROL WIRE TO BE RED. BUNDLE AND TAPE WIRING AT INTERVALS OF 10'-0" O.C.
3. NO SPLICES TO BE MADE BETWEEN CONTROLLER AND VALVE.
4. LIST OF APPROVED CONTROLLERS TO BE PROVIDED BY THE DISTRICT.

RANCHO MURIETA COMMUNITY SERVICES DISTRICT

ONSITE IRRIGATION AUTOMATIC CONTROLLER

DRAWN BY	SCALE	REVISION	DATE	BY	STANDARD DRAWING NO.
E. BULLOCK	NONE				
APPROVED	DATE				*RW-29*
K. KENNEDY	08/19				

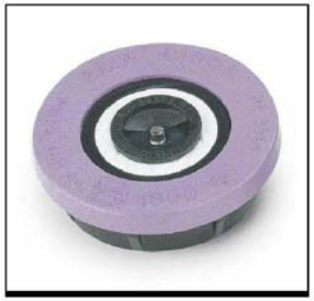
RW-30 *Not Used*

ROTORS

SHRUB SPRAY WITH DECAL

PURPLE DRIP HEAD

PURPLE DRIP LINE



PURPLE SPRAY HEADS

RANCHO MURIETA COMMUNITY SERVICES DISTRICT

IRRIGATION HEAD AND DRIP LINE COLOR CODING

DRAWN BY	SCALE	REVISION	DATE	BY	STANDARD DRAWING NO.
E. BULLOCK	NONE				
APPROVED K.KENNEDY	DATE 08/19				*RW-31*

Appendix A

Contact Agencies and Information

Contact Agencies and Information

Rancho Murieta Community Services District

Paul Siebensohn, Director of Field Operations
Phone No: (916) 354-3730
Fax No: (916) 354-2082
Email: psiebensohn@ranchomurietacsd.com

Edward Crouse, General Manager
Phone No: (916) 354-3700
Fax No: (916) 354-2082
Email: ecrouse@ranchomurietacsd.com

Regional Water Quality Control Board, Central Valley

Phone No: (916) 464-3291
Fax No: (916) 464-4645

Address: 11020 Sun Center Drive #200
Rancho Cordova, CA 95670-6114

California Department of Public Health, Sacramento District

Phone No: (916) 449-5600
Fax No: (916) 449-5655

Address: 1616 Capital Avenue
PO Box 997377, MS 7407
Sacramento, CA 95899-7377

Appendix B

Swivel Ell Connection Memo

State of California — Department of Health Services

Memorandum

Date: May 7, 2003

To: Regional and District Engineers

From: David P. Spath, Ph.D., P.E., Chief *(Original signed by Dave)*
Drinking Water and Environmental Management
601 North 7th Street, MS 216
Sacramento, CA 95814
(916) 322-2308

Subject: POLICY MEMO 2003-03: GUIDANCE FOR THE ALTERNATIVE USE OF POTABLE WATER IN RECYCLED WATER SUPPLY USE AREAS USING A "SWIVEL-ELL" PIPING ARRANGEMENT

RESCINDS POLICY MEMO 95-004

Introduction

This policy provides guidance to staff for applying the California regulations relating to cross-connection control (Title 17, California Code of Regulations, Sections 7583 et seq.). The practices outlined in this policy should be regarded as minimum conditions for providing backflow protection in the situations described. ***NOTE that this policy updates and supersedes Policy Memo 95-004 to reflect current Water Recycling Criteria adopted in December 2002, and clarifies that this policy does not apply to dual-plumbed recycled water facilities.***

Statement of Problem

Premises where recycled water is used for on-site non-potable uses may not utilize domestic water from a public water system as a supplemental source of water for the recycled water system unless the public water supply is isolated with an air-gap separation in conformance with Section 7604 of the California Code of Regulations (CCR). This regulatory requirement is based upon the potential for contamination of the public water supply from cross-connections created within a premises which utilizes recycled water for approved non-potable uses.

The Department has become aware of situations where recycled water is used for on-site non-potable uses and the potable supply is available to the premises as an emergency, alternative source of water in the event that the recycled water supply is temporarily unavailable. A swivel-ell type connection is utilized to preclude connecting both sources of supply to the use area at the same time. The swivel-ell is switched from the recycled water connection to the potable connection in an emergency and the procedure is reversed once the recycled supply is available. The potable supply pipeline must be protected by an approved reduced pressure principle backflow preventer. The potential exists for concurrent use of the recycled water and potable water connections in violation of Section 7604 of the CCR. Therefore, special precautions must be taken to prevent the creation of

cross-connections in these situations. In no case will it be acceptable for the potable supply to be directly connected to a recycled water supply.

Legal Status

Section 7604(c)(1), CCR Title 17, requires that an air-gap separation be used for backflow protection for premises where the public water supply is used to supplement the recycled water supply and the two supplies can be used simultaneously.

However, this Section does not address the use of alternative sources of water when the recycled water supply cannot be used simultaneously; this is the situation to which this policy applies.

Section 60315 of the Water Recycling Criteria (CCR, T22, adopted December 2000, following issuance of the original Swivel-Ell Policy Memo 95-004) includes design requirements for "Dual Plumbed Recycled Water Systems" which specifically exclude using the public water supply as a backup or supplemental source of water for the recycled system. **Therefore, this Policy is not applicable to Dual Plumbed Recycled Water Systems as defined by Section 60301.250 (Title 22).**

Department Position

It is the opinion of the Drinking Water Program of the California State Department of Health Services that with proper safeguards, a swivel-ell type connection may be used when potable water is used as an alternative water supply to an on-site recycled water distribution system with the exception of dual-plumbed systems as specified in Section 60315. This is acceptable only in cases where there is an unplanned, short-term interruption of the recycled water service.

Directions to Department Staff

No concurrent use of the potable water supply and the recycled water supply will be allowed. Prior to construction of any facilities, written approval shall be obtained from the potable water purveyor and the Department. Water utilities proposing to use potable water as an alternative water supply to an on-site recycled water distribution system at a recycled water use area or facility must demonstrate to the Department that they can comply with the following:

1. Only disinfected, tertiary recycled water is used.

2. The domestic water supplier has a cross-connection control program containing all of the minimum elements required by Section 7584 of the CCR.

The program ordinance or rules of service must address the use of recycled water in these situations and must be acceptable to the Department.

3. Each on-site recycled water distribution system may only be supplied from a single recycled water feed line. There shall be no other inter-connections between the recycled water distribution system and potable water system within the use area or facility.

4. The swivel-ell connection, including the recycled water service, potable water service and the service riser to the facility or use area must be located above ground, color coded in accordance with Section 4049.54 and provided with appropriate signs on both the recycled water and domestic water facilities. Appropriate security precautions must be provided (e.g. locked gate valves, warning signs, etc.) to prevent interconnections, vandalism and unauthorized use. The potable water purveyor shall inspect each location on a minimum annual basis to verify that a switchover has not occurred without the purveyor's approval. Meters must be provided on both connections and records of water use maintained.

5. The potable connection must be protected by an approved Reduced Pressure Principle Backflow Prevention Assembly (RP). Facilities for the swivel-ell connection must be located downstream of this assembly. The need for internal protection must also be evaluated.

6. To avoid concurrent use, swivel-ell connections must be designed such that a tee connection or other prefabricated mechanical appurtenances cannot readily be substituted for the ell. The recycled water and potable water services should not approach the service riser at an angle of 180^{0} (Figure 1).

7. A signed agreement between the public water supplier and recycled water supplier[1] that incorporates the following must be obtained:

   (a) The RP on the potable water supply line must be tested in accordance with Section 7605 of the CCR immediately prior to a switchover from the recycled water supply to the potable water supply. The completed test report must be sent to the Department and potable water purveyor prior to activation.

   (b) The potable water purveyor and Department must be notified within 24 hours of each switchover.

   (c) The potable water purveyor shall supervise the switchover and activation of the potable water service and subsequent deactivation.

   (d) Upon request, the potable water purveyor must follow up with a written report to the Department within 7 days following the switchover.

Note 1 - If a common agency has both water and recycled water operations then rules of service incorporating the following items must be in place.

This policy is intended for short-term emergency switch-overs, not to exceed 90 days.

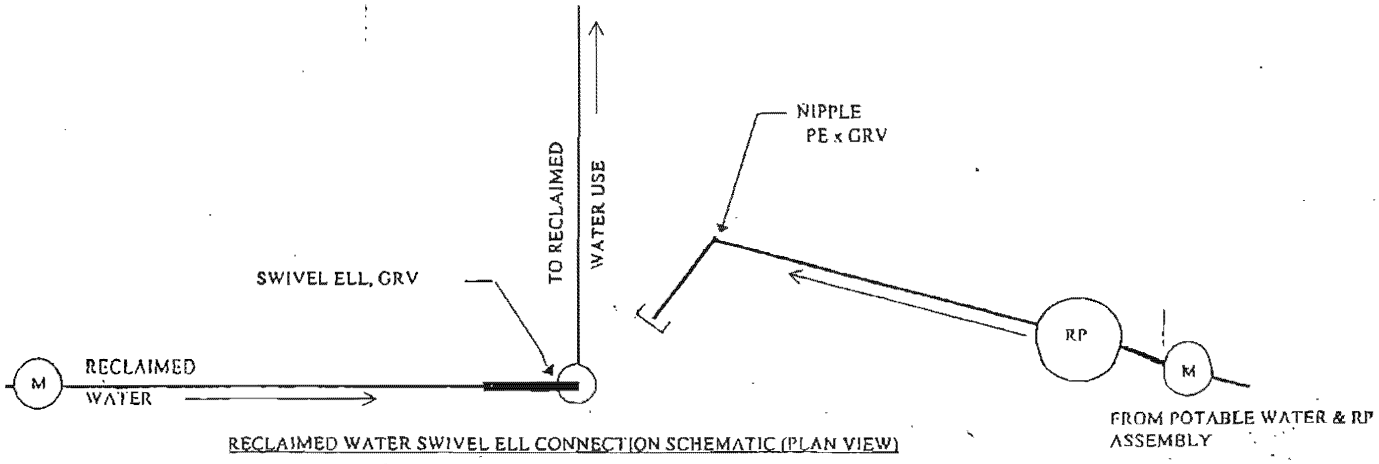
The potable water supplier will have the responsibility for documenting that all conditions of approval have been satisfied. The Department shall require installation of a permanent air-gap separation in accordance with Section 7604 of the CCR in the event that a cross-connection is made between the potable water supply and the on-site recycled water distribution system.

State of California

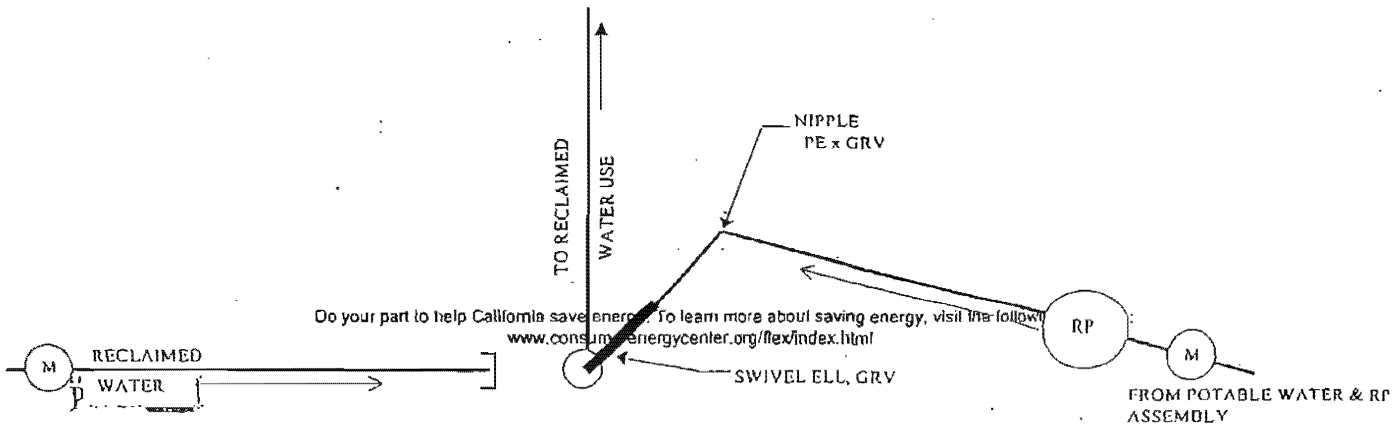
Department of Health Services

Memorandum

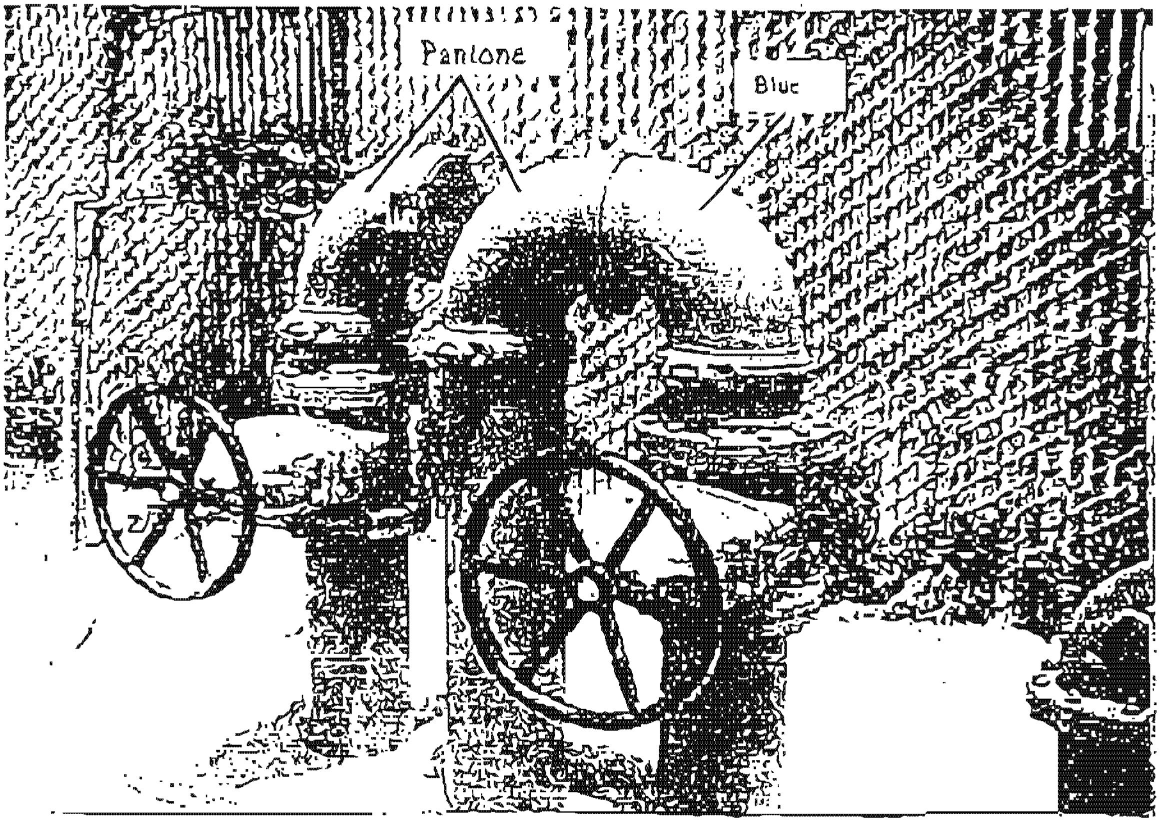
Figure 1 – Connection Schematics

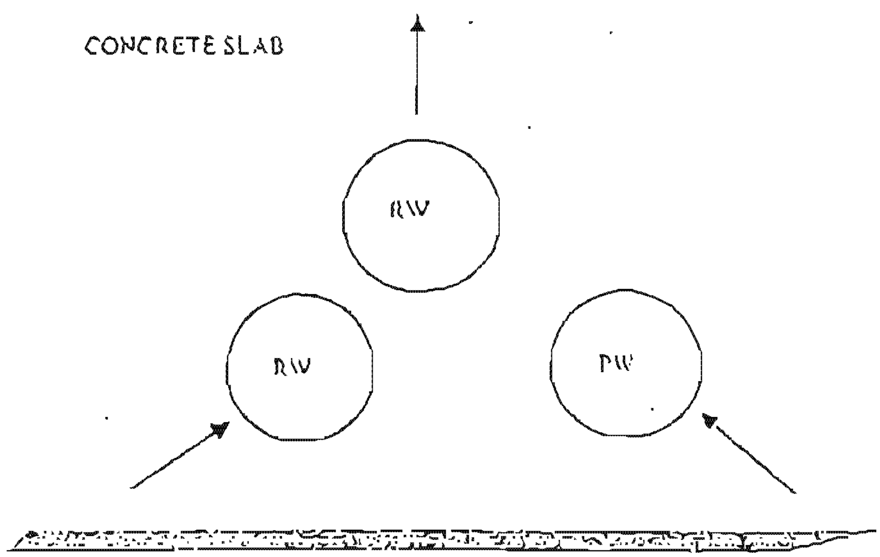


RECLAIMED WATER SWIVEL ELL CONNECTION SCHEMATIC (PLAN VIEW)



Memorandum





EXAMPLE: RECLAIMED AND POTABLE RISER LAYOUT
(PLAN VIEW)

Appendix C

Sample Application Form

Rancho Murieta Community Services District

Application for Onsite Recycled Water Irrigation Use Permit

Site Information	District Use Only
Location or Address:	Date Received
	Date Distributed
	Date of Determination
	☐ Accepted ☐ Returned ☐ Rejected
	User Name
Assessor's Parcel No.	Notes:

Applicant Information		
Applicant Is ☐ Owner ☐ Lessee ☐ Other (Describe)		
Applicants Name:		
Address (Current)	Telephone No.	
City	State	Zip Code
Owner's Name (if different)		
Owner's Contact Person		
Address	Telephone No.	
City	State	Zip Code

User's Designated Site Supervisor		
Relationship to Applicant ☐ Same ☐ Partner ☐ Employee ☐ Other		
Supervisor's Name		
Business Address	Telephone No. Business Hours: Home: Cellphone:	
City	State	Zip Code

Note: The User's Site Supervisor must be reachable at all times in case of emergency. All phone numbers are for the use of the Recycled Water Program only.

Proposed Recycled Water Uses	
Current Water Source (if applicable):	
☐ Landscape Irrigation	Approximate Area:_____

Briefly describe the proposed uses and potential degree of contact with public:

☐ Other Uses

Briefly describe the proposed uses and potential degree of contact with public:

Cross-Connection Control[1]

Has the cross-connection test been completed? ☐ Yes ☐ No

Backflow Prevention[2]

Have your backflow prevention devices been tested within the past year? ☐ Yes ☐ No

Recycled Water Demand Estimates

Description of Site:

Estimated Annual Recycled Water Use/Demand (gallons per year):

Peak Use/Demand (gallons per minute):

Pressure Requirements (pound per square inch):

Hours of Use:

Days of Use:

Attachments

☐ Recycled Water Plan (see 2.2.11.3 of the District's Recycled Water Standards

☐ Other:_____

Site Supervisor	Applicant
I will operate and maintain the recycled water system in compliance with all conditions of the District's Waste Discharge Requirements, Master Reclamation Permit, and the Recycled Water Use Permit.	I designate the named person as the Site Supervisor. I am the principal owner of this site or a duly authorized representative and certify that the information contained in this application is true and correct to the best of my knowledge.
Print Name: _____	Print Name: _____
Signature: _____	Signature: _____
Date: _____	Date: _____

[1] An initial cross-connection control test must be performed prior to receiving a Recycled Water Use Permit. If cross-connection test has been completed previous, please attach testing report results.

[2] All backflow prevention devices must be tested annually. If backflow prevention device tests have been completed previous, please attach the backflow prevention assembly test report and locate the devices on an attached site plan.

Appendix D

Cross-Connection Testing Procedures

Cross-Connection Testing Procedure

The Rancho Murieta Community Services District (District) uses a certified AWWA Cross-Connection Specialist to preform required cross-connection tests. The following general method is used for conducting these tests on all sites where both potable and recycled water are intended to be used in separate piping systems.

PART I: Potable Water System Testing

1. The potable water system shall be activated and pressurized. The recycled water irrigation system shall be shut down at the Point of Connection (usually the meter) and depressurized. Typically this is done by manually bleeding an irrigation control valve that is located at the lowest elevation in the irrigation system.

2. The potable water system shall remain pressurized for a minimum period of time specified by the Cross-Connection Control Specialist while the irrigation system is depressurized. The minimum period of time the recycled water irrigation system is to remain depressurized shall be determined on a case-by-case basis, taking into account the size and complexity of the potable and recycled water systems, but in no case shall that period be less than one hour.

3. All recycled water irrigation control valves, and any features that are approved to be supplied with recycled water from the onsite irrigation systems shall be tested (e.g., turned on or activated) and inspected for flow. Continuous flow from any part of the recycled water irrigation system indicates a cross-connection.

4. All interior and exterior potable water fixtures such as faucets, hose bibs, drinking fountains, toilets, supply lines to decorative fountains, etc. shall be tested and inspected for flow. The absence of flow from any potable water outlet indicates that it may be cross-connected to the recycled water irrigation system.

5. If no cross-connections are discovered, proceed to Part II of the test. If any cross-connections are found, they must be disconnected, and the site must be retested by an AWWA Cross-Connection Specialist in accordance with these procedures.

PART I: Recycled Water System Testing

1. The potable water system shall be shut off at its Point of Connection (usually the meter) and depressurized. In the case of a potable water system in a multi-story building, the potable water system pressure may be reduced by the amount deemed necessary by the Cross-Connection Control Specialist and monitored with a gauge installed at a low point of elevation in the potable water system.

2. The recycled water irrigation system shall then be activated and pressurized.

3. The recycled water irrigation system shall remain pressurized for a minimum period of time specified by the Cross-Connection Control Specialist while the potable water system is depressurized or, in the case of a multi-story building, remains in a state of reduced pressure. The minimum period of time the potable water system is to remain depressurized shall be determined on a case-by-case basis, but in no case shall the period be less than one (1) hour.

4. All interior and exterior potable water fixtures such as faucets, hose bibs, drinking fountains, toilets, supply lines to decorative fountains, etc. shall be tested and inspected for flow. Some flow may occur from water breaking loose from an air lock in an overhead water line. The amount of flow to cause a concern is a judgment call by the Cross-Connection Control Specialist. If the potable water system has been truly shut off at its Point of Connection, then continuous flow from any part of the potable water systems (that is beyond the drainage generated by an air lock breaking free) indicates a cross-connection. In the case of a potable water system in a multi-story building, the testing of all fixtures may be used in combination with a pressure gauge (as mentioned in 1 above), or the pressure gauge may be used instead of the testing of all fixtures. If the potable water system has been truly shut down at its Point of Connection, then an increase in the potable water system pressure measured at the gauge over the period of time specified by the Cross-Connection Control Specialist indicates a cross-connection.

5. All recycled water irrigation control valves and other site features approved to be supplied with recycled water from the onsite irrigation system (such as supply lines for decorative fountains) shall be tested and inspected for flow. No flow from a recycled water irrigation control valve or fixture indicates that it may be connected to the potable water system.

6. If no cross-connections are discovered, then the potable water system shall be re-pressurized. If any cross-connections are found, they must be disconnected, and the site must be retested by an AWWA Cross-Connection Control Specialist per these procedures.

Upon successful completion, the certified AWWA Cross-Connection Control Specialist responsible for completing the above test will indicate the results on a Cross-Connection Certification Form and provide the form to the District and a copy to the Owner.

Appendix C – Recycled Water Code

ORDINANCE NO. 2011-05

AN ORDINANCE OF THE RANCHO MURIETA COMMUNITY SERVICES DISTRICT, ADDING CHAPTER 17 TO THE DISTRICT CODE ESTABLISHING POLICIES AND REGULATION OF THE INSTALLATION, CONNECTION AND USE OF THE DISTRICT RECYCLED WATER SYSTEM

BE IT ORDAINED by the Board of Directors of the Rancho Murieta Community Services District, Rancho Murieta, Sacramento County, California, as follows:

SECTION ONE:
Chapter 17, Recycled Water Code is hereby added to the District Code and reads as stated in Attachment A.

SECTION TWO:
This Ordinance shall be in full force and effect thirty (30) days after its adoption and shall be published and/or posted as required by law.

PASSED AND ADOPTED by the Board of Directors of the Rancho Murieta Community Services District, Sacramento County, California, at a meeting held on January 18, 2012, by the following roll call vote:

AYES: Taylor, Ferraro, Mobley, Pasek
NOES: None
ABSENT: Belton
ABSTAIN: None

Richard L. Taylor for
Roberta Belton, President
Rancho Murieta Community Services District

[seal]

ATTEST:

Suzanne Lindenfeld, District Secretary

RANCHO MURIETA
COMMUNITY SERVICES DISTRICT

DISTRICT CODE

CHAPTER 17

THE RECYCLED WATER CODE

INSTALLATION, CONNECTION AND USE OF THE
DISTRICT RECYCLED WATER SYSTEM

Adopted January 18, 2012
Ordinance 2011-05

Table of Contents

CHAPTER 17

POLICES REGULATING THE INSTALLATION, CONNECTION AND USE OF THE DISTRICT RECYCLED WATER SYSTEM

SECTION 1.00 General Provisions

1.01 Title

This Chapter shall be known as the "Recycled Water Code" and may be cited as such.

1.02 Scope of Service:

The provision of this Chapter shall apply to recycled water supply and service in, upon or affecting the land within the Rancho Murieta Community Services District's service area boundary, and the design, construction, alteration, use, and maintenance of public recycled water mains, reservoirs, recycled water distribution system, pumping equipment and facilities, pressure reducing station connections and services, and all system appurtenances; the issuance of permits and the collection of fees therefore; fees to pay for the costs of checking plans, inspecting construction, and making record plans of the facilities permitted hereunder; providing penalties for violation of any of the provisions hereof, and all other necessary or related matters.

SECTION 2.00 Definitions

For the purpose of this Chapter, the following terms shall have the following meanings unless the context clearly indicates otherwise.

2.01 Applicant

Applicant shall mean the owner or the agent of the owner of the property for which recycled water service is being requested.

2.02 Authorized Contractor

Authorized Contractor shall mean a District approved contractor who has completed appropriate education requirements in order to perform any work associated with the District's or customer's recycled water system.

2.03 Board

Board shall mean the Board of Directors of the Rancho Murieta Community Services District.

2.04 Recycled Water Customer

Recycled Water Customer shall mean the owner or agent of the owner of the property receiving recycled water service.

2.05 Recycled Water Distribution System

Recycled Water Distribution System shall mean the system of the pipelines and other appurtenances by which the District conveys recycled water to its customers.

2.06 District

District shall mean the Rancho Murieta Community Services District.

2.07 Main or Recycled Water Mains

Mains or Recycled Water Mains shall mean the portion of the recycled water distribution system, which is located in streets, highways, public ways or easements, which are used to supply recycled water to the District's customers.

2.08 General Manager

General Manager shall mean the General Manager of the Rancho Murieta Community Services District.

2.09 Metered Service

Metered Service shall mean the provision of recycled water in measured quantities for a charge based on the quantity of recycled water supplied.

2.10 Metered Service Connection

Metered Service Connection shall mean the portion of the recycled water distribution system by which recycled water is conveyed from the recycled water main to the premises, including the tap, meter, meter box, pipe, corporation stop, curb stop or shut-off valve.

2.11 Recycled Water Permits

Recycled Water Permits shall mean the District's written approval or authorization for an action. A recycled water permit may only be issued by the District upon the completion of the appropriate District application form for the action sought, payment of all applicable fees and charges, and compliance with all applicable District ordinances, rules and regulations, as well as local, state and federal law.

2.12 Point of Connection

Point of Connection shall be defined as the location of the recycled water meter located adjacent to the curb, where downstream is the recycled water customer-owned recycled water line and upstream is the district owned infrastructure.

2.13 Premises

Premises shall mean a parcel of real estate, including any improvements thereon, which is determined by the District to be a single unit for purposes of receiving, using and paying for service.

In making this determination, the District shall take into consideration such factors as whether the unit could reasonably be subdivided and whether the unit is being used for a single enterprise, apartment or dwelling.

2.14 Customer Recycled Water Line

Customer Recycled Water Line shall mean the portion of the recycled water distribution system located on the customer's side of the point of connection.

2.15 Residential Recycled Water Service

Residential Recycled Water Service shall mean the provision of recycled water for purposes outlined in the District's "Recycled Water Use Guidelines" as applicable for residential dual plumbed homes, including water used on the premises for sprinkling lawns, gardens and shrubbery; and other similar and customary purposes pertaining to outdoor non-potable uses.

2.16 Recycled Water Service Connection

Recycled Water Service Connection generally means the pipe, valves and other facilities by which recycled water is conveyed from the recycled water main to the premises, and includes the tap, corporation stop, curb stop or shut-off valve, and may include meter and/or service box depending on the type of service.

2.17 Water Conservation or Water Use Efficiency

Water Conservation or Water Use Efficiency shall mean recycled water use that results in a water savings or lower demand due to (a) change that increases efficiency for the same productivity (e.g., update to more efficient models of irrigation equipment or upgrades to perform the same function) or (b) change in use of the irrigation equipment that results in reduced demand (e.g., customer behavioral change such as changing irrigation scheduling).

2.18 Recycled Water Facilities

Recycled Water Facilities shall mean all reservoirs, wells, sources of supply, storage, treatment, transmission, distribution and pumping facilities, recycled water service connections and any other appurtenance.

SECTION 3.00 GENERAL POLICIES

3.01 General Policy of Operating System

The District will operate and maintain the recycled water recycled water distribution system in strict compliance with the requirements, regulations and permits enforced by the Central Valley Regional Water Quality Control Board and the California Department of Public Health.

The District shall operate and maintain the recycled water distribution system in an efficient and economical manner and supply recycled water of acceptable quality as fairly and equitably as possible. The charges to be made for service shall be set at rates necessary to enable the District to recover all costs of supplying recycled water including, but not limited to, the costs for the following:

a. Purchasing, pumping, treating, storing, transmitting and distributing recycled water;

b. Customer Service and Water Conservation;

c. Administration;

d. Overhead;

e. Debt service;

f. Charges and assessments in-lieu of taxes;

g. Replacement Reserves

h. All other necessary and appropriate expenses.

3.02 District's Responsibility for Recycled Water Distribution System

The District shall be responsible for operating, maintaining and replacing all portions of the recycled water distribution system, which are owned by the District. The District shall not be responsible for operating, maintaining or replacing that portion of the recycled water distribution system not owned by the District. The installation of a District measuring device upon private property or within a portion of the recycled water distribution system not owned by the District shall not create an obligation on the part of the District for operation, maintenance or replacement of any works or facilities not owned by the District. District responsibility for maintenance of service extends only to the recycled water meter and the responsibility beyond the recycled water meter is the property owner's.

3.03 Allowable Uses of Recycled Water

The District will allow residential subdivisions, home owners associations, and commercial projects to receive recycled water. Residential subdivisions are required to prepare an Engineer's Report, subject to the approval of the California Department of Health Services. The District prohibits individual homes, not in such subdivisions, to receive recycled water. All residential and non-residential units located in an approved subdivision are required to

use recycled water for all landscaping uses upon District approval of adequacy to serve as subject to the provisions of Section 7.02. If recycled water is used on the property, then potable water may only be used indoors, through hose bibs connected to the house and for swimming pools and spas. Dual plumbed parcels are intended to use recycled water for landscape irrigation.

The District will review and approve of all uses of recycled water in accordance with the District's "Recycled Water Use Guidelines". At the General Manager's discretion, recycled water may be approved but not limited to the following non-potable uses:

a. Landscape irrigation

b. Construction including compaction and dust control

c. Industrial processing

d. Cooling towers

e. Toilet and urinal flushing in non-residential buildings

3.04 Unauthorized Use of District Recycled Water

No person shall supply recycled water to any person or to any premises except as authorized by District permit or as approved in writing by the District. Discharge of recycled water for any purpose, including approved uses, in areas other than those authorized, is prohibited. Unauthorized or wasteful use of recycled water as defined in Section 11.00 is prohibited. Violations are, at minimum, subject to the enforcement provisions in Section 13.00.

3.05 District Ownership and Control

The portion of the recycled water distribution system, including the recycled water main, recycled water service connection, and/or meter, which is located in the public way or in easements, shall be under the exclusive control of the District and owned, managed and operated under the direction of the General Manager.

3.06 Customer Recycled Water Lines

The customer shall be responsible for the proper operation and maintenance of the customer's recycled water line downstream of the point of connection and for any damages to the recycled water distribution system or loss of recycled water resulting from the customer's recycled water line.

3.07 Access to District-Owned Property

The District shall have access, at all reasonable hours, to meter service connections and other property owned by the District, whether located on or off the customer's premises, for the purposes

of inspection, installation, repair, maintenance, operation, turn on, turn off, or removal of the District's property.

3.08 Unsafe Apparatus, Detrimental or Damaging Conditions

If an unsafe or hazardous condition is found to exist on the customer's premises, or if the use of recycled water thereon by apparatus, appliance, equipment or otherwise is found to be detrimental or damaging to the District or its customers, the service may be shut off without notice, provided that the District shall notify the customer immediately of the reasons for the discontinuance and the corrective action to be taken by the customer before service can be restored.

3.09 Fraudulent Use of Service

When the District has discovered that a customer has obtained recycled water service by fraudulent means or has diverted the water service for unauthorized use; the service to that customer may be discontinued in the manner set forth in Section 13.00 herein. The District shall not be required to restore service until the customer has complied with all rules and requirements of the District and the District has been reimbursed for the full amount of the service rendered and the actual or estimated costs to the District incurred by reason of the fraudulent use.

3.10 Use of District Authorized Contractors

All customers shall choose an "Authorized Contractor" from the District's list of contractors who have completed an orientation and education class on recycled water use for any and all work performed on the customer owned side of recycled water system.

3.11 Inspection of Customer-Owned Property

A customer's recycled water line shall be open for inspection at all reasonable times to a representative of the District. However, except in cases of emergency, before a District representative enters a customer's premises for the purpose of inspecting non-District owned facilities, the District shall obtain the occupant's consent or the District shall give 24-hour advance notice, in writing, to the occupant of the District's intention to enter and inspect the customer's private recycled water line.

3.12 Interference with District Employees

Except as provided in Section 3.11 hereof, it shall be unlawful for any person to interfere, seek or cause to interfere with the inspection, installation, removal, maintenance, or other lawful activity by the General Manager or the General Manager's authorized representative, of any part of the recycled water distribution system owned by the District.

3.13 Obstructions Prohibited

No person shall place or cause to be placed on any recycled water line easement any wires, fences, trees, buildings, or other structures, either temporary or permanent, or any refuse, rubbish, debris or other objects which may impede or otherwise interfere with the ready access by the District to any portion of the recycled water distribution system owned by the District unless otherwise authorized by Board action. Any such obstruction, upon the written request of the General Manager, shall immediately be removed by the violator at no expense to the District or shall be removed by the District at violator's expense, and shall not be replaced.

3.14 Continuity of Service

The District shall not be liable for any interruptions, shortage, or insufficiency of recycled water supply or for pressure at the customer's point of connection, or for any loss or damages occasioned thereby.

3.15 Street Work:

a. When an authorized contractor who opens, grades, excavates, fills or does other street construction, deems it necessary to expose, remove, raise, lower, or otherwise affect any portion of the recycled water distribution system owned by the District, the contractor performing such street construction shall give at least seven (7) days advance notice in writing to the District and to the affected Home Owners Association of the contractor's intention to perform such construction and immediate notice upon exposure or contact with such system.

b. At its option, the District may elect to perform the removal, raising, lowering or other construction on the District's recycled water distribution system, which is necessitated by the street construction. Prior to the District performing the construction on its recycled water distribution system, the person requiring the street construction shall pay to the District a reasonable deposit in an amount not to exceed the estimated cost of the District's construction. When the District completes its construction, the District shall refund that portion, if any, of the deposit which exceeds the actual costs of construction and the person requiring the construction shall pay the amount, if any, by which the actual costs of construction exceeds the deposit.

c. The contractor performing the street construction shall be liable for any damage to the District's recycled water distribution system resulting from the street construction or from the contractor's construction on the District's recycled water distribution system.

3.16 Contractors Hired by the District

Portions of this Chapter may be waived by the General Manager for contractors hired by the District to construct any part of the District's recycled water distribution system.

3.17 Delegation of Authority

The General Manager shall have the authority to delegate the performance of any of the General Manager's responsibilities to any District employee or independent contractor.

3.18 Recycled Water Standards

All procedures, design, work, materials, capacities, facilities and other improvements on recycled water facilities or connections, subject to the provisions of this Chapter, shall be in accordance with the following District standards as applicable to District owned facilities or residential and non-residential sites:

a. Recycled Water Use Guidelines

b. Recycled Water System Design and Construction Standards

c. Standard Details

In addition, any work associated with recycled water facilities or connections shall be subject to applicable provisions of the latest revisions of State and Local regulations and generally accepted standards of recycled water works practice insofar as deemed appropriate by the District considering the conditions and where not in conflict with any District standards. Such regulations and standards are included in, but not necessarily limited to, the following references:

California Department of Health Services Titles 17 and 22 of the California Administrative Code

California Safe Drinking Water Act

California State Building Code (Cal Green) Title 24

Uniform Plumbing Code (National)

American Water Works Association

United States Environmental Protection Agency's (USEPA) WaterSense Program

SECTION 4.00 Connection To and Construction of Recycled Water Facilities

4.01 In General

Nothing in this Chapter shall be construed as preventing or limiting the right of the District to require or undertake the preparation of engineering, economic, environmental, or financing evaluation from any person requesting recycled water service from the District, which service necessitates the installation of recycled water facilities and thereafter to require the construction of such facilities as a condition of service, all without cost to the District.

4.02 Requirement of Meters

Following the effective date of this Chapter, every connection made to the District recycled water distribution system or recycled water service connection shall provide for and include a meter. The meter shall be supplied, approved and/or installed by the District prior to the time the owner connects to the District's recycled water distribution system.

4.03 Installation of Recycled Water Service Connections and Meters

a. Whenever practicable, the recycled water service connection from the recycled water main to the customer's property line shall be installed by a District Authorized Contractor at the time the main is constructed.

b. Main line extensions, recycled water service connections and meters shall be installed only after the District's issuance of a permit and after payment by the customer of all District fees and charges.

c. Main line extensions, recycled water service connections and/or meters shall be installed, at the District's option, either by the District or by contractors hired by the District or under the supervision of District employees.

d. When main line extensions, recycled water service connections or meters are not installed by the District, the main line extension, recycled water service connection or meter shall be installed only by bonded contractors licensed to perform such installation.

e. When the District determines that any installation shall be performed by the District or person hired by the District, the applicant shall pay in advance an amount of funds equal to the approximate costs of construction and other necessary expenses. Upon completion of construction, the District shall refund the excess, if any, of any funds paid by the applicant or, if applicable, the applicant shall pay the amount, if any, by which the actual costs exceeded the applicant's deposit.

4.04 Size of Recycled Water Service Connection and Meters

a. The size of the recycled water service connection shall be approved by the District in advance. Except when otherwise specifically approved by the District, the maximum size for a single-family recycled water service connection shall be one inch.

b. The size of the meter serving a premise shall be approved by the District in advance of service. The standard size recycled water meter serving a mobile village lot and townhouse lot shall be a 5/8 inch or 3/4 inch meter, for all other residential lots, it shall be a 3/4 inch or 1 inch meter.

4.05 Installation of Customer Recycled Water Line

The customer shall, at the customer's own expense, install according to District standards and using a District authorized contractor, the customer's recycled water line. The private recycled water line shall remain the sole property of the customer.

4.06 Financial Responsibility for Installation of Recycled Water Facilities

An applicant who installs or causes to be installed, any part of the District's recycled water facilities, shall be financially liable for the costs of installation and all incidents thereof.

4.07 Relocation of Recycled Water Facilities at Customer's Request

Upon a customer's written request, recycled water facilities may be relocated by the District, provided that the relocation, in the opinion of the General Manager, is not detrimental to the District's recycled water distribution system. The cost of the relocation shall be borne by the customer and shall be payable in advance to the District. The cost of the relocation shall include the applicable costs and fees for all construction (if the construction is performed by persons hired by the District), design, installation, inspection, administration, overhead, and any other necessary related expenses.

4.08 Relocation of Recycled Water Service Connection at District's Request

Where a recycled water service connection is relocated for the convenience or protection of the District, the relocation shall be at the expense of the District provided such relocation is not made necessary by the customer.

4.09 Change of Recycled Water Meter at Customer's Request

a. A customer may apply in writing to the District to change the size of an installed meter.

b. If the existing recycled water service connection is adequate to service the proposed change in meter size and the District determines that the change is necessary or advisable, the District shall authorize the change. Before the meter is changed, the customer shall pay all applicable fees and charges to the District.

c. If the existing recycled water service connection is inadequate to serve the proposed meter change, the recycled water service connection shall be changed at the customer's expense. Before the meter and recycled water service connection are changed, the customer shall pay all applicable fees and charges to the District.

4.10 Separate Recycled Water Service Connection

Separate premises, whether owned by the same or different persons, shall not be supplied with recycled water through the same recycled water service connection.

4.11 Division of Presently Serviced Premises

When premises currently serviced by the District's recycled water distribution system are divided into two or more premises, unless otherwise agreed to by the District, the existing meter and recycled water service connection shall be considered to belong to the premise which the meter or recycled water service connection most directly enters and the new premises shall require the installation of additional meter(s) and recycled water service connection(s) and payment of all applicable fees and charges.

4.12 Recycled Water Plans

a. Each application for a recycled water permit, for which installation of recycled water facilities is necessary, shall be accompanied by three (3) sets of plans and specifications for the installation and one electronic version in District approved software format.

b. The plans shall be the exclusive property of the District.

c. The General Manager or Engineer shall determine the adequacy of the proposed recycled water facilities as to size, type and quality of materials, and as to the location of facilities to serve the proposed development, including off-tract pipelines and other appurtenances.

d. The General Manager or Engineer shall certify in writing whether the plans and specifications submitted conform to District Recycled Water System Design and Construction Standards.

4.13 Easements and Rights-of-Way

a. Any applicant who installs, or proposes to install, recycled water facilities shall furnish the District all necessary easements and rights-of-way for such facilities and the subsequent operation and maintenance thereof.

b. If the applicant cannot finish the necessary easements and rights-of-way, the District may, at its sole option, acquire such easements and right-of-way, subsequent to the applicant's payment to the District of all funds necessary to cover the District's cost of such acquisition.

c. Until the necessary easements and rights-of-way have been properly executed and recorded, the District shall not approve any plans for recycled water facilities to be constructed by one person across the property of another person. The District shall not accept for public use any such recycled water facilities and no person shall place such facilities into use.

4.14 Performance Bond

The applicant shall post a surety bond, cash or other security satisfactory to the District to guarantee the faithful performance of any agreement for the applicant's construction of the recycled water facilities. The surety bond, cash or security shall be in the sum of one hundred percent (100%) of the estimated cost of the work, or in such other sum as may be fixed by the District. The surety bond, cash or security shall, in addition to guaranteeing the faithful performance of the work, guarantee the maintenance of the portion of the recycled water facilities constructed by the applicant for a

period of one year following the District's written acceptance of the work.

4.15 Liability

The District and its officers, agents and employees shall not be liable for any injury or death of any person or damage to any property arising during or stemming from, the performance of any work by an applicant. The applicant shall be answerable for, defend, indemnify and hold harmless, the District and its officers, agents and employees, including all costs, expenses, attorney's fees and other fees and interest, incurred in defending the same or in seeking to enforce this provision. The applicant shall be solely liable for any defects in the performance of the applicant's work or for any failure, damage, injury, claim or loss, which may develop therefrom.

4.16 Dedication Requirements

An Offer of Dedication of the recycled water facilities, excluding any private water lines, shall be included in any application for a recycled water permit. The District shall not accept for dedication any portion of the recycled water facilities, which are not constructed in conformity with the requirements of the main line extension agreement, if any, and of this Chapter.

4.17 As-Built Plan

Two (2) sets of drawings and one (1) electronic version delineating as-built recycled water lines and appurtenances shall be filed with the District, prior to and as a condition of, the District's approval and acceptance of construction by an applicant. No certificate of final inspection shall be issued until such prints and drawings are filed.

4.18 Inspection of Construction

a. The District shall have the right to inspect all work on the recycled water distribution system downstream of the point of connection on the customer side of the meter during and subsequent to its construction. When construction is completed, the work must be inspected and approved, in writing, by the District before the newly constructed facilities may be connected to the District's recycled water distribution system. Each site will be inspected to ensure prevention of any cross connection between the water and recycled water systems. No construction shall be covered at any time unless it has been inspected and approved by the District. No facilities shall be connected to the District's system unless the District has performed tests indicating the new construction is satisfactory and the

facilities have been cleaned of any debris accumulated from construction operations.

b. The applicant shall give the District at least forty-eight (48) hours advance notice, Saturdays, Sundays and holidays excluded, of when it wishes the District to perform an inspection of any part of the recycled water system. If work is inspected and deemed inadequate, the District shall so notify the applicant in writing and identify the deficiencies in the project.

4.19 Certificate of Final Inspection and Completion

When the District determines that a work done; under the recycled water permit and a recycled water main line extension agreement, if any, has been constructed according to and meets the requirements of all applicable provisions of this Chapter, the agreement, and other District rules and regulations, and when any fees have been paid, the General Manager, subject to any procedure which may be adopted by the Board, shall authorize the issuance of the Certificate of Final Inspection and Completion.

4.20 Ownership Upon Dedication

When the Certificate of Final Inspection and Completion is issued, the District shall accept the Offer of Dedication and authorize the connection of the new recycled water facilities. Upon connection to the District's recycled water distribution system, the new recycled water facilities, excluding recycled private water lines, shall become the exclusive property of the District.

4.21 Testing of Backflow Devices

Pursuant to County Ordinance, certain categories of District customers are required to install, maintain and test annually backflow devices. Provided District has personnel who are certified to perform the annual testing, upon the customer's request, the District will perform the annual testing on a time-and-materials basis charged to the customer and collectible as any other District fee. Otherwise, the annual backflow testing shall be performed by a certified third party vendor.

SECTION 5.00 Recycled Water Main Line Extensions

5.01 Recycled Water Main Line Extension

Any person requesting recycled water service from the District, which necessitates an extension of the District's recycled water main line, shall apply to the District for a recycled water main line extension agreement on the forms prescribed by the District.

5.02 Formation of an Assessment District

At the District's sole discretion, the District may utilize any statutory or other procedure concerning assessment districts to finance the construction of the recycled water main line extension, metered recycled water service connections and related appurtenances.

5.03 Size of New Recycled Water Main Line

The District may require the installation of a recycled water main line larger than that necessary to adequately serve the applicant's property. When the District requires the installation of a larger recycled water main line, the District shall either:

a. Pay the difference in cost, as determined by the District, between the size necessary to service the applicant's construction and the larger recycled water main line;

b. Perform the installation itself, subsequent to the receipt from the applicant of a sum sufficient to cover the cost of installation, and other necessary expenses, of the recycled water main line required by the applicant;

c. Require the applicant to construct the larger recycled water main line subject to reimbursement as hereinafter provided.

d. A combination of the foregoing.

5.04 Reimbursement for Extension

When an applicant enters into a recycled water main line extension agreement with the District, which requires the installation of a recycled water main line larger than that necessary to adequately serve the applicant's property, the agreement shall provide for a refund to the applicant as follows:

a. Within the limits specified herein, when the recycled water main line extension has been installed at the applicant's sole expense, the applicant shall be eligible for reimbursement of applicant's cost based upon the applicant's and other customer's pro rata use, as determined by the District, of the extension.

b. The District shall levy on all customers connecting into the extension financed by applicant; a fee determined by the District and based on the connecting customer's pro rata use of the extension and the actual cost of the extension.

c. Within ninety (90) days of the District's receipt of any money pursuant to Section 5.04(b), the District shall pay such money to the applicant.

5.05 Pre-Existing Recycled Water Main Line Extension Agreements

Notwithstanding any section of this Chapter, all recycled water main line extension agreements, on or before adoption of this recycled water code, shall be governed by the rules under which the pre-existing recycled water main line extension agreements were made at the time of execution of that particular agreement.

SECTION 6.00 Recycled Water Permits and Fees

6.01 Recycled Water Permit Required

No persons, other than those specifically excluded by this Chapter, shall uncover or cause to be uncovered, construct or cause to be constructed, use or cause to be used, alter or cause to be altered, or connect to or cause to be connected to, any public recycled water main or other portion of the recycled water distribution system or services owned by the District without first obtaining a recycled water permit from the District, paying the applicable fees, and complying with all other applicable provisions of this Chapter.

6.02 Application for Recycled Water Permit

Any person legally entitled to apply for and receive a recycled water permit shall make application for a recycled water permit on forms provided by the District for that purpose. Any applicant shall describe the proposed construction and location, ownership, occupancy, and use of the premises in connection therewith. The General Manager may require, in addition to the information specified, any additional information from the applicant, which will enable the General Manager to determine that the proposed connection complies with the provisions of this Chapter.

6.03 Unauthorized Usage of Recycled Water Permit

a. Upon prior written approval of the District, a person to whom a recycled water permit has been issued may transfer such permit to another person solely for the same use and premise for which the recycled water permit was issued, subject to all terms and conditions under which the recycled water permit was issued. The transferee shall meet all requirements of the District relating to the transfer.

b. Usage of recycled water permit for a premise other than the premises for which the recycled water permit was issued shall be unauthorized usage and shall render the recycled water permit void and invalid.

c. A person engaging in an unauthorized use of the recycled water permit shall apply to the District for an appropriate recycled water permit. If the District issues the recycled water permit, the applicant shall pay the appropriate current fees and charges.

6.04 Persons Excluded From This Section

The provisions of this Section 6.00 may be waived by the General Manager for contractors constructing recycled water facilities or improvements under contract with the District, or under contract awarded by the District under proceedings pursuant to any of the special procedure statutes of the State providing for the construction of recycled water facilities and assessing of the expenses thereof against the lands benefited thereby.

6.05 Plan Checking

No recycled water permit shall be issued until the District has checked and approved the plans in accordance with the applicable provisions of this Chapter.

6.06 Payment of Fees and Charges

No recycled water permit shall be issued until all fees and charges in connection therewith are paid to the District.

6.07 Applicant's Agreement to Comply with Code

The applicant's signature on an application for a recycled water permit or the applicant's acceptance of any recycled water permit shall constitute an agreement by the applicant to comply with all the provisions, terms and requirements of the District's Recycled Water Code, with all other rules and regulations of the District, and with the plans and specifications the applicant has filed, together with such corrections or modifications, if any, as may be permitted or required by the District in writing. This agreement shall be binding upon the applicant and the applicant's successors in interest, and may be altered only by the District in writing upon the applicant's written request.

6.08 Time Limits on Recycled Water Permits

If work under a recycled water permit is not commenced within six (6) months from the date of issuance of such permit or if, after commencing, the work is discontinued for a period of one (1) year, the recycled water permit shall become void and no further work shall be undertaken until a new recycled water permit shall have been secured and a new fee paid therefore at applicable rates then in effect.

SECTION 7.00 Recycled Water Rates and Charges

7.01 Recycled Water Service When Recycled water Service Connection is Adequate

Where an existing and adequate recycled water service connection and/or meter are properly connected to the District's recycled water distribution system, and which is or has been legally servicing the premises or for which a District recycled water permit has been issued, an applicant for recycled water service from the District shall be entitled to such service after the applicant submits an appropriate application to the District, and complies with all other District regulations. However, if the applicant is delinquent in any bills to the District, the applicant shall pay such bills in full, prior to receiving District recycled water service.

7.02 Recycled Water Service When Recycled Water Service Connection Is Inadequate

Prior to recycled water being available, potable water will be supplied in lieu of recycled water via recycled water distribution and service lines. Once the District has sufficient recycled water supply and system capacity to supply recycled water, all parcels connected to the recycled water system shall accept recycled water. The District shall notify in advance their schedule for furnishing the recycled water service subsequent to the applicant's construction and when sufficient recycled water supplies have become available. The District shall furnish the recycled water service, when available, subsequent to the applicant's construction, or payment for the construction of the necessary portions of the distribution system; the applicant's payment of all fees to the District; the applicant's compliance with all District rules and regulations; and the applicant's payment in full of all delinquent charges, if any, owed to the District. The applicant must also be in compliance with all District rules and regulations for recycled water use by the time recycled water service is deemed adequate and service is initiated.

7.03 Rates and Fees

The District will determine all recycled water rates, fees and charges concerning recycled water service. These may be changed at the discretion of the District and may be subject to the same conservation pricing levels as potable water to encourage efficient water use. The rates, fees and charges shall be determined by Board Resolution.

SECTION 8.00 Special Types of Recycled Water Service

8.01 Recycled Water Service Outside District

a. The District may provide or allow recycled water service to persons outside its boundaries when the

Board finds that such service shall not adversely affect the recycled water service within the District and that a surplus supply of recycled water and recycled water facility capacity exists.

b. In the event that, because of increased usage or other causes, service outside the District becomes adverse to the District's interest or the interest of District customers located within the District or surplus recycled water and/or pipeline capacity is no longer available for such outside use, the District may discontinue or disconnect the service outside the District 120 days after the District gives written notice to the person or premises receiving the recycled water that such outside service is to be terminated.

c. Except as set forth in this Section, the rules and regulations of the District shall apply to all customers outside the District.

d. The rates, fees and charges for recycled water service outside of District boundaries are to be determined by future Board Resolution.

e. Prior to receiving recycled water service, a customer outside the District shall deposit an amount equal to three (3) months of the District's applicable rates for recycled water service.

f. The supply of recycled water to persons outside the District shall not create a vested right with the person outside the District to continue to receive recycled water service from the District for any credit or refund for improvements made to receive such recycled water service.

8.02 Temporary Recycled Water Service

Before temporary service is supplied through a recycled water service connection, the applicant shall obtain a recycled water permit or other written approval from the District.

a. The applicant for temporary recycled water service shall pay the charges to be set forth by a future Board resolution.

b. Temporary service may be interrupted for testing or other conditions deemed necessary by the District.

SECTION 9.00 Collection of Recycled Water Rates and Enforcement Provisions

The collection and enforcement provisions related to recycled water rates, fees and charges are to be determined by future Board Resolution.

SECTION 10.00 Recycled Water Use Efficiency

10.01 Definitions

As used in Section 10.00, the following terms shall have the specified meanings.

a. Pressure Reducing Valve

Pressure reducing valve shall mean a valve device, which regulates recycled water pressure to structures and is designated to permit the pressure for use within that structure.

b. Public Use

Pubic use shall mean all commercial or industrial establishments, including restaurants, bars, public buildings, comfort stations, schools, gymnasiums, or other places to which the public has access or which are frequented by the public with or without special permission or invitation, and installation where both free and pay fixtures are installed so that the fixtures' use is similarly unrestricted.

c. Self-Closing Valve

Self-closing valve shall mean a valve device designed to close by spring or by recycled water pressure when left unattended.

d. Weather Based Irrigation Controller

An irrigation controller that has automated watering schedules using climate or soil moisture sensing capability in accordance with requirements of the California Building Standards CalGreen Code.

e. Landscape Area

Landscape area means all the planting areas, turf areas, and water features in a landscape design plan. The landscape area does not include footprints of buildings or structures, sidewalks, driveways, parking lots, decks, patios, gravel or stone walks, other pervious or non-pervious hardscapes, and other non-irrigated areas designated for non-development (e.g., open spaces and existing native vegetation).

f. Dedicated Irrigation Meter
A meter used to measure recycled water only used for outdoor irrigation purposes and which can serve as the basis for applied water to the landscape area used in comparison to a water budget for the same area.

g. Runoff
Water which is not absorbed by the soil or landscape to which it is applied and flows from the landscape area. For example, runoff may result from water that is applied at too great a rate (application rate exceeds infiltration rate) or when there is a slope runoff is strictly prohibited.

10.02 Recycled Water Waste

No person shall cause or permit any recycled water furnished to the person's premises by the District to run to waste as defined in Section 11.00. The District may, pursuant to the requirements of Section 13.00, disconnect the District's service to any premises and/or customer for the customer's failure to comply with this Section. The District may inspect or install test meters in un-metered service to determine compliance.

10.03 Outdoor Conservation Devices Required on New or Remodeled Landscapes

All landscaped area that requires a Sacramento County Building or Home Owner's Association (HOA) review and/or permit that are connected to the District recycled water distribution system, after the effective date of this Chapter, shall be constructed pursuant to the California State Building Codes otherwise known as the "CalGreen Code" and any replaced or remodeled irrigation equipment shall be District-approved water efficient equipment, and be USEPA WaterSense labeled products. Pressure reducing valves shall be installed on landscape or dedicated irrigation connections where District approved improvement plans call for such installation in accordance with District Standards.

10.04 Conservation Devices Required on New or Remodel Public Landscaped Areas or Facilities

All new public users or users remodeling landscaped area or any facilities that may benefit from recycled water use that require a Sacramento County building permit and are connected to the District recycled water distribution system after the effective date of this Chapter, shall be equipped with District-approved water efficient equipment pursuant to the California State Building Codes otherwise known as the "CalGreen Code" and be USEPA WaterSense labeled products. Pressure reducing valves shall be installed on new

public use facilities where District approved improvement plans call for such installation in accordance with District Standards.

SECTION 11.00 Recycled Water Waste

11.01 Illegal Discharge of Recycled Water

Discharge of recycled water for any purpose, including approved uses, in areas other than those authorized, is prohibited.

11.02 Determination of Wasteful Uses of Recycled Water

It shall be unlawful for any person to waste recycled water as defined in this Section 11.00. Violations will be based on observation(s) and documentation of waste by District staff, including up not limited to evidence of a continually running recycled water meter readings and/or physical inspection, and/or visual observation of the occurrence. Violations are subject to the enforcement and penalty provisions in Section 13.00.

11.03 Repair of Leaky Outdoor Fixtures

It shall be unlawful for any person to maintain or allow on the person's premises leaky or faulty recycled water using equipment or devices to which District recycled water is supplied, so that District recycled water is wasted thereby. Failure to repair or disconnect such leaky or faulty devices within seven (7) days after being notified in writing to do so by the District, shall be sufficient cause for the District to disconnect its water service for such premises, pursuant to the requirements of Section 13.00, until the repairs have been made. At the discretion of the District, the customer may be informed in writing that the leak must be repaired more quickly, in which case the customer shall repair the leak in the time specified by the General Manager.

SECTION 12.00 Drought Response

The General Manager may restrict or interrupt service supplied using District recycled water in response to a District declared drought based on the provisions outlined in the District Board adopted Water Shortage Contingency Plan. The Board of Directors shall make the final drought declaration and service interruption, if any, upon public review of the General Manager's drought response.

SECTION 13.00 Enforcement, Disconnection and Restoration of Service

13.01 Enforcement

The General Manager shall enforce the provisions of this Chapter and, for such purposes, shall have the powers of a peace officer, if deputized or if authorized by law. Such power shall not be regarded as limitations on or otherwise affecting the powers and duties of the County Health Officer.

13.02 Violation of Chapter

In the event of a violation of any laws, ordinances, rules or regulations of the State of California, the County of Sacramento, or the District, respecting the subject matter contained herein, the District shall notify in writing the person or persons causing, allowing, or committing such violation and the General Manager shall have the authority to issue penalties and/or disconnect the property served from the District recycled water distribution system, in the manner set forth herein.

13.03 Penalties

The goal of the provisions of this chapter are to achieve voluntary compliance from the customer, and the District will take reasonable measures to assure the customer has information available to promptly and efficiently address recycled water use issues. Where voluntary compliance cannot be achieved through initial contacts and warnings, then appropriate administrative penalties and further action are required. Except as otherwise provided herein, violations of any provision of this chapter shall be addressed as follows:

Violation	Penalty
First	Personal or written notification of the violation
Second	Written notification and issuance of a notice to correct
Third	Issuance of an administrative penalty of $100
Fourth	Issuance of a penalty of $200
Fifth	Issuance of a penalty of $500
Final	Disconnected water service and/or other penalties as provided in the notice of violation and as determined by the General Manager.

13.04 Penalties in Times of Water Shortage

In addition to any other penalties provided by this chapter, if a customer of the District recycled water system violates any of the recycled water use restrictions as set forth in the Water Shortage Contingency Plan, and such conditions are not corrected within five (5) days after the customer is given written notice, the District is authorized to bill the customer, as a penalty, at twice the metered rate during the time that the violation continues and the penalties listed above in Section 13.03 may be increased by up to 100%.

13.05 Appeal

There shall be no appeal of the recycled water use restrictions identified in this Chapter or the Water Shortage Contingency Plan. Any appeal of other matters or decisions of District staff shall be appealable in writing to the General Manager within ten (10) days and if still unresolved a second appeal may be sent in writing to the District Board of Directors within ten (10) days of the General Manager's decision.

13.06 Variances

In unusual circumstances, application of this chapter may cause unnecessary hardships or results inconsistent with this chapter's purposes and intent. Therefore, variances to some of the requirements of this chapter may be appropriate as described below:

a. Authority to Grant Variances
   The General Manager may grant variances to recycled water use restrictions provisions as specified in the Water Shortage Contingency Plan.

b. Other Variances
   Customers who seek a variance from this chapter for any reason shall submit to the District a written request for variance, setting forth, in detail, the extraordinary circumstances that support the application. The General Manager may approve the application in his or her discretion; provided, that the variance allows the applicant to use only the minimum amount of recycled water in addition to that allowed by this chapter that the General Manager reasonably believes is necessary to satisfy the circumstances that support the application. Any such variance shall terminate one (1) year after its issuance, subject to an application for its renewal.

13.07 Disconnection

As an alternative method of enforcing the provisions of this or any other Chapter, rule or regulation of the District, the General Manager shall have the authority to disconnect the customer from the District's recycled water distribution system, without liability to the District, in the following manner:

a. At least ten (10) days before the proposed disconnection of any recycled water service, a customer shall be provided with written notice of the procedure for the availability of an opportunity to discuss the reasons for the proposed disconnection of recycled water service.

b. After notice has been given as specified in subparagraph (a) and prior to disconnection of recycled

water service, a customer shall have the opportunity to discuss the reason for the disconnection with an employee designated by the District who shall be empowered to review disputed bills, rectify errors and settle controversies pertaining to disconnection of recycled water service.

c. No recycled water service shall be disconnected by reason of delinquency in payment of bills on any Saturday, Sunday, legal holiday, or any time during which the District's office is not open to the public.

13.08 Settling Disputes

The General Manager is hereby authorized to review disputes pertaining to any matters for which recycled water service may be disconnected and to adjust errors and settle disputes.

13.09 Public Nuisance and Abatement

During the period of disconnection, the habitation of such disconnected premises by human beings shall constitute a public nuisance, which shall authorize the District to bring proceedings for the abatement of the occupancy of the premises during the period of the disconnection. In such event, and as a condition of restoring service, the District shall be paid reasonable attorney's fees and costs arising from such action, plus any other necessary charges for or incurred in the restoration of service.

13.10 Restoration of Recycled Water Service

When recycled water service under this Chapter has been disconnected for any reason, the recycled water service shall not be restored until all unpaid sums are paid in full, plus all District expenses for disconnecting and restoring the recycled water service, plus a seventy-five dollar ($75.00) restoration fee.

13.11 Recovery of Costs

In the event that the District is required to bring legal action to enforce any provision of this Chapter, including but not limited to the collection of delinquent fees and charges, the District shall be entitled to recover its reasonable attorney's fees, interest and other costs of suit.

13.12 Means of Enforcement Only

The District hereby declares that the foregoing procedures are established as a means of enforcement of the terms and conditions of its ordinances, rules, and regulations and not as a penalty.

13.13 Cumulative Remedies

All remedies set forth herein for the collection and enforcement of rates, charges, and penalties are cumulative and may be pursued alternatively, concurrently or consecutively.

13.14 Misdemeanor

A violation of any provision of this Chapter is a misdemeanor, punishable by a fine not to exceed five hundred dollars ($500.00) or by imprisonment in the County Jail not to exceed six (6) months, or both. Each and every day, or part of day that a violation of the Chapter continues, shall be deemed a separate offense hereunder and shall be punishable as such.

13.15 Other Emergencies

Nothing in this chapter limits, or may be construed as limiting the availability of recycled water for meeting the demands of any emergency or routine inspection and maintenance of the recycled water distribution system or recycled water private lines.

SECTION 14.00 Severability

The Board hereby declares that it would have passed this Ordinance and thereby adopted this Chapter or any section, subsection, sentence, clause or phrase thereof, irrespective of the fact that any one or more sections, subsections, sentences, clauses or phrases be declared to be unconstitutional.

If any section, subsection, sentence, clause or phrase of the Ordinance of the application thereof to any person or circumstances is for any reason held unconstitutional or invalid, such decision shall not affect the validity of the remaining portions of this Chapter or the application of such provisions to other persons or circumstances.

Appendix D – Water Balances

Rancho Murieta Community Services District
Water Balance - Current Conditions (2011 Historic Influent Flow)

100-YR Modifiers		WWRP Influent Flows & Site Info				Demand Info							
100-yr Return Ratio	1.84 unitless	Influent Flow- avg.	182.8 mg/yr	Pan Evaporation Coefficient	0.75 unitless	Reservoir Watershed Area	40 acres	Maximum Storage of Reservoirs (1&2)	859.9 ac-ft	RMCC Lake Water Surface Area	11.2 acres	RMCC Demand	550.0 AFY
100-yr modifier - Pan Evaporation	0.8 unitless	ADWF-(June-Sep)	0.45 mgd	WWRP Site Area	7.5 acres	Run-off Coefficient for Reservoirs	0.9 unitless	ge Volume of Reservoirs w/ 2ft FB (1&2)	728.2 ac-ft	RMCC Contributing Watershed	15.0 acres	Van Vleck	215 AFY
Normalized I&I	61.74 mg/MGD/yr	Beginning Water Volume in Res.	45 ac-ft	Run-off Coefficient for WWRP	0.9 unitless	Proportion in Reservoir #1	0.81 %	Water Balance Max Volume	584.9 ac-ft	Run-off Coefficient	0.2 unitless	Residential Irrigation	AFY
100-yr I/I Volume	31.4 mg			WWRP Pond Area Total	10.7 acres	Proportion in Reservoir #2	0.19 %						
Average-yr I/I Volume	18.7 mg												

100-yr Level of Annual Precipitation

		October	November	December	January	February	March	April	May	June	July	August	September	Total
Climate Inputs	**Units**													
Precipitation (Average)	in	1.32	3.47	3.39	4.46	4.34	4.30	1.84	0.52	0.31	0.11	0.10	0.45	24.6
Precipitation (100-YR)	in	2.43	6.38	6.24	8.21	7.99	7.91	3.39	0.96	0.57	0.20	0.18	0.83	45.3
Pan Evaporation	in	4.89	2.06	1.25	0.92	1.90	3.47	5.21	8.07	9.91	11.12	9.93	7.45	66.2
Effective Lake Evaporation	in	3.67	1.55	0.94	0.69	1.43	2.60	3.91	6.05	7.43	8.34	7.45	5.59	49.6
Lake Evap - 100- yr Effective	in	3.67	1.55	0.75	0.55	1.14	2.08	3.13	6.05	7.43	8.34	7.45	5.59	47.7
Percolation	in	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
RMCSD WWRP														
WW Influent - Monthly-Daily Flow	%	8%	8%	10%	9%	8%	10%	9%	8%	8%	8%	8%	7%	100%
# Days in Month	days	31	30	31	31	28	31	30	31	30	31	31	30	365
Wastewater Influent	MG	14.5	14.3	17.6	16.2	14.3	18.1	16.2	15.3	14.1	14.3	14.3	13.6	182.84
Wastewater Influent	ac-ft	44.6	44.0	54.1	49.7	43.8	55.6	49.7	46.9	43.3	44.0	43.7	41.8	561.12
100-YR I/I Estimate	ac-ft	7.7	7.6	9.3	8.5	7.5	9.5	8.5	8.0	7.4	7.5	7.5	7.2	96.36
Average YR I/I Estimate	ac-ft													
Site Run-off	ac-ft	1.9	5.1	5.0	6.6	6.4	6.3	2.7	0.8	0.5	0.2	0.1	0.7	36.34
Pond Precipitation (direct)	ac-ft	2.2	5.7	5.6	7.3	7.1	7.1	3.0	0.9	0.5	0.2	0.2	0.7	40.38
Pond Evaporation	ac-ft	-3.3	-1.4	-0.8	-0.6	-1.3	-2.3	-3.5	-5.4	-6.6	-7.4	-6.6	-5.0	-44.26
RMCSD Secondary Storage Reservoirs														
Reservoir # 1 Vol	ac-ft	36.5	56.7	124.2	202.4	286.6	361.7	442.8	473.7	443.4	334.8	178.1	60.7	3001.67
Reservoir # 1 Depth	ft	5.2	6.4	10.5	14.8	19.0	22.4	25.7	26.9	25.8	21.2	13.5	6.7	198.08
Reservoir # 1 Surface Area	acre	18.5	18.9	20.3	21.7	23.2	24.3	25.4	25.8	25.5	23.9	21.3	19.0	267.74
Reservoir #2 Vol	ac-ft	8.6	13.3	29.1	47.5	67.2	84.8	103.9	111.1	104.0	78.5	41.8	14.2	704.09
Reservoir # 2 Depth	ft	3.6	4.9	9.1	13.6	18.0	21.4	24.8	26.0	24.8	20.2	12.3	5.2	184.01
Reservoir # 2 Surface Area	acre	3.3	3.5	4.0	4.7	5.3	5.8	6.2	6.4	6.2	5.6	4.5	3.5	58.82
Total Water Surface Area	acre	21.7	22.3	24.3	26.4	28.4	30.1	31.7	32.2	31.7	29.5	25.8	22.5	326.56
Contributing Water Shed Area	acre	18.3	17.7	15.7	13.6	11.6	9.9	8.3	7.8	8.3	10.5	14.2	17.5	153.44
Reservoir Run-off	ac-ft	3.3	8.5	7.3	8.4	6.9	5.9	2.1	0.6	0.4	0.2	0.2	1.1	44.80
Reservoir Precip (direct)	ac-ft	4.4	11.9	12.6	18.0	18.9	19.8	8.9	2.6	1.5	0.5	0.4	1.5	101.16
Reservoir Evaporation	ac-ft	-6.6	-2.9	-1.9	-1.5	-3.4	-6.5	-10.3	-16.3	-19.6	-20.5	-16.0	-10.5	-115.97
RMCC Irrigation Lakes														
Lake Water Shed Run-off	ac-ft	0.2	0.4	0.4	0.5	0.5	0.5	0.2	0.1	0.0	0.0	0.0	0.1	2.81
Lake Precipitation (direct)	ac-ft	2.3	6.0	5.8	7.7	7.5	7.4	3.2	0.9	0.5	0.2	0.2	0.8	42.41
Irrig. Lake Evaporation	ac-ft	-3.4	-1.4	-0.9	-0.6	-1.3	-2.4	-3.7	-5.7	-7.0	-7.8	-7.0	-5.2	-46.49
Supplemental Water														
Supplemental Water	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
Disposal														
RMCC Golf Course Demand	ac-ft	-20.3	0.0	0.0	0.0	0.0	-0.8	-16.4	-50.8	-111.4	-151.3	-120.5	-78.5	-550
Van Vleck Ranch Demand	ac-ft	-7.9	0.0	0.0	0.0	0.0	0.0	-6.4	-19.9	-43.6	-59.1	-47.1	-30.7	-215
Effluent Storage														
Beginning Water Volume in Res.	ac-ft	45	70.0	153.4	249.9	353.9	446.5	546.7	584.9	547.4	413.3	219.9	75.0	3705.76
Change in Water Volume	ac-ft	25.0	83.4	96.5	104.0	92.7	100.1	38.2	-37.4	-134.1	-193.5	-144.9	-76.0	-46.04
Final Water Volume in Reservoirs	ac-ft	70.0	153.4	249.9	353.9	446.5	546.7	584.9	547.4	413.3	219.9	75.0	-1.0	3659.72

Average-yr Level of Annual Precipitation

		October	November	December	January	February	March	April	May	June	July	August	September	Total
Climate Inputs	**Units**													
Precipitation (Average)	in	1.32	3.47	3.39	4.46	4.34	4.30	1.84	0.52	0.31	0.11	0.10	0.45	24.6
Precipitation (100-YR)	in	2.43	6.38	6.24	8.21	7.99	7.91	3.39	0.96	0.57	0.20	0.18	0.83	45.3
Pan Evaporation	in	4.89	2.06	1.25	0.92	1.90	3.47	5.21	8.07	9.91	11.12	9.93	7.45	66.2
Effective Lake Evaporation	in	3.67	1.55	0.94	0.69	1.43	2.60	3.91	6.05	7.43	8.34	7.45	5.59	49.6
Lake Evap - 100- yr Effective	in	3.67	1.55	0.94	0.69	1.43	2.60	3.91	6.05	7.43	8.34	7.45	5.59	49.6
Percolation	in	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
RMCSD WWRP														
WW Influent - Monthly-Daily Flow	%	8%	8%	10%	9%	8%	10%	9%	8%	8%	8%	8%	7%	100%
# Days in Month	days	31	31	31	31	31	31	31	31	31	31	31	31	372
Wastewater Influent	MG	14.5	14.3	17.6	16.2	14.3	18.1	16.2	15.3	14.1	14.3	14.3	13.6	182.84
Wastewater Influent	ac-ft	44.6	44.0	54.1	49.7	43.8	55.6	49.7	46.9	43.3	44.0	43.7	41.8	561.12
100-YR I/I Estimate	ac-ft													
Average YR I/I Estimate	ac-ft	4.6	4.5	5.5	5.1	4.5	5.7	5.1	4.8	4.4	4.5	4.5	4.3	57.50
Site Run-off	ac-ft	1.1	2.8	2.7	3.6	3.5	3.5	1.5	0.4	0.2	0.1	0.1	0.4	19.75
Pond Precipitation (direct)	ac-ft	1.2	3.1	3.0	4.0	3.9	3.8	1.6	0.5	0.3	0.1	0.1	0.4	21.94
Pond Evaporation	ac-ft	-3.3	-1.4	-0.8	-0.6	-1.3	-2.3	-3.5	-5.4	-6.6	-7.4	-6.6	-5.0	-44.26
RMCSD Secondary Storage Reservoirs														
Reservoir # 1 Vol	ac-ft	-0.8	13.2	72.0	141.0	214.2	278.9	349.3	374.5	341.4	230.7	72.7	-45.8	2041.28
Reservoir # 1 Depth	ft	2.8	3.7	7.4	11.4	15.4	18.6	21.9	23.0	21.5	16.2	7.4	-0.2	149.16
Reservoir # 1 Surface Area	acre	17.7	18.0	19.2	20.6	21.9	23.0	24.1	24.5	24.0	22.2	19.2	16.6	251.12
Reservoir #2 Vol	ac-ft	-0.2	3.1	16.9	33.1	50.2	65.4	81.9	87.8	80.1	54.1	17.1	-10.7	478.82
Reservoir # 2 Depth	ft	1.1	2.1	5.9	10.1	14.2	17.6	20.9	22.0	20.5	15.1	6.0	-2.0	133.65
Reservoir # 2 Surface Area	acre	2.9	3.1	3.6	4.2	4.7	5.2	5.7	5.8	5.6	4.9	3.6	2.5	51.79
Total Water Surface Area	acre	20.6	21.0	22.8	24.8	26.7	28.3	29.8	30.3	29.6	27.1	22.8	19.1	302.91
Contributing Water Shed Area	acre	19.4	19.0	17.2	15.2	13.3	11.7	10.2	9.7	10.4	12.9	17.2	20.9	177.09
Reservoir Run-off	ac-ft	3.5	9.1	8.0	9.4	8.0	7.0	2.6	0.7	0.4	0.2	0.2	1.3	50.46
Reservoir Precip (direct)	ac-ft	2.3	11.2	11.8	16.9	17.8	18.6	8.4	2.4	1.4	0.5	0.3	1.3	92.97
Reservoir Evaporation	ac-ft	-6.3	-2.7	-1.8	-1.4	-3.2	-6.1	-9.7	-15.3	-18.4	-18.8	-14.2	-8.9	-106.77
RMCC Irrigation Lakes														
Lake Water Shed Run-off	ac-ft	0.1	0.2	0.2	0.3	0.3	0.3	0.1	0.0	0.0	0.0	0.0	0.0	1.53
Lake Precipitation (direct)	ac-ft	1.2	3.3	3.2	4.2	4.1	4.0	1.7	0.5	0.3	0.1	0.1	0.4	23.05
Irrig. Lake Evaporation	ac-ft	-3.4	-1.4	-0.9	-0.6	-1.3	-2.4	-3.7	-5.7	-7.0	-7.8	-7.0	-5.2	-46.49
Supplemental Water														
Supplemental Water	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
Disposal														
RMCC Golf Course Demand	ac-ft	-20.3	0.0	0.0	0.0	0.0	-0.8	-16.4	-50.8	-111.4	-151.3	-120.5	-78.5	-550.00
Van Vleck Ranch Demand	ac-ft	-7.9	0.0	0.0	0.0	0.0	0.0	-6.4	-19.9	-43.6	-59.1	-47.1	-30.7	-215
Effluent Storage														
Beginning Water Volume in Res.	ac-ft	-1.0	16.3	88.9	174.0	264.4	344.3	431.2	462.4	421.4	284.9	89.8	-56.6	2520.10
Change in Water Volume	ac-ft	17.4	72.6	85.1	90.4	79.9	86.8	31.2	-40.9	-136.6	-195.1	-146.4	-78.4	-133.89
Final Water Volume in Reservoirs	ac-ft	16.3	88.9	174.0	264.4	344.3	431.2	462.4	421.4	284.9	89.8	-56.6	-134.9	2386.20

Drops to minimum storage depth

Rancho Murieta Community Services District
Water Balance - ADWF at Capacity of Existing Storage Reservoirs

100-YR Modifiers		WWRP Influent Flows & Site Info		Pan Evaporation Coefficient	0.75 unitless	Reservoir Watershed Area	40 acres	Maximum Storage of Reservoirs (1&2)	859.9 ac-ft	RMCC Lake Water Surface Area	11.2 acres	Demand Info	
100-yr Return Ratio	1.84 unitless	Influent Flow- avg.	257.50 mg/yr	WWRP Site Area	7.5 acres	Run-off Coefficient for Reservoirs	0.9 unitless	ge Volume of Reservoirs w/ 2ft FB (1&2)	728.2 ac-ft	RMCC Contributing Watershed	15.0 acres	RMCC Demand	550 AFY 550 AFY
100-yr modifier - Pan Evaporation	0.8 unitless	ADWF (June-Sep)	0.65 mgd										
Normalized I&I	61.74 mg/MGD/yr	Beginning Water Volume in Res.	45 ac-ft	Run-off Coefficient for WWRP	0.9 unitless	Proportion in Reservoir #1	0.81 %	Water Balance Max Volume	726.6 ac-ft	Run-off Coefficient	0.2 unitless	Van Vleck Ranch	0 AFY 215 AFY
100-yr I/I Volume	31.4 mg			WWRP Pond Area Total	10.7 acres	Proportion in Reservoir #2	0.19 %					Residential Irrigation	165 AFY 165 AFY
Average-yr I/I Volume	18.7 mg												

100-yr Level of Annual Precipitation

		October	November	December	January	February	March	April	May	June	July	August	September	Total
Climate Inputs	**Units**													
Precipitation (Average)	in	1.32	3.47	3.39	4.46	4.34	4.30	1.84	0.52	0.31	0.11	0.10	0.45	24.61
Precipitation (100-YR)	in	2.43	6.38	6.24	8.21	7.99	7.91	3.39	0.96	0.57	0.20	0.18	0.83	45.28
Pan Evaporation	in	4.89	2.06	1.25	0.92	1.90	3.47	5.21	8.07	9.91	11.12	9.93	7.45	66.18
Effective Lake Evaporation	in	3.67	1.55	0.94	0.69	1.43	2.60	3.91	6.05	7.43	8.34	7.45	5.59	49.64
Lake Evap - 100- yr Effective	in	3.67	1.55	0.75	0.55	1.14	2.08	3.13	6.05	7.43	8.34	7.45	5.59	47.72
Percolation	in	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RMCSD WWRP														
WW Influent - Monthly-Daily Flow	%	8%	8%	10%	9%	8%	10%	9%	8%	8%	8%	8%	7%	100%
# Days in Month	days	31	30	31	31	28	31	30	31	30	31	31	30	365
Wastewater Influent	MG	20.5	20.2	24.8	22.8	20.1	25.5	22.8	21.5	19.9	20.2	20.1	19.2	257.50
Wastewater Influent	ac-ft	62.9	61.9	76.1	70.0	61.6	78.3	70.0	66.0	60.9	61.9	61.6	58.9	790.25
100-YR I/I Estimate	ac-ft	7.7	7.6	9.3	8.5	7.5	9.5	8.5	8.0	7.4	7.5	7.5	7.2	96.36
Average-YR I/I Estimate	ac-ft													
Site Run-off	ac-ft	1.9	5.1	5.0	6.6	6.4	6.3	2.7	0.8	0.5	0.2	0.1	0.7	36.34
Pond Precipitation (direct)	ac-ft	2.2	5.7	5.6	7.3	7.1	7.1	3.0	0.9	0.5	0.2	0.2	0.7	40.38
Pond Evaporation	ac-ft	-3.3	-1.4	-0.8	-0.6	-1.3	-2.3	-3.5	-5.4	-6.6	-7.4	-6.6	-5.0	-44.26
RMCSD Secondary Storage Reservoirs														
Reservoir # 1 Vol	ac-ft	36.5	73.0	155.0	251.0	351.7	441.2	540.3	588.5	576.7	489.5	356.8	260.6	4120.80
Reservoir # 1 Depth	ft	5.2	7.4	12.2	17.3	22.0	25.7	29.2	30.7	30.4	27.5	22.2	17.7	247.45
Reservoir # 1 Surface Area	acre	18.5	19.2	20.8	22.6	24.2	25.4	26.6	27.1	27.0	26.0	24.3	22.7	284.51
Reservoir #2 Vol	ac-ft	8.6	17.1	36.4	58.9	82.5	103.5	126.7	138.0	135.3	114.8	83.7	61.1	966.61
Reservoir # 2 Depth	ft	3.6	6.0	10.9	16.2	21.0	24.7	28.3	29.7	29.4	26.5	21.2	16.7	234.28
Reservoir # 2 Surface Area	acre	3.3	3.6	4.3	5.0	5.7	6.2	6.7	6.9	6.9	6.5	5.7	5.1	65.84
Total Water Surface Area	acre	21.7	22.8	25.1	27.6	29.9	31.6	33.3	34.0	33.9	32.5	30.0	27.8	350.35
Contributing Water Shed Area	acre	18.3	17.2	14.9	12.4	10.1	8.4	6.7	6.0	6.1	7.5	10.0	12.2	129.65
Reservoir Run-off	ac-ft	3.3	8.2	7.0	7.6	6.1	5.0	1.7	0.4	0.3	0.1	0.1	0.8	40.56
Reservoir Precip (direct)	ac-ft	4.4	12.1	13.1	18.9	19.9	20.9	9.4	2.7	1.6	0.5	0.5	1.9	105.87
Reservoir Evaporation	ac-ft	-6.6	-2.9	-2.0	-1.6	-3.5	-6.9	-10.9	-17.2	-21.0	-22.6	-18.6	-13.0	-126.70
RMCC Irrigation Lakes														
Lake Water Shed Run-off	ac-ft	0.2	0.4	0.4	0.5	0.5	0.5	0.2	0.1	0.0	0.0	0.0	0.1	2.81
Lake Precipitation (direct)	ac-ft	2.3	6.0	5.8	7.7	7.5	7.4	3.2	0.9	0.5	0.2	0.2	0.8	42.41
Irrig. Lake Evaporation	ac-ft	-3.4	-1.4	-0.9	-0.6	-1.3	-2.4	-3.7	-5.7	-7.0	-7.8	-7.0	-5.2	-46.49
Supplemental Water														
Supplemental Water	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
Disposal														
RMCC Golf Course Demand	ac-ft	-20.3	0.0	0.0	0.0	0.0	-0.8	-16.4	-50.8	-111.4	-151.3	-120.5	-78.5	-550.00
Residential Irrigation	ac-ft	-6.1	0.0	0.0	0.0	0.0	-0.2	-4.9	-15.3	-33.4	-45.4	-36.2	-23.6	-165.00
Van Vleck Ranch Demand	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
Effluent Storage														
Beginning Water Volume in Res.	ac-ft	45	90.1	191.4	309.9	434.2	544.7	667.0	726.6	712.0	604.3	440.5	321.8	5087.41
Change in Water Volume	ac-ft	45.1	101.3	118.6	124.3	110.5	122.4	59.5	-14.6	-107.7	-163.8	-118.7	-54.2	222.54
Final Water Volume in Reservoirs	ac-ft	90.1	191.4	309.9	434.2	544.7	667.0	726.6	712.0	604.3	440.5	321.8	267.5	5309.95

Average-yr Level of Annual Precipitation

		October	November	December	January	February	March	April	May	June	July	August	September	Total
Climate Inputs	**Units**													
Precipitation (Average)	in	1.32	3.47	3.39	4.46	4.34	4.30	1.84	0.52	0.31	0.11	0.10	0.45	24.61
Precipitation (100-YR)	in	2.43	6.38	6.24	8.21	7.99	7.91	3.39	0.96	0.57	0.20	0.18	0.83	45.28
Pan Evaporation	in	4.89	2.06	1.25	0.92	1.90	3.47	5.21	8.07	9.91	11.12	9.93	7.45	66.18
Effective Lake Evaporation	in	3.67	1.55	0.94	0.69	1.43	2.60	3.91	6.05	7.43	8.34	7.45	5.59	49.64
Lake Evap - 100- yr Effective	in	3.67	1.55	0.75	0.55	1.14	2.08	3.13	6.05	7.43	8.34	7.45	5.59	47.72
Percolation	in	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RMCSD WWRP														
WW Influent - Monthly-Daily Flow	%	8%	8%	10%	9%	8%	10%	9%	8%	8%	8%	8%	7%	100%
# Days in Month	days	31	30	31	31	28	31	30	31	30	31	31	30	365
Wastewater Influent	MG	20.5	20.2	24.8	22.8	20.1	25.5	22.8	21.5	19.9	20.2	20.1	19.2	257.50
Wastewater Influent	ac-ft	62.9	61.9	76.1	70.0	61.6	78.3	70.0	66.0	60.9	61.9	61.6	58.9	790.25
100-YR I/I Estimate	ac-ft													
Average-YR I/I Estimate	ac-ft	4.6	4.5	5.5	5.1	4.5	5.7	5.1	4.8	4.4	4.5	4.5	4.3	57.39
Site Run-off	ac-ft	1.1	2.8	2.7	3.6	3.5	3.5	1.5	0.4	0.2	0.1	0.1	0.4	19.75
Pond Precipitation (direct)	ac-ft	1.2	3.1	3.0	4.0	3.9	3.8	1.6	0.5	0.3	0.1	0.1	0.4	21.94
Pond Evaporation	ac-ft	-3.3	-1.4	-0.8	-0.6	-1.3	-2.3	-3.5	-5.4	-6.6	-7.4	-6.6	-5.0	-44.26
RMCSD Secondary Storage Reservoirs														
Reservoir # 1 Vol	ac-ft	216.7	60.5	136.1	225.1	317.9	399.9	490.8	529.1	498.3	373.6	191.7	56.7	3496.38
Reservoir # 1 Depth	ft	15.5	6.7	11.1	16.0	20.5	24.0	27.5	28.8	27.8	22.9	14.2	6.4	221.51
Reservoir # 1 Surface Area	acre	22.0	19.0	20.5	22.1	23.7	24.9	26.1	26.5	26.1	24.5	21.5	18.9	275.69
Reservoir #2 Vol	ac-ft	50.8	14.2	31.9	52.8	74.6	93.8	115.1	124.1	116.9	87.6	45.0	13.3	820.14
Reservoir # 2 Depth	ft	14.4	5.2	9.8	14.8	19.5	23.1	26.6	27.9	26.8	22.0	13.0	4.9	208.00
Reservoir # 2 Surface Area	acre	4.8	3.5	4.1	4.8	5.5	6.0	6.5	6.7	6.5	5.8	4.6	3.5	62.17
Total Water Surface Area	acre	26.7	22.5	24.6	27.0	29.1	30.9	32.5	33.2	32.7	30.3	26.1	22.3	337.87
Contributing Water Shed Area	acre	13.3	17.5	15.4	13.0	10.9	9.1	7.5	6.8	7.3	9.7	13.9	17.7	142.13
Reservoir Run-off	ac-ft	2.4	8.4	7.2	8.0	6.5	5.4	1.9	0.5	0.3	0.1	0.2	1.1	42.11
Reservoir Precip (direct)	ac-ft	5.4	11.9	12.8	18.4	19.4	20.3	9.2	2.6	1.6	0.5	0.4	1.5	104.15
Reservoir Evaporation	ac-ft	-8.2	-2.9	-1.9	-1.5	-3.5	-6.7	-10.6	-16.7	-20.2	-21.1	-16.2	-10.4	-119.91
RMCC Irrigation Lakes														
Lake Water Shed Run-off	ac-ft	0.1	0.4	0.4	0.5	0.5	0.5	0.2	0.1	0.0	0.0	0.0	0.1	2.74
Lake Precipitation (direct)	ac-ft	1.2	6.0	5.8	7.7	7.5	7.4	3.2	0.9	0.5	0.2	0.2	0.8	41.38
Irrig. Lake Evaporation	ac-ft	-3.4	-1.4	-0.9	-0.6	-1.3	-2.4	-3.7	-5.7	-7.0	-7.8	-7.0	-5.2	-46.49
Supplemental Water														
Supplemental Water	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
Disposal														
RMCC Golf Course Demand	ac-ft	-20.3	0.0	0.0	0.0	0.0	-0.8	-16.4	-50.8	-111.4	-151.3	-120.5	-78.5	-550.00
Residential Irrigation	ac-ft	-6.1	0.0	0.0	0.0	0.0	-0.2	-4.9	-15.3	-33.4	-45.4	-36.2	-23.6	-165.00
Van Vleck Ranch Demand	ac-ft	-7.9	0.0	0.0	0.0	0.0	-0.3	-6.4	-19.9	-43.6	-59.1	-47.1	-30.7	-215.00
Effluent Storage														
Beginning Water Volume in Res.	ac-ft	45	74.6	168.0	278.0	392.4	493.7	605.9	653.2	615.2	461.3	236.6	70.0	4093.98
Change in Water Volume	ac-ft	29.6	93.3	110.0	114.5	101.3	112.2	47.3	-38.0	-153.9	-224.7	-166.6	-86.0	-60.95
Final Water Volume in Reservoirs	ac-ft	74.6	168.0	278.0	392.4	493.7	605.9	653.2	615.2	461.3	236.6	70.0	-15.9	4033.03

Rancho Murieta Community Services District
Water Balance - Buildout Condition

100-YR Modifiers		WWRP Influent Flows & Site Info						Demand Info			
100-yr Return Ratio	1.84 unitless	Influent Flow- avg.	360.50 mg/yr	Pan Evaporation Coefficient	0.75 unitless	Reservoir Watershed Area	40 acres	Maximum Storage of Reservoirs (1&2)	859.9 ac-ft	RMCC Lake Water Surface Area	11.2 acres	RMCC Demand	550 AFY	550 AFY
100-yr modifier - Pan Evaporation	0.8 unitless	ADWF-(June-Sep)	0.91 mgd	WWRP Site Area	7.5 acres	Run-off Coefficient for Reservoirs	0.9 unitless	ge Volume of Reservoirs w/ 2ft FB (1&2)	728.2 ac-ft	RMCC Contributing Watershed	15.0 acres	Van Vleck Ranch	215 AFY	500 AFY
Normalized I&I	61.74 mg/MGD/yr	Beginning Water Volume in Res.	45 ac-ft	Run-off Coefficient for WWRP	0.9 unitless	Proportion in Reservoir #1	0.81 %	Water Balance Max Volume	889.5 ac-ft	Run-off Coefficient	0.2 unitless	Residential Irrigation	370 AFY	370 AFY
100-yr I/I Volume	31.4 mg			WWRP Pond Area Total	10.7 acres	Proportion in Reservoir #2	0.19 %							
Average-yr I/I Volume	18.7 mg													

100-yr Level of Annual Precipitation

		October	November	December	January	February	March	April	May	June	July	August	September	Total
Climate Inputs	**Units**													
Precipitation (Average)	in	1.32	3.47	3.39	4.46	4.34	4.30	1.84	0.52	0.31	0.11	0.10	0.45	24.61
Precipitation (100-YR)	in	2.43	6.38	6.24	8.21	7.99	7.91	3.39	0.96	0.57	0.20	0.18	0.83	45.28
Pan Evaporation	in	4.89	2.06	1.25	0.92	1.90	3.47	5.21	8.07	9.91	11.12	9.93	7.45	66.18
Effective Lake Evaporation	in	3.67	1.55	0.94	0.69	1.43	2.60	3.91	6.05	7.43	8.34	7.45	5.59	49.64
Lake Evap - 100- yr Effective	in	3.67	1.55	0.75	0.55	1.14	2.08	3.13	6.05	7.43	8.34	7.45	5.59	47.72
Percolation	in	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RMCSD WWRP														
WW Influent - Monthly-Daily Flow	%	8%	8%	10%	9%	8%	10%	9%	8%	8%	8%	8%	7%	100%
# Days in Month	days	31	30	31	31	28	31	30	31	30	31	31	30	365
Wastewater Influent	MG	28.7	28.3	34.7	31.9	28.1	35.7	32.0	30.1	27.8	28.2	28.1	26.9	360.50
Wastewater Influent	ac-ft	88.0	86.7	106.6	98.0	86.3	109.6	98.1	92.4	85.3	86.7	86.3	82.5	1106.35
100-YR I/I Estimate	ac-ft	7.7	7.6	9.3	8.5	7.5	9.5	8.5	8.0	7.4	7.5	7.5	7.2	96.36
Average-YR I/I Estimate	ac-ft													
Site Run-off	ac-ft	1.9	5.1	5.0	6.6	6.4	6.3	2.7	0.8	0.5	0.2	0.1	0.7	36.34
Pond Precipitation (direct)	ac-ft	2.2	5.7	5.6	7.3	7.1	7.1	3.0	0.9	0.5	0.2	0.2	0.7	40.38
Pond Evaporation	ac-ft	-3.3	-1.4	-0.8	-0.6	-1.3	-2.3	-3.5	-5.4	-6.6	-7.4	-6.6	-5.0	-44.26
RMCSD Secondary Storage Reservoirs														
Reservoir # 1 Vol	ac-ft	36.5	80.8	182.9	303.6	426.9	536.3	660.1	720.5	698.0	560.8	354.0	203.2	4763.62
Reservoir # 1 Depth	ft	5.2	7.9	13.7	19.8	25.1	29.1	32.7	34.1	33.6	29.9	22.1	14.8	267.97
Reservoir # 1 Surface Area	acre	18.5	19.4	21.4	23.4	25.2	26.6	27.8	28.3	28.1	26.8	24.2	21.7	291.48
Reservoir #2 Vol	ac-ft	8.6	18.9	42.9	71.2	100.1	125.8	154.8	169.0	163.7	131.6	83.0	47.7	1117.39
Reservoir # 2 Depth	ft	3.6	6.5	12.5	18.8	24.2	28.1	31.6	33.0	32.5	28.9	21.1	13.6	254.53
Reservoir # 2 Surface Area	acre	3.3	3.7	4.5	5.4	6.1	6.7	7.2	7.4	7.3	6.8	5.7	4.7	68.67
Total Water Surface Area	acre	21.7	23.1	25.9	28.8	31.4	33.3	35.0	35.7	35.4	33.6	29.9	26.4	360.14
Contributing Water Shed Area	acre	18.3	16.9	14.1	11.2	8.6	6.7	5.0	4.3	4.6	6.4	10.1	13.6	119.86
Reservoir Run-off	ac-ft	3.3	8.1	6.6	6.9	5.2	4.0	1.3	0.3	0.2	0.1	0.1	0.8	36.95
Reservoir Precip (direct)	ac-ft	4.4	12.3	13.5	19.7	20.9	21.9	9.9	2.8	1.7	0.6	0.5	1.8	109.88
Reservoir Evaporation	ac-ft	-6.6	-3.0	-2.0	-1.7	-3.7	-7.2	-11.4	-18.0	-21.9	-23.4	-18.6	-12.3	-129.79
RMCC Irrigation Lakes														
Lake Water Shed Run-off	ac-ft	0.2	0.4	0.4	0.5	0.5	0.5	0.2	0.1	0.0	0.0	0.0	0.1	2.81
Lake Precipitation (direct)	ac-ft	2.3	6.0	5.8	7.7	7.5	7.4	3.2	0.9	0.5	0.2	0.2	0.8	42.41
Irrig. Lake Evaporation	ac-ft	-3.4	-1.4	-0.9	-0.6	-1.3	-2.4	-3.7	-5.7	-7.0	-7.8	-7.0	-5.2	-46.49
Supplemental Water														
Supplemental Water	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
Disposal														
RMCC Golf Course Demand	ac-ft	-20.3	0.0	0.0	0.0	0.0	-0.8	-16.4	-50.8	-111.4	-151.3	-120.5	-78.5	-550.00
Residential Irrigation	ac-ft	-13.6	0.0	0.0	0.0	0.0	-0.5	-11.0	-34.2	-75.0	-101.8	-81.1	-52.8	-370.00
Van Vleck Ranch Demand	ac-ft	-7.9	0.0	0.0	0.0	0.0	-0.3	-6.4	-19.9	-43.6	-59.1	-47.1	-30.7	-215.00
Effluent Storage														
Beginning Water Volume in Res.	ac-ft	45	99.7	225.8	374.8	527.1	662.1	815.0	889.5	861.7	692.4	437.0	250.9	5881.02
Change in Water Volume	ac-ft	54.7	126.1	149.0	152.3	135.0	152.9	74.6	-27.8	-169.3	-255.4	-186.1	-90.0	115.95
Final Water Volume in Reservoirs	ac-ft	99.7	225.8	374.8	527.1	662.1	815.0	889.5	861.7	692.4	437.0	250.9	160.9	5996.96

Average-yr Level of Annual Precipitation

		October	November	December	January	February	March	April	May	June	July	August	September	Total
Climate Inputs	**Units**													
Precipitation (Average)	in	1.32	3.47	3.39	4.46	4.34	4.30	1.84	0.52	0.31	0.11	0.10	0.45	24.61
Precipitation (100-YR)	in	2.43	6.38	6.24	8.21	7.99	7.91	3.39	0.96	0.57	0.20	0.18	0.83	45.28
Pan Evaporation	in	4.89	2.06	1.25	0.92	1.90	3.47	5.21	8.07	9.91	11.12	9.93	7.45	66.18
Effective Lake Evaporation	in	3.67	1.55	0.94	0.69	1.43	2.60	3.91	6.05	7.43	8.34	7.45	5.59	49.64
Lake Evap - 100- yr Effective	in	3.67	1.55	0.75	0.55	1.14	2.08	3.13	6.05	7.43	8.34	7.45	5.59	47.72
Percolation	in	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RMCSD WWRP														
WW Influent - Monthly-Daily Flow	%	8%	8%	10%	9%	8%	10%	9%	8%	8%	8%	8%	7%	100%
# Days in Month	days	31	30	31	31	28	31	30	31	30	31	31	30	365
Wastewater Influent	MG	28.7	28.3	34.7	31.9	28.1	35.7	32.0	30.1	27.8	28.2	28.1	26.9	360.50
Wastewater Influent	ac-ft	88.0	86.7	106.6	98.0	86.3	109.6	98.1	92.4	85.3	86.7	86.3	82.5	1106.35
100-YR I/I Estimate	ac-ft													0.00
Average-YR I/I Estimate	ac-ft	4.6	4.5	5.5	5.1	4.5	5.7	5.1	4.8	4.4	4.5	4.5	4.3	57.39
Site Run-off	ac-ft	1.1	2.8	2.7	3.6	3.5	3.5	1.5	0.4	0.2	0.1	0.1	0.4	19.75
Pond Precipitation (direct)	ac-ft	1.2	3.1	3.0	4.0	3.9	3.8	1.6	0.5	0.3	0.1	0.1	0.4	21.94
Pond Evaporation	ac-ft	-3.3	-1.4	-0.8	-0.6	-1.3	-2.3	-3.5	-5.4	-6.6	-7.4	-6.6	-5.0	-44.26
RMCSD Secondary Storage Reservoirs														
Reservoir # 1 Vol	ac-ft	130.4	157.8	243.3	347.3	449.8	539.1	642.0	685.3	636.8	449.6	177.3	-24.7	4433.94
Reservoir # 1 Depth	ft	10.8	12.4	16.9	21.8	26.0	29.2	32.2	33.3	32.1	26.0	13.4	1.2	255.25
Reservoir # 1 Surface Area	acre	20.4	20.9	22.4	24.1	25.5	26.6	27.6	28.0	27.6	25.5	21.3	17.1	287.16
Reservoir #2 Vol	ac-ft	30.6	37.0	57.1	81.5	105.5	126.5	150.6	160.8	149.4	105.5	41.6	-5.8	1040.06
Reservoir # 2 Depth	ft	9.5	11.1	15.8	20.8	25.1	28.2	31.2	32.2	31.1	25.1	12.2	-0.5	241.73
Reservoir # 2 Surface Area	acre	4.1	4.3	5.0	5.7	6.3	6.7	7.1	7.3	7.1	6.3	4.5	2.7	66.88
Total Water Surface Area	acre	24.5	25.2	27.4	29.8	31.8	33.3	34.8	35.3	34.7	31.8	25.7	19.8	354.04
Contributing Water Shed Area	acre	15.5	14.8	12.6	10.2	8.2	6.7	5.2	4.7	5.3	8.2	14.3	20.2	125.96
Reservoir Run-off	ac-ft	1.5	3.8	3.2	3.4	2.7	2.2	0.7	0.2	0.1	0.1	0.1	0.7	18.72
Reservoir Precip (direct)	ac-ft	2.7	7.3	7.7	11.1	11.5	11.9	5.3	1.5	0.9	0.3	0.2	0.7	61.23
Reservoir Evaporation	ac-ft	-7.5	-3.2	-2.1	-1.7	-3.8	-7.2	-11.3	-17.8	-21.5	-22.1	-16.0	-9.2	-123.47
RMCC Irrigation Lakes														
Lake Water Shed Run-off	ac-ft	0.1	0.2	0.2	0.3	0.3	0.3	0.1	0.0	0.0	0.0	0.0	0.0	1.53
Lake Precipitation (direct)	ac-ft	1.2	3.3	3.2	4.2	4.1	4.0	1.7	0.5	0.3	0.1	0.1	0.4	23.05
Irrig. Lake Evaporation	ac-ft	-3.4	-1.4	-0.9	-0.6	-1.3	-2.4	-3.7	-5.7	-7.0	-7.8	-7.0	-5.2	-46.49
Supplemental Water														
Supplemental Water	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
Disposal														
RMCC Golf Course Demand	ac-ft	-20.3	0.0	0.0	0.0	0.0	-0.8	-16.4	-50.8	-111.4	-151.3	-120.5	-78.5	-550.00
Residential Irrigation	ac-ft	-13.6	0.0	0.0	0.0	0.0	-0.5	-11.0	-34.2	-75.0	-101.8	-81.1	-52.8	-370.00
Van Vleck Ranch Demand	ac-ft	-18.4	0.0	0.0	0.0	0.0	-0.7	-14.9	-46.2	-101.3	-137.5	-109.6	-71.4	-500.00
Effluent Storage														
Beginning Water Volume in Res.	ac-ft	160.9	194.8	300.4	428.7	555.3	665.6	792.6	846.1	786.2	555.0	218.9	-30.6	5474.00
Change in Water Volume	ac-ft	33.8	105.6	128.3	126.6	110.3	127.1	53.4	-59.8	-231.2	-336.1	-249.5	-132.8	-324.26
Final Water Volume in Reservoirs	ac-ft	194.8	300.4	428.7	555.3	665.6	792.6	846.1	786.2	555.0	218.9	-30.6	-163.3	5149.74

Appendix E – Recycled Water Contingency and Response Plan

Reclaimed Water Contingency and Response Plan

For

Rancho Murieta Community Services District

Revised: October 21, 2013
Contact: Paul Siebensohn
(916) 354-3712

Table of Contents

Overview

This plan will serve as an outline for the response of District employees if a tertiary treatment limit is exceeded or if there is an overflow of one of the reclaimed water storage ponds at the Rancho Murieta Reclamation Facility.

Tertiary Plant's Discharge Limits

See Waste Discharge Requirements (WDRs) Order No. R5-2007-0109. General information from it is as follows; The median concentration of total coliform bacteria measured in the disinfected effluent shall not exceed an MPN of 2.2 per 100 milliliters utilizing the bacteriological result of the last seven days for which analyses have been completed and the number of total coliform bacteria shall 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.

The turbidity of the filter effluent shall not exceed 2.0 NTU as a daily average; shall not exceed 5 NTU more than 5 percent of the time during a 24 hour period; and shall never exceed 10 NTU.

RMCSD may not discharge reclaimed water 24 hours before or after any precipitation, or when soils are saturated.

pH levels must be between 6.5 and 9.0 and maintain a D.O. level of 1 mg/L.

Staffing

The District's operators work Monday thru Friday from 0700 to 1600 hours and one operator works Saturday and Sunday from 0700 to 1600. There is one utility worker and operator that is on call after normal working hours.

Name	Title	Cell Phone	Office
Paul Siebensohn	Director of Field Operations	On file	(916)354-3700
David Herrmann	Chief Plant Operator	On file	(916)354-3700
Sean Montgomery	Plant Operator	On file	(916)354-3700
Jason Dill	Equipment Mechanic	On file	(916)354-3700
Travis Bohannon	Plant Operator	On file	(916)354-3700
Mike Miller	Plant Operator	On file	(916)354-3700
Cory Xavier	Plant Operator	On file	(916)354-3700
Rob McLeod	Utility Supervisor	On file	(916)354-3700

Monitoring Equipment

A chlorine analyzer, pH meter and a turbidimeter monitor the tertiary effluent at the end of the contact chamber. The chlorine analyzer or the turbidimeter instruments will shut down the tertiary plant if the water is out of the monitored parameter. All of these instruments are checked daily for calibration. The water elevation in the equalization basin will cause the tertiary plant to shut down when the basin fills to a set level. There are contacts in Lake 17 that operates the valve separating Lake 16 and the equalization basin, as well as a high float switch that will alarm out as well as shut down the plant.

Prevention

The chlorine analyzer, pH meter and the turbidimeter are checked for calibration daily while the plant is running. If they are found to be out of calibration they are calibrated. The chlorinators are rebuilt annually with maintenance kits. The levels of the equalization basin and Lakes 16 and 17 are monitored throughout the day for proper operation.

Effluent Exceeding Limitation Response

District personnel are made aware of a situation either by observing that the plant has shut down and then investigating the reason the plant shut down, by finding an instrument out of calibration or not operating correctly, or by alarms through notification by the south gate of a problem with the level of a lake or the equalization basin.

If tertiary effluent does not meet discharge requirements, an automated valve opens between the contact chamber and equalization basin to discharge the out of compliance water back into secondary holding Reservoir 1. If out of compliance water was to get into the equalization basin, the basin would be pumped back into secondary process pond #1. The Country Club Lakes that store the reclaimed water will be tested to see if the out of limit water has entered them.

If Lakes 16 and 17 are too high, above the high level probe at Pond 17, a high level float switch will activate and shut off the tertiary plant as well as shut the automated valve that feeds Pond 16 from the EQ basin. If there was an issue where Pond 17 was overflowing, or was in the process of filling too high, the discharge valve from the equalization basin will be shut manually and the proper authorities (see Emergency Phone Numbers list) will be notified.

If the equalization basin is overflowing or filling too high the reclamation facility will be shut down. The basin has not overflowed before and the flow should all go to Reservoir 1. If flow somehow made it to surface water the proper authorities will be notified.

As soon as time permits the notification part of the Effluent Exceeding Limitation Notification and Reporting section of this plan is started. If there is not time to start the Effluent Exceeding Limitation Response Evaluation during the event it will be filled out as soon as the problem has been stopped.

Copies of this plan are located at the wastewater reclamation facility, the Operation office, the Director of Field Operations Office, and the District's network drive.

Effluent Exceeding Limitation Notification and Reporting

As soon as an incident has been identified and we have time from dealing with it, the following entities are to be notified and the Effluent Exceeding Limitation Response Evaluation is to be filled out and filed with the appropriate office.

For an overflow that reaches surface water contact California Office of Emergency Services, California Regional Water Quality Control Board, and California Department of Fish and Game and file the response evaluation with California Office of Emergency Services.

For incidents where the water exceeds the discharge limits contact California Regional Water Quality Control Board and Rancho Murieta Country Club and file the response evaluation with California Regional Water Quality Control Board.

Emergency Phone Numbers

Outside Agencies

California Valley Regional Water Quality Control Board
Guy Childs
11020 Sun Center Drive #200
Rancho Cordova, CA 95827-3003
(916) 464-4648
Main Number (916)464-3291Leave a voice mail for after hours.

California Office of Emergency Services
Inland Region
2800 Meadowview Road
Sacramento, CA 95832
(800) 852-7550 24-Hour Spill Notification Number

California Department of Fish and Wildlife
Dispatch
(916) 445-0045 24-Hour Spill Notification Number

Rancho Murieta Country Club
7000 Alameda Drive
Rancho Murieta, CA 95683
Arnie Billingsley, General Manager
(916) 354-3400
(916) 354-0916 FAX
Rich Scholes, Golf Course Superintendent
(916) 354-3490
(916)869-3560 Cell Phone

District Personnel

		Work			
Ed Crouse	General Manager	(916)354-3700	cell	"on file"	Home "on file"
Paul Siebensohn		(916)354-3700	cell	"on file"	Home "on file"
Rob McCleod		(916)354-3700	cell	"on file"	Home "on file"

Outside Contractors and Suppliers

Vince Carrillo	(916) 354-2581	Cell	(916) 716-8988
Pac Machine	(916) 387-1336		
4-Men Electric	(916) 933-0459		
Ace Hardware	(916) 354-1970		

Effluent Exceeding Limitation Response Evaluation

Rancho Murieta Community Services District

Source of incident (check one): _____Chlorine Residual _____Coliform _____pH _____Turbidity _____Overflow

Incident Started: (Date/Time)_____/_____

Incident Ended: (Date/Time)_____/_____

Estimated Duration (Time)_____

First knowledge of incident: (Date/Time) _____/_____

Estimated volume of incident of _____ gallons. Show rational for volume.

_____

_____

Did incident reach surface waters? _____Yes _____No (If Yes, please list the following)

Volume reaching surface waters _____ gallons

Name of surface water_____

Did incident result in a fish kill? _____Yes _____No

If yes, what is the estimated number of fish killed? _____

If spill is ongoing, please notify Office of Emergency Services and Regional Water Quality Control Board on a daily basis until spill can be stopped.

The California Office of Emergency Services needs to be call only if there is an overflow of reclaimed water.

Reported to: California Office of Emergency Services (Date/time) _____

Name of person _____

Reported to: California Regional Water Quality Control Board (Date/time) _____

Name of person _____

Weather conditions: _____

Effluent Exceeding Limitation Response Evaluation

Please provide the following information:

1. Location and type of incident: _____

_____

_____

2. Cause of incident: _____

_____

_____

_____

3. Did you have personnel available to perform initial assessment 24 hours/day (including weekends and holidays)?
Yes _____ No _____

4. How long did it take to make an initial assessment of the incident after first knowledge?

_____ Hours _____ Minutes

How long did it take to get a repair crew onsite?

_____ Hours _____ Minutes

Please explain the time taken to make initial assessment: _____

_____

_____

Effluent Exceeding Limitation Response Evaluation

5. Action taken to contain the incident and/or remediation of the site: _____

_____

_____

_____

_____

_____

6. Were the equipment and parts needed to make repairs readily available?

Yes _____ No _____ If no, please explain why: _____

_____

_____

_____

_____

_____

7. Did the monitoring equipment function at the time of the incident? Yes _____ No _____ if not, please explain why: _____

_____

_____

_____

_____

Effluent Exceeding Limitation Response Evaluation

8. Repairs made are: Permanent _____ Temporary _____

Please describe what repairs were made. If the repairs are temporary, please indicate a date by which permanent repairs will be completed, and notify the Regional Office within 7 days of the permanent repair: _____

_____

_____

_____

_____

9. What actions have been made to prevent this discharge from occurring again in the future?

_____

_____

_____

10. Comments: _____

_____

_____

_____

Other agencies notified: _____

Person reporting incident: _____ Phone Number: _____

Signature_____ Date: _____

Post Effluent Exceeding Limitation Assessment

Soon after the problem has been corrected, any repairs have been made, and all notifications and reports submitted, the staff that was involved with the incident, and management will meet to assess the cause of the incident and their response to it.

Using the filled out Effluent Exceeding Limitation Response Evaluation the cause of the incident will be looked at to see if there is something that we could implement or install to reduce the chances of that type of incident occurring again. The time it took to respond, our response to the incident, and any corrective action we took will be looked at to see if there is anything that we can improve on for the next time. Also we will check to see if there were any trends that were monitored that indicated a problem. We will also see if there is any equipment that we do not own which could have aided in our correcting the situation. If the problem was caused by mechanical failure then the alarm system and equipment reliability will be looked at to see if there is anything that can be modified to alleviate the situation.

Appendix F – Golf Course Irrigation Drawings

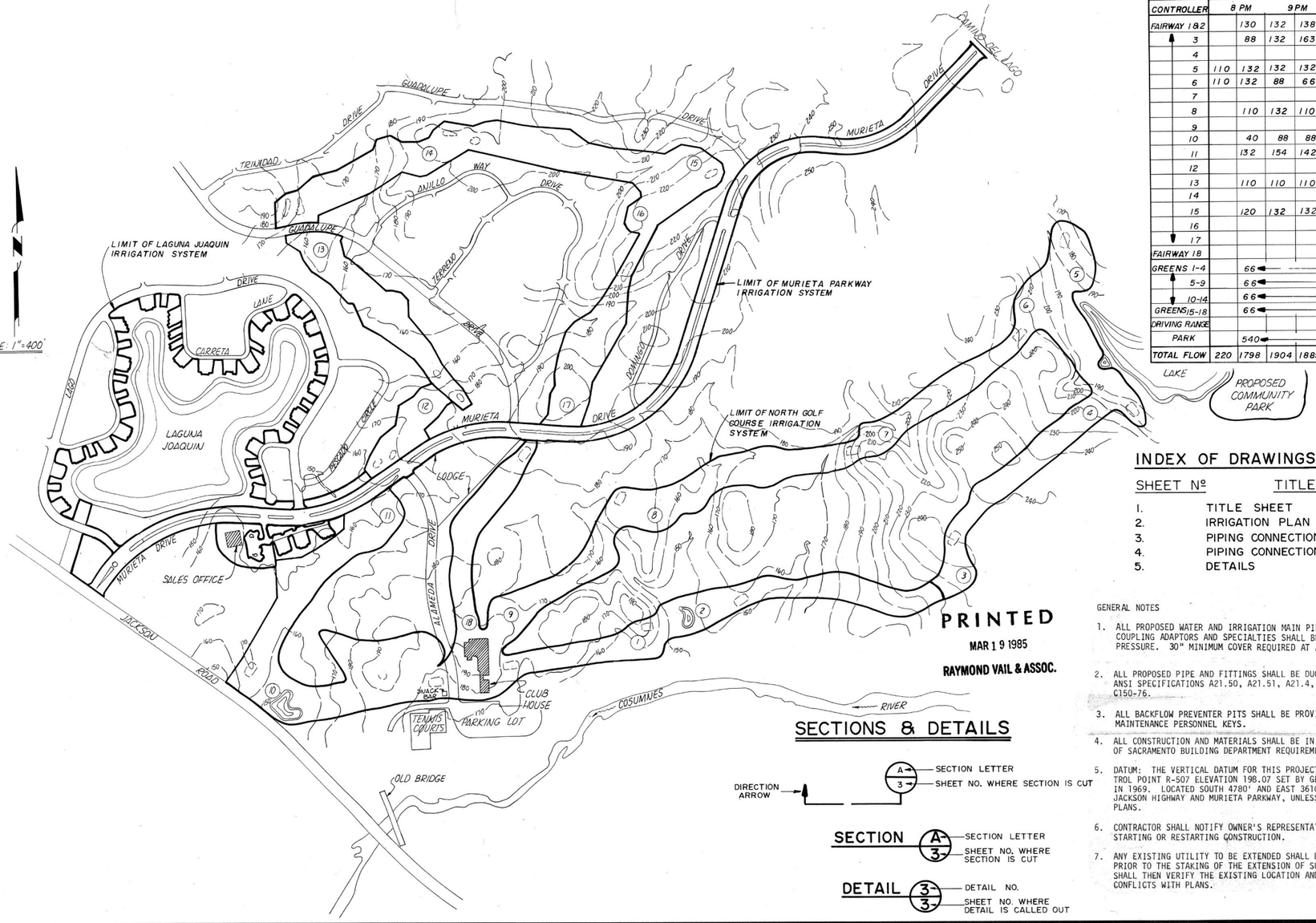
PLANS FOR IMPROVEMENTS

OF

RANCHO MURIETA WASTEWATER RECLAMATION

NORTH GOLF COURSE IRRIGATION SYSTEMS

SACRAMENTO COUNTY, CALIFORNIA.



IRRIGATION SYSTEM DEMAND

CONTROLLER	8 PM	9 PM	10 PM	11 PM	12 MN	1 AM	2 AM	3 AM	4 AM	5 AM	6 AM
FAIRWAY 1&2	130	132	138	132	132	132	132	110	175	181	
3	88	132	163	175	154	132	132	138	138	97	110
4									88	175	132	132	132	132	132	132	110
5	110	132	132	132	132	132	154	66	132	110							
6	110	132	88	66	132	110	132	176	88	88							
7									88	88	132	132	154	132	154	110	110
8	110	132	110	154	154	110	110	176	132	154	132	132					
9									110	110	88	169	154	154	132	132	110	110	88
10	40	88	88	132	132	132	176	176	176	132	110						
11	132	154	142	132	132	110	110	176	132	132	110	110	110	132	110		
12															176	110	110	110	110
13	110	110	110	132	110	176	132	132	110	132	110	110	110				
14													164	132	132	132	154	154	164	164
15	120	132	132	132	154	154	174	132	132	132	132	110					
16														110	176	142	176	154	110
17															154	154	132	176	176
FAIRWAY 18									176	88	132	132	176	176	132	132	154	44	128
GREENS 1-4	66 ← GREENS 1-4 → 66								66 ← LODGE → 66								
5-9	66 ← GREENS 5-9 → 66								66 ← LODGE → 66								
10-14	66 ← GREENS 10-14 → 66								66 ← CLUBHOUSE → 66								
GREENS 15-18	66 ← GREENS 15-18 → 66								66 ← CLUBHOUSE → 66								
DRIVING RANGE							132	154	88	132	110	132	132	66
PARK	540 ← COMMUNITY PARK → 540																
TOTAL FLOW	220	1798	1904	1885	2057	2014	2036	2012	2086	1932	2044	1887	1662	1884	1816	1838	2124	2002	2058	1936	1866

INDEX OF DRAWINGS

PRINTED

MAR 19 1985

RAYMOND VAIL & ASSOC.

SECTIONS & DETAILS

DIRECTION ARROW → A/3 — SECTION LETTER; SHEET NO. WHERE SECTION IS CUT

SECTION A/3 — SECTION LETTER; SHEET NO. WHERE SECTION IS CUT

DETAIL 3/3 — DETAIL NO.; SHEET NO. WHERE DETAIL IS CALLED OUT

GENERAL NOTES

1. ALL PROPOSED WATER AND IRRIGATION MAIN PIPING, FITTINGS, VALVES, FLANGE COUPLING ADAPTORS AND SPECIALTIES SHALL BE RATED FOR 150 PSI WORKING PRESSURE. 30" MINIMUM COVER REQUIRED AT ALL TIMES.
2. ALL PROPOSED PIPE AND FITTINGS SHALL BE DUCTILE IRON, CONFORMING TO ANSI SPECIFICATIONS A21.50, A21.51, A21.4, A21.11, A21.10 AND AWWA C150-76.
3. ALL BACKFLOW PREVENTER PITS SHALL BE PROVIDED WITH PADLOCKS KEYED TO MAINTENANCE PERSONNEL KEYS.
4. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE COUNTY OF SACRAMENTO BUILDING DEPARTMENT REQUIREMENTS.
5. DATUM: THE VERTICAL DATUM FOR THIS PROJECT WAS ESTABLISHED FROM CONTROL POINT R-507 ELEVATION 198.07 SET BY GEORGE S. NOLTE & ASSOCIATES IN 1969, LOCATED SOUTH 4780' AND EAST 3610' FROM THE INTERSECTION OF JACKSON HIGHWAY AND MURIETA PARKWAY, UNLESS OTHERWISE SHOWN ON THE PLANS.
6. CONTRACTOR SHALL NOTIFY OWNER'S REPRESENTATIVE 48 HOURS PRIOR TO STARTING OR RESTARTING CONSTRUCTION.
7. ANY EXISTING UTILITY TO BE EXTENDED SHALL BE EXPOSED BY THE CONTRACTOR PRIOR TO THE STAKING OF THE EXTENSION OF SUCH UTILITIES. THE ENGINEER SHALL THEN VERIFY THE EXISTING LOCATION AND/OR ELEVATION FOR POSSIBLE CONFLICTS WITH PLANS.
8. ALL WATER AND SEWER SYSTEM CONSTRUCTION SHALL CONFORM TO EL DORADO IRRIGATION DISTRICT (E.I.D.) SPECIFICATIONS AND DRAWINGS AS APPLICABLE.
9. EXISTING FACILITIES INCLUDING BUT NOT RESTRICTED TO CULVERTS, PIPING, VALVES, AND FITTINGS WHICH ARE REMOVED BUT NOT REUSED SHALL BE SALVAGED AND RELOCATED TO AN AREA ON RANCHO MURIETA PROPERTIES AS INDICATED BY THE ENGINEER. EXISTING WATER AND SEWER FACILITIES ARE THE PROPERTY OF E.I.D.
10. THE CONTRACTOR SHALL EXPOSE EXISTING UTILITIES AT CROSSINGS OF EXISTING AND PROPOSED UTILITIES PRIOR TO THE STAKING OF THE PROPOSED UTILITIES BY THE ENGINEER. THE ENGINEER SHALL VERIFY THAT NO GRADE CONFLICTS OCCUR. IF IN THE OPINION OF THE ENGINEER A GRADE CONFLICT DOES OCCUR, THE ENGINEER SHALL MAKE ANY GRADE ADJUSTMENT NECESSARY TO RESOLVE THE GRADE CONFLICT. NO ADJUSTMENT IN BID PRICES WILL BE ALLOWED AS A RESULT OF SUCH GRADE ADJUSTMENTS.
11. THE TYPES, LOCATIONS, SIZES, AND DEPTHS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE IMPROVEMENT PLANS WERE OBTAINED FROM SOURCES OF VARYING RELIABILITY. A REASONABLE EFFORT HAS BEEN MADE TO LOCATE AND DELINEATE ALL KNOWN UNDERGROUND UTILITIES. HOWEVER, THE ENGINEER CAN ASSUME NO RESPONSIBILITY FOR THE COMPLETENESS OR ACCURACY OF ITS DELINEATION OF SUCH UNDERGROUND UTILITIES NOR FOR THE EXISTENCE OF OTHER BURIED OBJECTS OR UTILITIES WHICH MAY BE ENCOUNTERED BUT WHICH ARE NOT SHOWN ON THESE DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATIONS OF THOSE UTILITIES SHOWN AND ANY WHICH MAY EXIST AND ARE NOT SHOWN PRIOR TO COMMENCEMENT OF ANY WORK. THE CONTRACTOR SHALL EXPOSE ALL UNDERGROUND FACILITIES THAT ARE TO BE CONNECTED TO OR THAT ARE IN THE PATH OF THE PROPOSED IMPROVEMENTS FOR VERIFICATIONS OF LOCATION AND ELEVATION PRIOR TO COMMENCING CONSTRUCTION.
12. THE CONTRACTOR IS ADVISED THAT CONFORMANCE TO MINIMUM COVER REQUIREMENTS PER PLANS AND SPECIFICATIONS OVER UNDERGROUND PIPING SHALL BE STRICTLY ENFORCED. DESIGN GRADES FOR PIPING INSTALLATION SHALL BE STRICTLY ENFORCED.
13. FOR LOCATION OF UTILITIES, CALL U.S.A. (800) 642-2444 2 DAYS PRIOR TO CONSTRUCTION.
14. ONLY LIGHT WEIGHT CONSTRUCTION EQUIPMENT SHALL BE ALLOWED IN TURFED AND FAIRWAY AREAS. THE OWNER WILL REMOVE AND REPLACE THE TURF IN THE IMMEDIATE VICINITY OF THE WORK TO PROVIDE THE CONTRACTOR WITH REASONABLE WORKING SPACE.
15. FIRE PROTECTION TO CLUBHOUSE SHALL NOT BE INTERRUPTED FOR MORE THAN 6 HOURS. COORDINATE WITH LOCAL FIRE DEPARTMENT.

NOTES CONTINUED ON SHEET 2

DRAWN BY: M.D.H. DESIGN BY: E.A.L.

CHECK BY: K.C.G.

BY

REVISION	DATE	DESCRIPTION
	3/25/85	FINAL "AS-BUILTS" WORK DONE IN 1983

RVA RAYMOND VAIL AND ASSOCIATES
ENGINEERING • PLANNING • SURVEYING
SACRAMENTO, CALIFORNIA 1410 Ethan Way 95825

PROPOSED IMPROVEMENTS FOR

NORTH GOLF COURSE IRRIGATION SYSTEMS

TITLE SHEET

RANCHO MURIETA CALIFORNIA

DATE FEB. 1983

SCALE:

HORIZONTAL 1"=400'

VERTICAL

W.O. NO. 1205.18V

SHEET 1 OF 5 SHEETS

FILE NO.

12 STATION CONTROLLER
12 FAIRWAY VALVES

12 STATION CONTROLLER
8 FAIRWAY VALVES

18 STATION CONTROLLER
13 FAIRWAY VALVES

GREENS 10-14
12 STATION CONTROLLER
10 GREENS VALVES

12 STATION CONTROLLER
6 FAIRWAY VALVES

SEE SH 1 FOR
MURIETA PARKWAY
IRRIGATION SYS.

12 STATION CONTROLLER
5 FAIRWAY VALVES

LAGUNA JOAQUIN
PUMP

LAGUNA
JOAQUIN

SEE LAGUNA JOAQUIN
SITE PLAN FOR PIPING
CHANGES - SHEET 5

GREENS 15-18
12 STATION CONTROLLER
8 GREENS VALVES

SEE SH. 1 FOR LAGUNA
JOAQUIN IRRIGATION
SYSTEM AREA

12 STATION CONTROLLER
5 FAIRWAY VALVES

12 STATION CONTROLLER
11 FAIRWAY VALVES

18 STATION CONTROLLER
15 FAIRWAY VALVES

DRIVING RANGE
12 STATION CONTROLLER
8 FAIRWAY VALVES

MAINT.
SHOP

FOR PIPING
CHANGES SEE 2/2

FOR PIPING
CHANGES SEE
SHEET 3

EXIST. 8"Ø RIVER PUMPS
DISCHARGE - TO BE
ABANDONED(FUTURE)

3"Ø TO COURSE
MAINT. SHOP

8" DOMESTIC WATER

12" DOMESTIC WATER

12" WASTEWATER INFLUENT

EXIST. PIPE
SIZE & SPEC. UNKNOWN (CONTRACTOR TO DETERMINE)
CLUBHOUSE

INSTALL BACKFLOW PREVENTER, SEE DET. 4/5
DETERMINE LOCATION IN FIELD.

INSTALL TEE
& ADAPTER

EXISTING
12" WATER
(DOMESTIC)

INSTALL 1½" POLYETHYLENE PIPE TO
EXISTING PRO SHOP WATER SERVICE
CONTR. TO LOCATE IN FIELD. DISCONNECT
EXIST. DOMESTIC SERV. FOR 8" DOM. WATER
LINE TO BE CONVERTED TO IRRIGATION,
PRIOR TO DISCONNECTING 8" & 12"
WATER LINES ON SH.3.

12 STATION CONTROLLER
11 FAIRWAY VALVES
(FAIRWAYS 1 & 2)

8" DOMESTIC WATER TO BE
CONVERTED TO IRRIGATION WATER

GREENS 1-4
12 STATION CONTROLLER
8 GREENS VALVES

12 STATION CONTROLLER
11 FAIRWAY VALVES

12 STATION CONTROLLER
12 FAIRWAY VALVES

12 STATION CONTROLLER
9 FAIRWAY VALVES

RELOCATE EXIST. F.H., LOCATION TO BE
DETERMINED IN FIELD. CONNECT TO EXIST.
8" IRRIG. MAIN.

CLUB
HOUSE

EXISTING F.H. TO BE
RELOCATED. PROVIDE
BLIND FLANGE AT STUB

EXISTING
12" WATER

PROPOSED 8"Ø D.I.P.
FIRE MAIN.

DISCONNECT EXIST. 6"Ø IRRIG.
LINE & CONNECT PROPOSED 8"Ø
D.I.P. TO EXIST. FIRE MAIN. LOWER
IRRIG. LINE UNDER PROPOSED MAIN.

EXISTING SPRINKLER
STANDPIPE

INSTALL 8"Ø D.I.P.
FIRE MAIN & CONNECT
TO EXIST. VALVE

INSTALL 8"Ø BACKFLOW
PREVENTER SEE DETAIL 4/5

EXISTING 8"Ø FIRE MAIN

EXISTING
8" GATE
VALVE

EXISTING 8"Ø
IRRIGATION LINE

GREENS 5-9
12 STATION CONTROLLER
10 GREENS VALVES

DETAIL 2/2
N.T.S.

12 STATION CONTROLLER
10 FAIRWAY VALVES

12 STATION CONTROLLER
10 FAIRWAY VALVES

BASS
LAKE

FOR PIPING CHANGES
SEE SHEET 4

PUMP TO BE ABANDONED
IN FUTURE

LEGEND

- VALVE
- CONTROLLER
- CONDUIT RUN

NOTE: VALVES & CONTROLLERS SHOWN
REQUIRE NEW WIRES

PRINTED
MAR 19 1985
RAYMOND VAIL & ASSOC.

16. ALL STREET AND STORM DRAIN CONSTRUCTION SHALL CONFORM TO SACRAMENTO COUNTY IMPROVEMENT STANDARDS DATED MARCH 27, 1978, SACRAMENTO COUNTY STANDARD CONSTRUCTION SPECIFICATIONS DATED APRIL 25, 1977.

17. CONTRACTOR SHALL REPLACE ALL LANDSCAPING AND SPRINKLER SYSTEMS DISTURBED IN KIND TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE.

18. CONTRACTOR SHALL DISPOSE OF ALL TRENCH SPOIL AT A LOCATION WITHIN RANCHO MURIETA AT THE DIRECTION OF THE OWNER'S REPRESENTATIVE. THE CONSTRUCTION AREA SHALL BE CLEAN AND RESTORED TO ORIGINAL CONDITION PRIOR TO ACCEPTANCE OF THE PROJECT.

19. THE CONTRACTOR SHALL COORDINATE ALL WORK WITH RANCHO MURIETA PROJECT SUPERINTENDENT. ALL WORK SHALL BE INSPECTED AND APPROVED BY THE RANCHO MURIETA PROJECT SUPERINTENDENT.

20. CONTRACTOR SHALL COORDINATE WORK ON GOLF COURSE WITH THE GREENS SUPERINTENDENT FOR REMOVAL AND REPLACEMENT OF TURF AND CONSTRUCTION METHODS FOR WORKING AROUND EXISTING IRRIGATION PIPING AND CONTROL SIGNAL WIRES (LOCATIONS NOT SHOWN ON THIS PLAN), AND FOR INTERRUPTION OF PLAY ON GOLF COURSE. CONTRACTOR SHALL PERFORM LOCATING WORK FOR IRRIGATION PIPING AND WIRES AT HIS EXPENSE WITH DIRECTION FROM GOLF COURSE SUPERINTENDENT.

DRAWN BY: RAW DESIGN BY: EAL
CHECK BY: KCG
BY

REVISION	DATE	DESCRIPTION

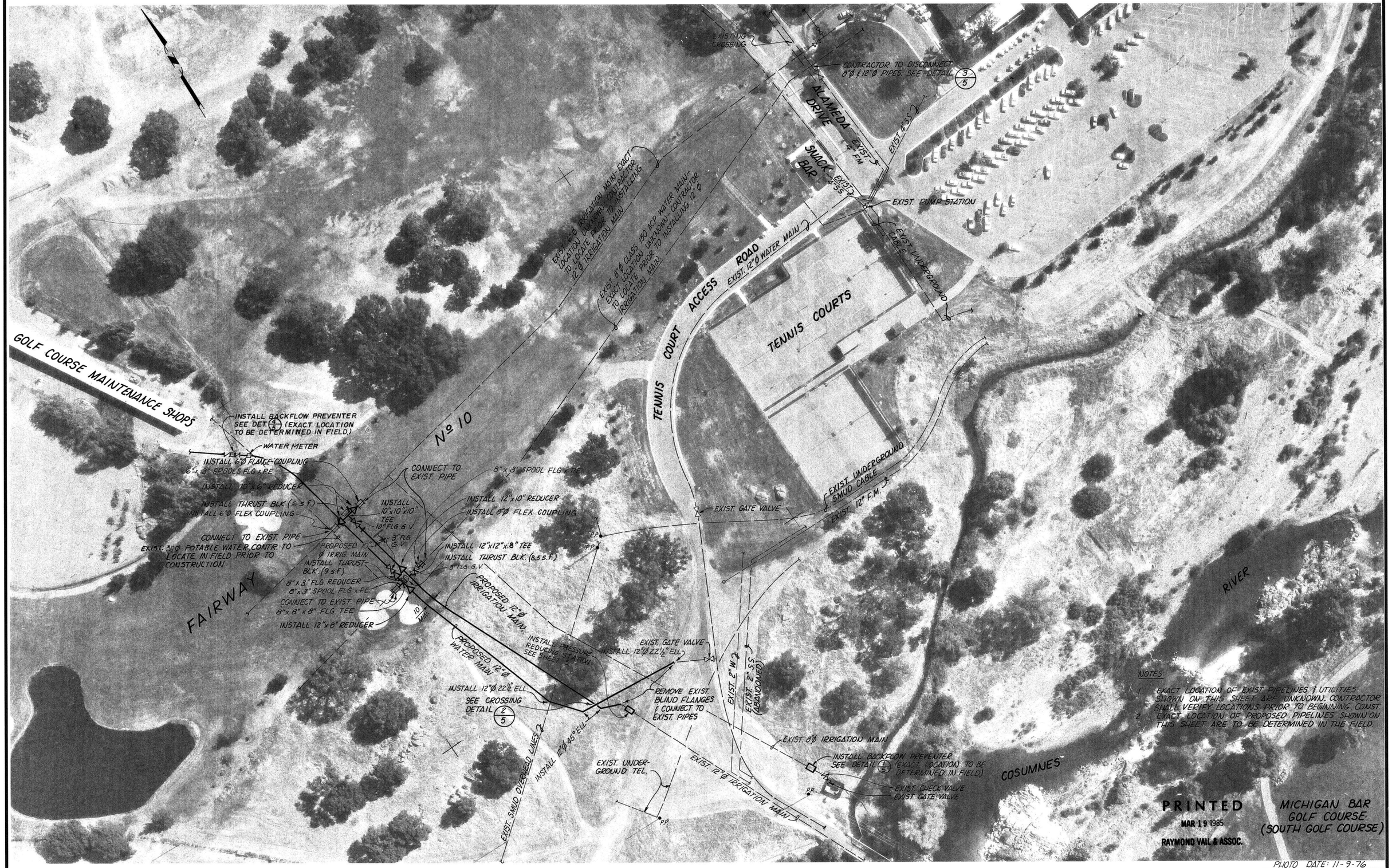
RAYMOND VAIL AND ASSOCIATES
ENGINEERING • PLANNING • SURVEYING
SACRAMENTO, CALIFORNIA 1410 Ethan Way 95825

PROPOSED IMPROVEMENTS FOR
NORTH GOLF COURSE IRRIGATION SYSTEMS
IRRIGATION PLAN
RANCHO MURIETA CALIFORNIA

DATE FEB 83
SCALE:
HORIZONTAL 1"=200'
VERTICAL
W.O. NO. 1205.18V

SHEET 2 OF 5 SHEETS

N67725



NOTES:

1. EXACT LOCATION OF EXIST PIPELINES & UTILITIES SHOWN ON THIS SHEET ARE UNKNOWN. CONTRACTOR SHALL VERIFY LOCATIONS PRIOR TO BEGINNING CONST.
2. EXACT LOCATION OF PROPOSED PIPELINES SHOWN ON THIS SHEET ARE TO BE DETERMINED IN THE FIELD.

PRINTED MAR 19 1985 RAYMOND VAIL & ASSOC.

MICHIGAN BAR GOLF COURSE (SOUTH GOLF COURSE)

PHOTO DATE: 11-9-76

DRAWN BY: MDH DESIGN BY: EAL

CHECK BY: KCG

BY

REVISION	DATE	DESCRIPTION
1	4-13-83	REALIGN 12" IRRIGATION AND 12" WATER MAINS
	2-85	VALVE ASSEMBLYS ETC. UPDATED AS BUILT

RVA RAYMOND VAIL AND ASSOCIATES
ENGINEERING • PLANNING • SURVEYING
SACRAMENTO, CALIFORNIA 1410 Ethan Way 95825

PROPOSED IMPROVEMENTS FOR
NORTH GOLF COURSE IRRIGATION SYSTEMS
PIPING CONNECTION AT FAIRWAY 10
RANCHO MURIETA CALIFORNIA

DATE FEB. 1983
SCALE
HORIZONTAL 1"=50'
VERTICAL
W.O. NO. 1205.18 V

SHEET 3 OF 5 SHEETS

8"x8"x8" TEE

370'±

6"x6" REDUCER

6"Ø GATE VALVE

6"x6"x6" TEE

THRUST BLK (5 s.f.)

EXIST. PIPE

EXIST. 6"Ø FLANGE COUPLING ADAPTOR

EXIST. THRUST BLK (2 s.f.)

EXIST. 6"x4" REDUCER

EXIST. 4" Ø GATE VALVE NORMALLY CLOSED

EXIST. GATE VALVE

EXIST. 8"

IRRIG. MAIN

8"Ø 8"x8" FLG TEE

EXIST. 8"Ø A.C.P.

THRUST BLK 8"Ø

FLANGE COUPLING FLEX W/ 2-8"x 3' SPOOLS FLG. x PL

8" FLEX CPLG.

8"x 3'0" I.P. SPOOL, FLG. TYPE

8"x8"x8" FLG. TEE

8"x 3'0" I.P. SPOOL, FLG. TYPE

8" BACKFLOW PREVENTER

8"x 3'0" I.P. SPOOL, FLG. TYPE

8" FLEX CPLG.

BASS LAKE

EXIST. GATE VALVE

EXIST. PUMP STATION

INSTALL BACKFLOW PREVENTER SEE DETAIL 1/5 (EXACT LOCATION TO BE DETERMINED IN THE FIELD)

EXIST. SMUD OVERHEAD LINES

EXIST. 8"Ø W/S STEEL PIPE

8"x8"x8" FLG TEE

8" GATE VALVES, FLG.

THRUST BLK. (4 s.f.)

EXIST. 4"Ø A.C.P. CL. 150

EXIST. ABANDONED LINE

EXIST. ABANDONED WATER TREATMENT PLANT

NOTES:

1. EXACT LOCATION OF EXIST. PIPELINES & UTILITIES SHOWN ON THIS SHEET ARE UNKNOWN. CONTRACTOR SHALL VERIFY LOCATIONS PRIOR TO BEGINNING CONST.
2. EXACT LOCATION OF PROPOSED PIPELINES SHOWN ON THIS SHEET ARE TO BE DETERMINED IN THE FIELD.

PRINTED
MAR 19 1985
RAYMOND VAIL & ASSOC.

PHOTO DATE: 11-9-76

DRAWN BY: MDH DESIGN BY: EAL

CHECK BY: KCG

BY

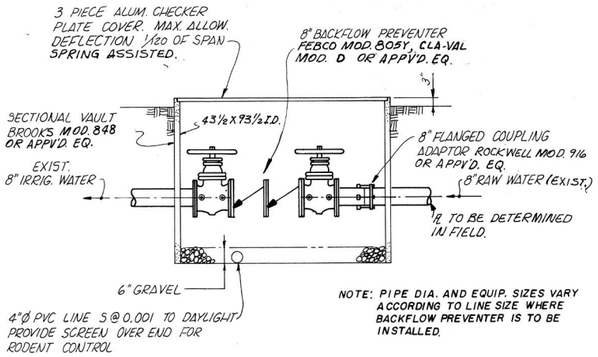
REVISION	DATE	DESCRIPTION
	4-11-83	AS-BUILT INFORMATION
	2-85	VALVE ASSEMBLYS ETC. UPDATED - AS BUILT

RVA RAYMOND VAIL AND ASSOCIATES
ENGINEERING • PLANNING • SURVEYING
SACRAMENTO, CALIFORNIA 1410 Ethan Way 95825

PROPOSED IMPROVEMENTS FOR
NORTH GOLF COURSE IRRIGATION SYSTEMS
PIPING CONNECTION AT BASS LAKE
RANCHO MURIETA CALIFORNIA

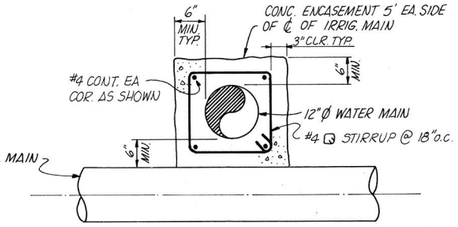
DATE FEB. 1983
SCALE:
HORIZONTAL 1" = 50'
VERTICAL
W.O. NO. 1205.18V

SHEET 4 OF 5 SHEETS



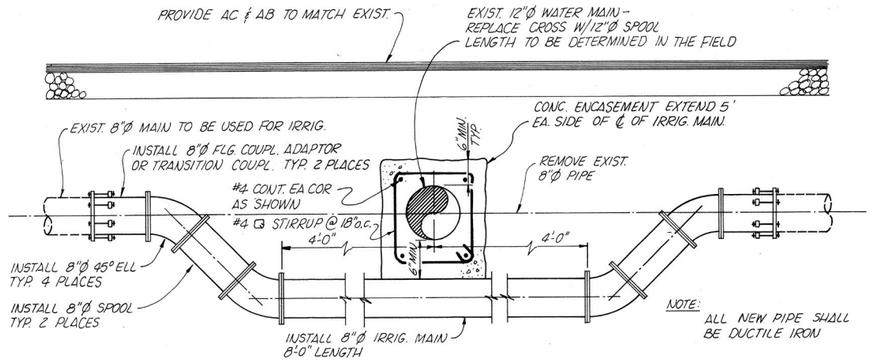
BACKFLOW PREVENTER DETAIL 1/4 1/5 1/3

NO SCALE



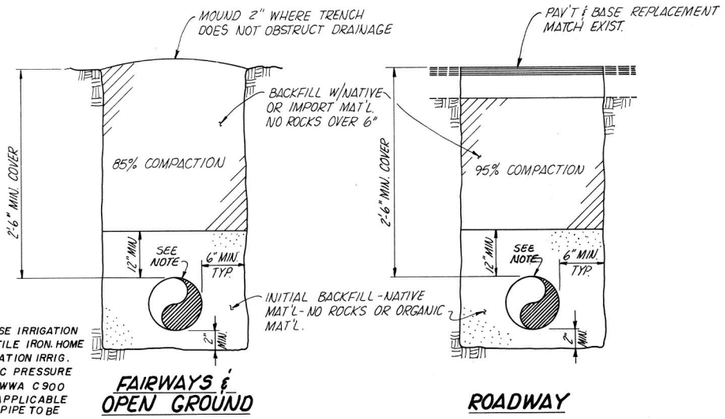
CROSSING DETAIL 2/3

NO SCALE



CROSSING DETAIL 3/3

NO SCALE

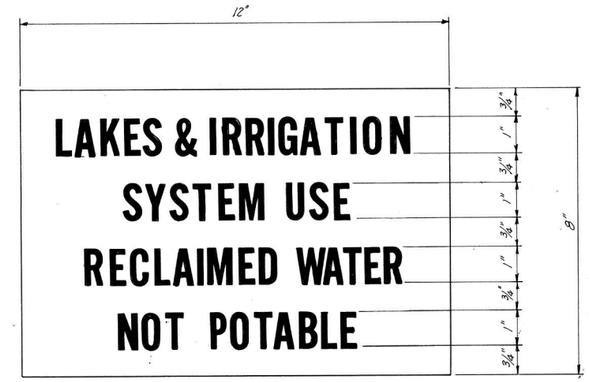


FAIRWAYS & OPEN GROUND

ROADWAY

TRENCH DETAILS

NO SCALE



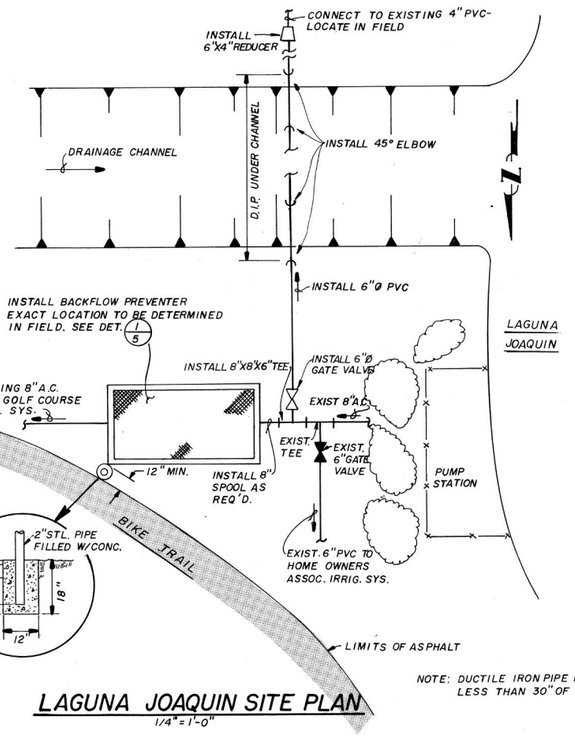
SPECIFICATIONS:

SIZE.....8"x12"
COLORS.....#12 RED BACKGROUND W/WHITE COPY.
FINISH.....FUSED PORCELAIN CERAMIC.
MOUNTING.....FOUR GROMMETED HOLES FOR #10 FASTENER.
END USE.....EXTERIOR.
STEEL.....18 GAGE VITREOUS ENAMELING STOCK.
MFR.....FERRO ENAMELING CO. OR EQ.

NOTE: MADE IN ACCORDANCE WITH PORCELAIN ENAMEL INSTITUTE SIGN SPEC. PEI: S-103 CURRENT EDITION.

SIGN DETAIL

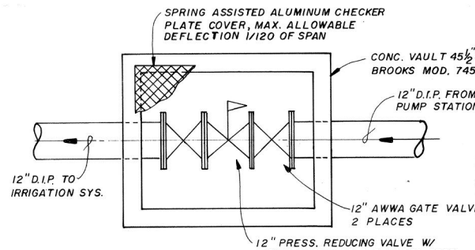
1/2"= 1'-0"



LAGUNA JOAQUIN SITE PLAN

1/4"= 1'-0"

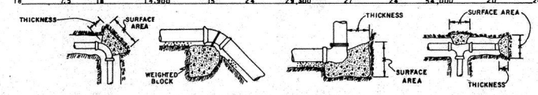
NOTE: DUCTILE IRON PIPE REQ'D. WHERE LESS THAN 30" OF COVER.



PRESSURE REDUCING STATION

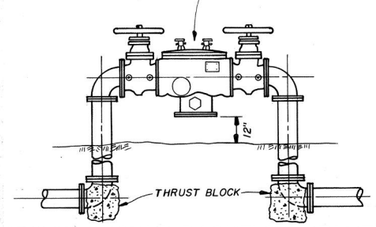
1/2" = 1'-0"

DIAMETER OF PIPE IN.	22½ HORIZONTAL BEND SURFACE AREA SQ. FT.	22½ HORIZONTAL BEND THICKNESS IN.	WEIGHT @ VERTICAL BENDS LBS.	45° HORIZONTAL BEND SURFACE AREA SQ. FT.	45° HORIZONTAL BEND THICKNESS IN.	WEIGHT @ VERTICAL BENDS LBS.	90° HORIZONTAL BEND SURFACE AREA SQ. FT.	90° HORIZONTAL BEND THICKNESS IN.	WEIGHT @ VERTICAL BENDS LBS.	TEE & DEAD ENDS SURFACE AREA SQ. FT.	TEE & DEAD ENDS THICKNESS IN.
4	1	8	1,000	1	8	1,500	2	12	3,400	2	12
6	1	8	1,700	2	12	3,200	3	12	6,000	2	12
8	1.5	12	3,000	3	14	5,800	5	15	10,700	4	15
10	2	12	4,600	4.5	18	9,000	8	18	16,700	6	18
12	3	14	6,600	6.5	18	13,000	12	18	24,000	8.5	18
14	4.5	18	9,000	8	24	17,700	16	24	32,600	11.5	24
16	6	18	11,800	11.5	24	23,200	21	24	42,700	15	24
18	7.5	18	14,300	15	24	29,300	27	24	54,000	20	24



NOTE: 1. ALL VALUES SHOWN ARE MINIMUM FOR A HYDROSTATIC PRESSURE OF 150 PSI AND A SOIL RESISTANCE OF 2,000 LBS./SQ.FT. WITH PIPELINE A MINIMUM OF 2 FEET OF COVER.
2. GRAVITY LINES, ALL SIZES, 10 PSI OR LESS, USE THE 4" DIMENSION ABOVE.

THRUST BLOCK DIMENSIONS



ABOVE GROUND BACKFLOW PREVENTER 4/2 4/3

N.T.S.

PRINTED
MAR 1 9 1985
RAYMOND VAIL & ASSOC.

REVISION	DATE	DESCRIPTION

DRAWN BY: MDH DESIGN BY: EAL
CHECK BY: KCG
BY

RAYMOND VAIL AND ASSOCIATES
ENGINEERING • PLANNING • SURVEYING
SACRAMENTO, CALIFORNIA 1410 Ethan Way 95825

PROPOSED IMPROVEMENTS FOR
NORTH GOLF COURSE IRRIGATION SYSTEMS
DETAILS
RANCHO MURIETA CALIFORNIA

DATE FEB. 1983
SCALE:
HORIZONTAL AS NOTED
VERTICAL
W.O. NO. 1205.18V

SHEET 5 OF 5 SHEETS

FILE NO. 84-410

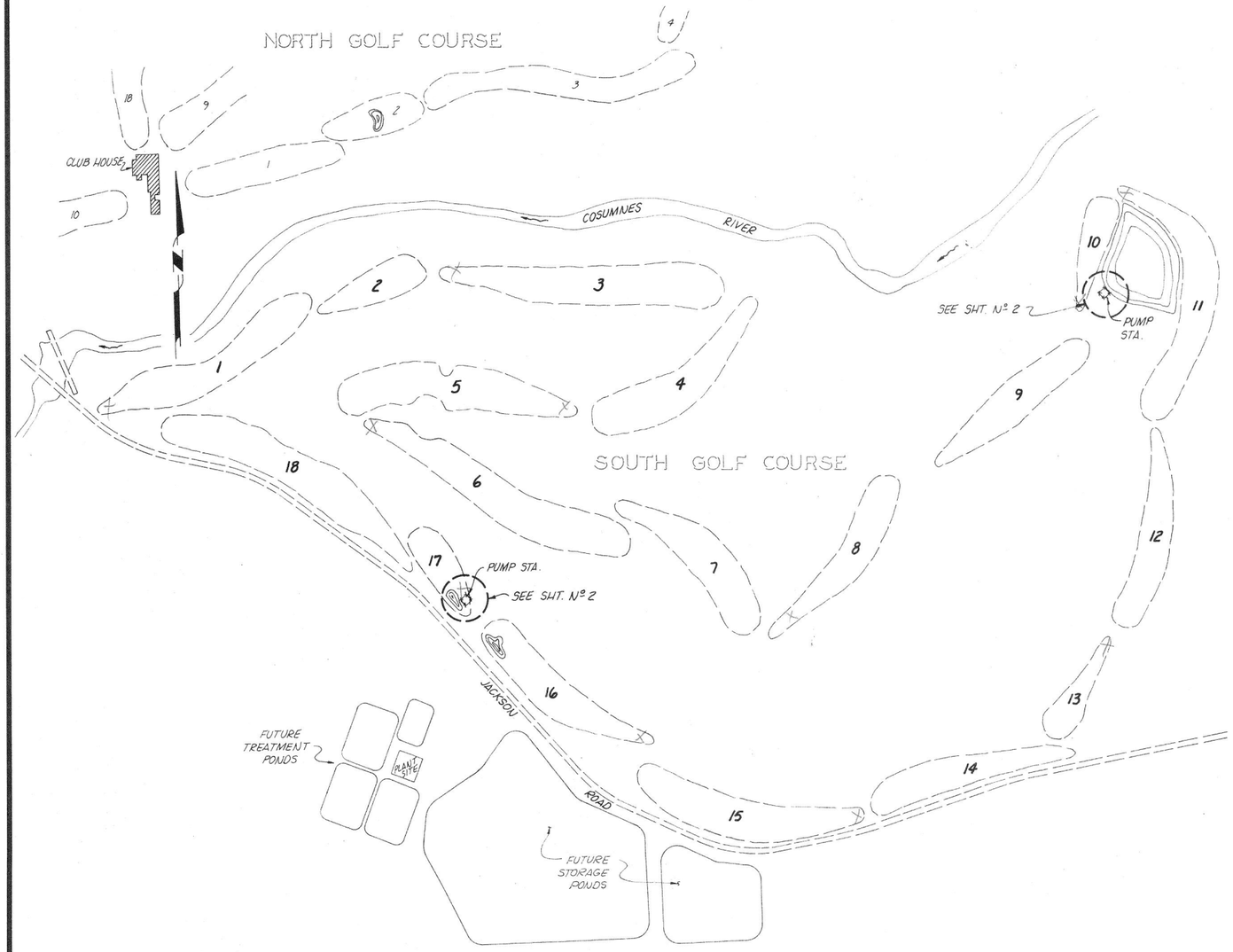
PLANS FOR IMPROVEMENTS

OF

RANCHO MURIETA WASTEWATER RECLAMATION

SOUTH GOLF COURSE IRRIGATION SYSTEMS

SACRAMENTO COUNTY, CALIFORNIA.



INDEX OF DRAWINGS

SHEET Nº	TITLE
1.	TITLE SHEET
2.	PUMP STATIONS AT FAIRWAYS 10 & 17
3.	DETAILS

SECTIONS & DETAILS

DIRECTION ARROW

B / 3 — SECTION LETTER; SHEET NO. WHERE SECTION IS CUT

SECTION B / 3 — SECTION LETTER; SHEET NO. WHERE SECTION IS CUT

DETAIL 4 / 3 — DETAIL NO.; SHEET NO. WHERE DETAIL IS CALLED OUT

GENERAL NOTES

1. ALL PROPOSED IRRIGATION MAIN PIPING, FITTINGS, VALVES AND SPECIALTIES SHALL BE RATED FOR 150 PSI WORKING PRESSURE - 30 INCHES MINIMUM COVER REQUIRED AT ALL TIMES.

2. ALL PROPOSED PIPE AND FITTINGS SHALL BE DUCTILE IRON, CONFORMING TO ANSI SPECIFICATIONS A21.50, A21.51, A21.4, A21.11, A21.10 AND AWWA C150-76.

3. CORNELL PUMP AND VERTICAL MOTOR SHOWN IN SCHEMATIC (1/3) SHALL BE SALVAGED FROM STORAGE AT THE EXISTING WASTEWATER TREATMENT PLANT YARD. THE MOTOR SHALL BE SENT TO AN AUTHORIZED MOTOR REPAIR DEALER FOR A BASIC REPAIR CONSISTING OF THE FOLLOWING:

   A) TEST RUN MOTOR TO CHECK FOR VIBRATIONS
   B) CHECK BEARING FITS
   C) REPLACE BEARINGS
   D) STEAM CLEAN
   E) BAKE UNTIL DRY
   F) DIP IN VARNISH - ONE COAT
   G) BAKE AGAIN UNTIL DRY
   H) TEST OPERATE
   I) REPAINT MOTOR

   IN ADDITION, THE PUMP SHALL BE PROVIDED WITH NEW BEARINGS AND MECHANICAL SEAL. THE PLANT MANAGER SHALL DETERMINE WHICH PUMP AND MOTOR IS TO BE SALVAGED. NOTIFY ENGINEER IF DURING BASIC REPAIR ANY OTHER REPAIR WORK IS REQUIRED.

4. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE COUNTY OF SACRAMENTO BUILDING DEPARTMENT REQUIREMENTS.

5. DATUM: THE VERTICAL DATUM FOR THIS PROJECT WAS ESTABLISHED FROM CONTROL POINT R-507 ELEVATION 198.07 SET BY GEORGE S. NOLTE & ASSOCIATES IN 1969. LOCATED SOUTH 4780' AND EAST 3610' FROM THE INTERSECTION OF JACKSON HIGHWAY AND MURIETA PARKWAY, UNLESS OTHERWISE SHOWN ON THE PLANS.

6. CONTRACTOR SHALL NOTIFY OWNER'S REPRESENTATIVE 48 HOURS PRIOR TO STARTING OR RESTARTING CONSTRUCTION.

7. EXISTING FACILITIES INCLUDING BUT NOT RESTRICTED TO CULVERTS, PIPING, VALVES, AND FITTINGS WHICH ARE REMOVED BUT NOT REUSED SHALL BE SALVAGED AND RELOCATED TO AN AREA ON RANCHO MURIETA PROPERTIES AS INDICATED BY THE ENGINEER.

8. THE TYPES, LOCATIONS, SIZES, AND DEPTHS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE IMPROVEMENT PLANS WERE OBTAINED FROM SOURCES OF VARYING RELIABILITY. A REASONABLE EFFORT HAS BEEN MADE TO LOCATE AND DELINEATE ALL KNOWN UNDERGROUND UTILITIES. HOWEVER, THE ENGINEER CAN ASSUME NO RESPONSIBILITY FOR THE COMPLETENESS OR ACCURACY OF ITS DELINEATION OF SUCH UNDERGROUND UTILITIES NOR FOR THE EXISTENCE OF OTHER BURIED OBJECTS OR UTILITIES WHICH MAY BE ENCOUNTERED BUT WHICH ARE NOT SHOWN ON THESE DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATIONS OF THOSE UTILITIES SHOWN AND ANY WHICH MAY EXIST AND ARE NOT SHOWN PRIOR TO COMMENCEMENT OF ANY WORK. THE CONTRACTOR SHALL EXPOSE ALL UNDERGROUND FACILITIES THAT ARE TO BE CONNECTED TO OR THAT ARE IN THE PATH OF THE PROPOSED IMPROVEMENTS FOR VERIFICATIONS OF LOCATION AND ELEVATION PRIOR TO COMMENCING CONSTRUCTION.

9. FOR LOCATION OF UTILITIES, CALL U.S.A. (800) 642-2444 2 DAYS PRIOR TO CONSTRUCTION.

10. ALL STREET AND STORM DRAIN CONSTRUCTION SHALL CONFORM TO SACRAMENTO COUNTY IMPROVEMENT STANDARDS DATED MARCH 27, 1978, SACRAMENTO COUNTY STANDARD CONSTRUCTION SPECIFICATIONS DATED APRIL 25, 1977.

11. CONTRACTOR SHALL REPLACE ALL LANDSCAPING AND SPRINKLER SYSTEMS DISTURBED IN KIND TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE.

12. CONTRACTOR SHALL DISPOSE OF ALL TRENCH SPOIL AT A LOCATION WITHIN RANCHO MURIETA AT THE DIRECTION OF THE OWNER'S REPRESENTATIVE. THE CONSTRUCTION AREA SHALL BE CLEAN AND RESTORED TO ORIGINAL CONDITION PRIOR TO ACCEPTANCE OF THE PROJECT.

13. THE CONTRACTOR SHALL COORDINATE ALL WORK WITH RANCHO MURIETA PROJECT SUPERINTENDENT. ALL WORK SHALL BE INSPECTED AND APPROVED BY THE RANCHO MURIETA PROJECT SUPERINTENDENT.

14. CONTRACTOR SHALL COORDINATE WORK ON GOLF COURSE WITH THE GREENS SUPERINTENDENT FOR REMOVAL AND REPLACEMENT OF TURF AND CONSTRUCTION METHODS FOR WORKING AROUND EXISTING IRRIGATION PIPING AND CONTROL SIGNAL WIRES (LOCATIONS NOT SHOWN ON THIS PLAN), AND FOR INTERRUPTION OF PLAY ON GOLF COURSE. CONTRACTOR SHALL PERFORM LOCATING WORK FOR IRRIGATION PIPING AND WIRES AT HIS EXPENSE WITH DIRECTION FROM GOLF COURSE SUPERINTENDENT.

DRAWN BY: MDH DESIGN BY: EAL

CHECK BY: KCG

BY

REVISION	DATE	DESCRIPTION

RVA RAYMOND VAIL AND ASSOCIATES
ENGINEERING • PLANNING • SURVEYING
SACRAMENTO, CALIFORNIA 1410 Ethan Way 95825

PROPOSED IMPROVEMENTS FOR
SOUTH GOLF COURSE IRRIGATION SYSTEMS
TITLE SHEET

RANCHO MURIETA CALIFORNIA

DATE FEB 1983
SCALE
HORIZONTAL 1" = 400'
VERTICAL
W.O. NO. 1205.11T

SHEET 1 OF 3 SHEETS

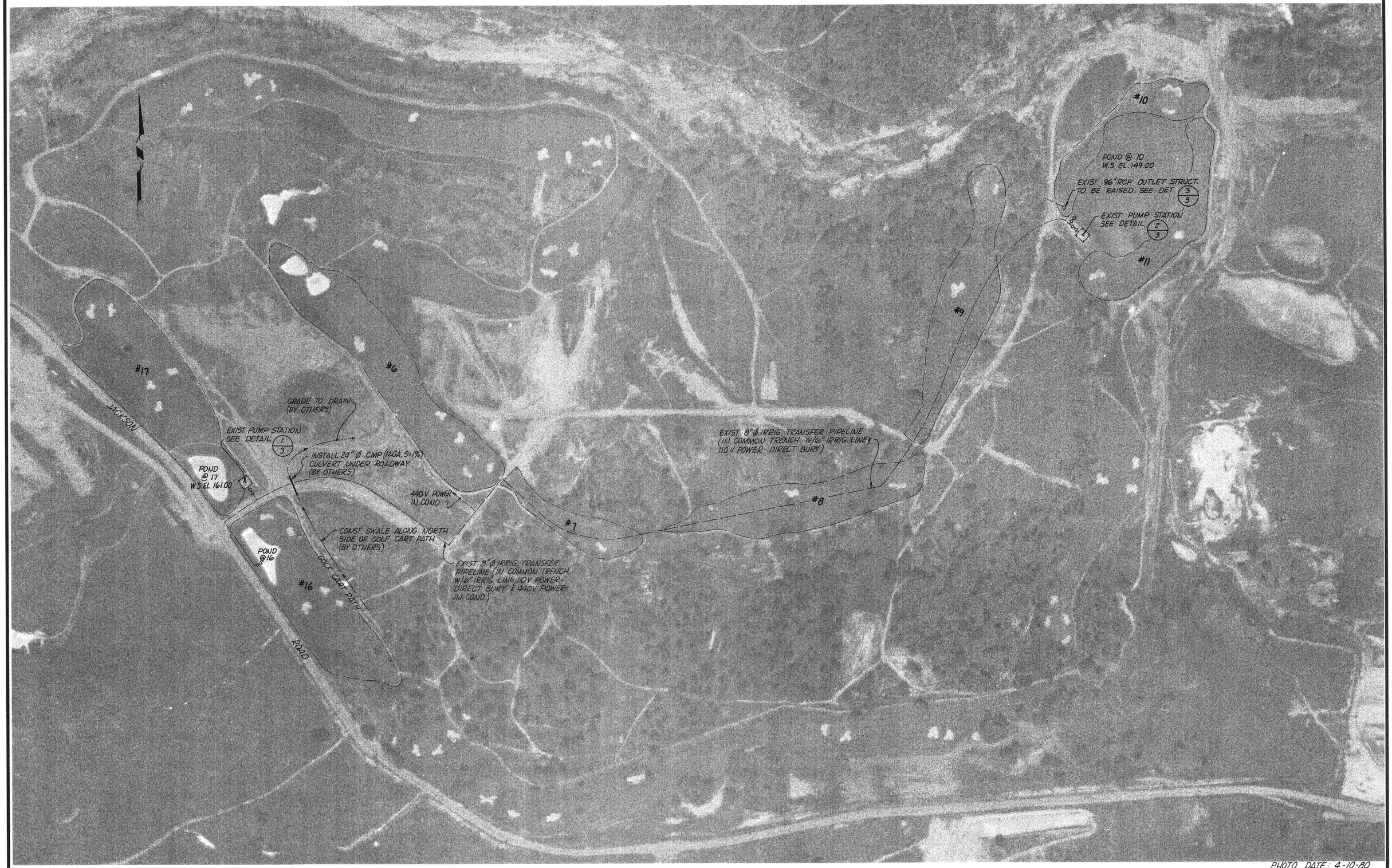


PHOTO DATE: 4-10-80

DRAWN BY: MDH DESIGN BY: EAL

CHECK BY: KCG

BY

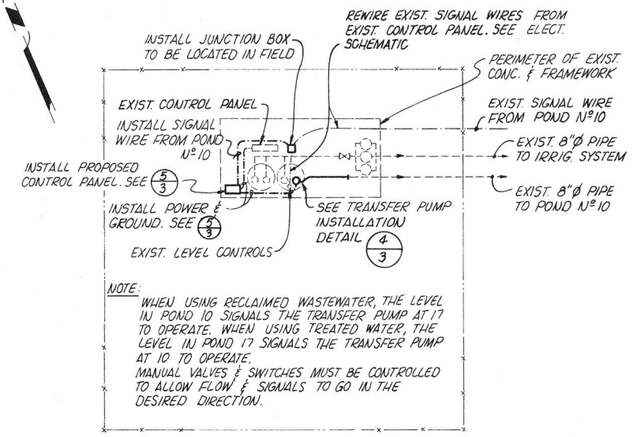
REVISION	DATE	DESCRIPTION

RVA RAYMOND VAIL AND ASSOCIATES
ENGINEERING • PLANNING • SURVEYING
SACRAMENTO, CALIFORNIA 1410 Ethan Way 95825

PROPOSED IMPROVEMENTS FOR
SOUTH GOLF COURSE IRRIGATION SYSTEMS
PUMP STATIONS AT FAIRWAYS 10 & 17
RANCHO MURIETA CALIFORNIA

DATE FEB 1983
SCALE:
HORIZONTAL 1" = 200'
VERTICAL
W.O. NO. 1205.11T

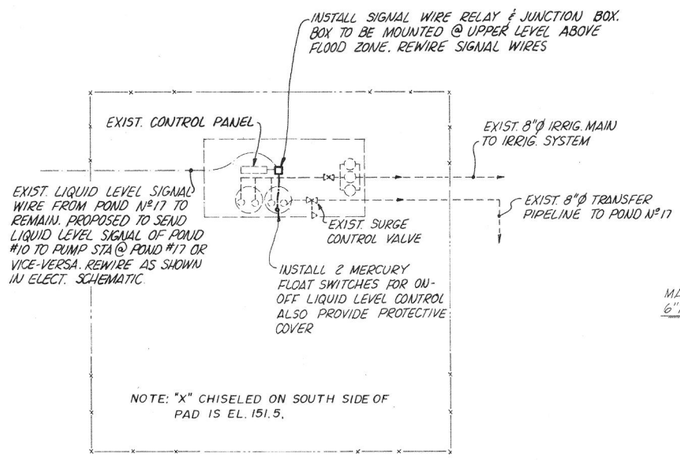
SHEET 2 OF 3 SHEETS



NOTE:
WHEN USING RECLAIMED WASTEWATER, THE LEVEL IN POND 10 SIGNALS THE TRANSFER PUMP AT 17 TO OPERATE. WHEN USING TREATED WATER, THE LEVEL IN POND 17 SIGNALS THE TRANSFER PUMP AT 10 TO OPERATE.
MANUAL VALVES & SWITCHES MUST BE CONTROLLED TO ALLOW FLOW & SIGNALS TO GO IN THE DESIRED DIRECTION.

PUMP STATION SCHEMATIC @ POND 17 (1/2)

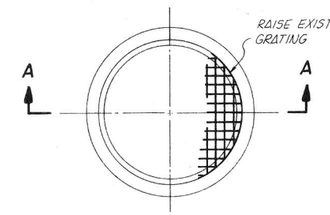
SCALE: 1"=10'



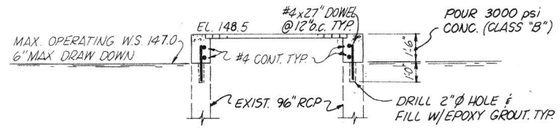
NOTE: "X" CHISELED ON SOUTH SIDE OF PAD IS EL. 151.5.

PUMP STATION SCHEMATIC @ POND 10 (2/2)

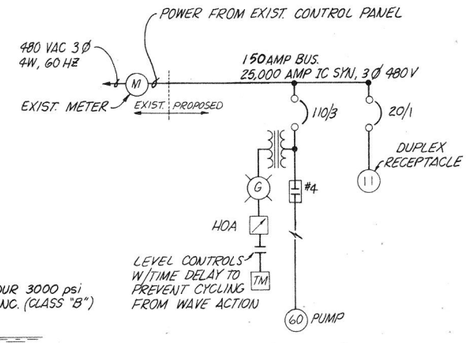
SCALE: 1"=10'



PLAN



SECTION A-A

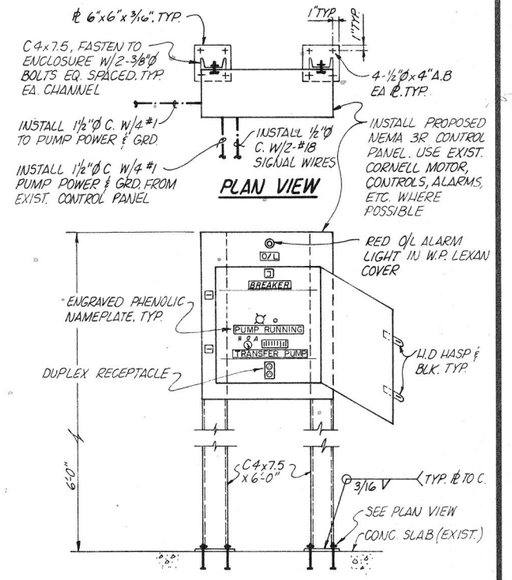


TRANSFER PUMP ONE LINE DIAGRAM

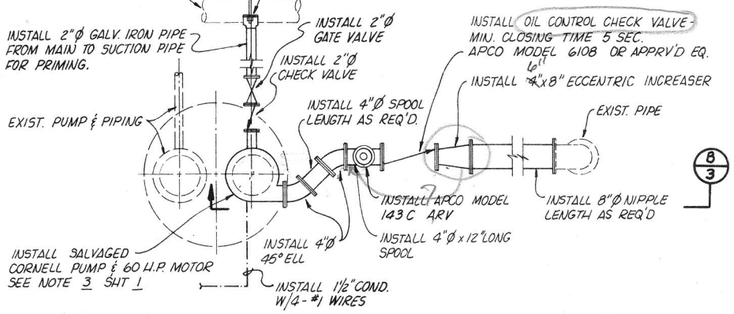
NO SCALE

DETAIL (3/2)

SCALE: 1/4"=1'

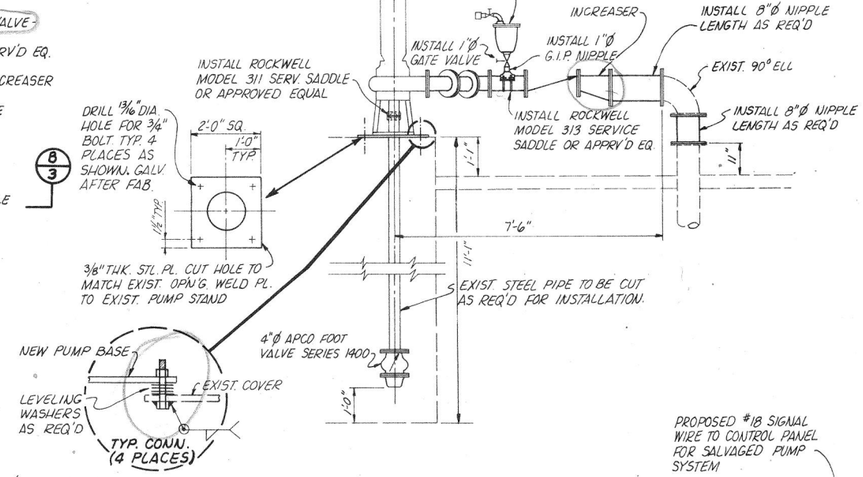


PLAN VIEW



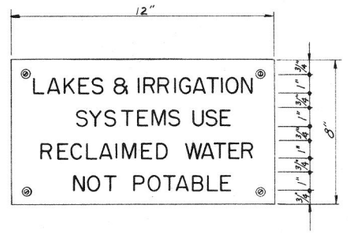
TRANSFER PUMP INSTALLATION DETAIL (4/3)

SCALE: ½"=1'



SECTION (8/3)

SCALE: ½"=1'



SPEC'S.

SIZE	8"x12"
COLOR	#12 RED BACKGROUND W/WHITE COPY
FINISH	FUSED PORCELAIN CERAMIC
MOUNTING	FOUR GROMMETED HOLES FOR #10 FASTENER
END USE	EXTERIOR
STEEL	18 GAGE VITREOUS ENAMELING STOCK
MFR	FERRO ENAMELING CO. OR EQ.

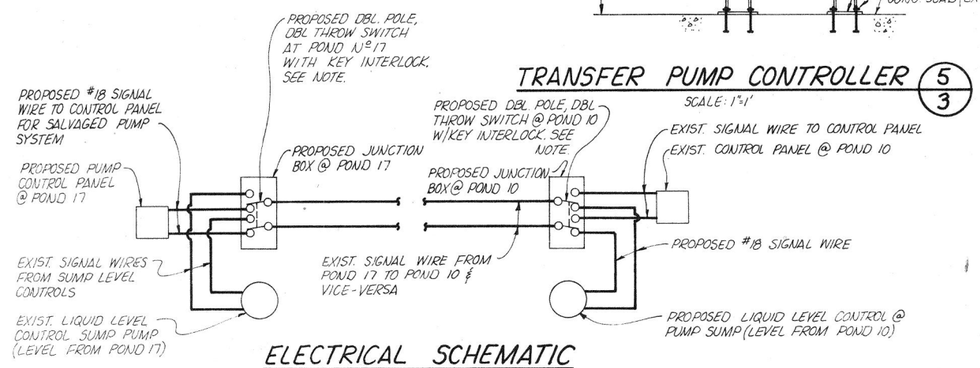
NOTE: MADE IN ACCORDANCE W/PORCELAIN ENAMEL INSTITUTE SIGN SPEC. PEI: S-103 CURRENT EDITION.

SIGN DETAIL

NO SCALE

NOTE: KEY INTERLOCK-

ONLY ONE SWITCH HANDLE SHALL BE PROVIDED, & KEYED SUCH THAT THE HANDLE CAN ONLY BE REMOVED IN THE LEVEL CONTROL POSITION. THIS INTERLOCK IS REQ'D SO THAT THE TWO MOTOR CONTROL CIRCUITS CAN NOT BE INTERFIED



ELECTRICAL SCHEMATIC

NO SCALE

TRANSFER PUMP CONTROLLER (5/3)

SCALE: 1"=1'

DRAWN BY: MDH DESIGN BY: EAL
CHECK BY: KCG
BY

REVISION	DATE	DESCRIPTION

RAYMOND VAIL AND ASSOCIATES
ENGINEERING • PLANNING • SURVEYING
SACRAMENTO, CALIFORNIA 1410 Ethan Way 95825

PROPOSED IMPROVEMENTS FOR
SOUTH GOLF COURSE IRRIGATION SYSTEMS
DETAILS
RANCHO MURIETA CALIFORNIA

DATE FEB 1983
SCALE:
HORIZONTAL AS NOTED
VERTICAL
W.O. NO. 1205.11T

SHEET 3 OF 3 SHEETS

Appendix G – Dust Control Guidelines

Rancho Murieta Community Services District (District)

Dust Control Guidelines

ALLOWED USE

The California Code of Regulations, Title 22 Section 60307(b) (6) allows for the use of recycled water for dust control on streets and roads. In addition, this Dust Control Guideline has been approved by the California Department of Public Health (pending CDPH approval) for dust control. Recycled water is NOT allowed for drinking, washing, or animal water supply.

REQUIREMENTS FOR USE

Vehicles used for collecting and distributing recycled water for dust control shall:

- Have an adequate tank and plumbing system to ensure that leaks and ruptures will not occur due to normal use.
- Be equipped with either two risers, one for potable water and one for recycled water, or each tank used shall be equipped with a District-approved air-gap separation between the filler tube and the tank.
- Have color-coded risers, hoses, and fittings; blue for potable water and purple for recycled water.
- Be equipped with uniquely sized fittings to prevent accidental connection between the potable water and recycled water systems.
- Be equipped with spray heads/nozzles configured to minimize runoff, ponding, and drift.
- Be equipped with control valves configured such that recycled water can be applied in a controlled fashion on the site and completely retained during transit.
- Be clearly labeled as specified in the "Signage Requirements."
- Prior to use, the District will inspect the Users' vehicles to ensure compliance with the requirements listed above.
- Each vehicle tank used to store and/or transport recycled water must be flushed and disinfected prior to storage and/or transport of potable water or recycled water of higher quality.
- User must maintain a log recording details of all recycled water deliveries (date, location, volume, and end use).
- Any storage facility containing recycled water for reuse applications shall be managed in a manner to control odor.
- Sites shall be designed and operated using Best Management Practices (BMPs) as stated below, or as revised by the District to prevent recycled water spray, mist, or surface flow from either leaving the site or reaching:
    1. Any storm drain or surface water with year-round flow located adjacent to the site;
    2. Areas with public access (e.g., dwellings, designated outdoor earing areas, or food handling facilities); and
    3. Drinking fountains, unless specifically protected with a shielding device.

BEST MANAGEMENT PRACTICES

- For dust control adjacent to surface waters, install runoff barriers, such as vegetative strips, collection system, or 100-foot buffers.
- Maintain distance buffers if applying recycled water near sensitive land uses.
- Do not apply recycled water for dust control during strong winds.
- The application method must not cause ponding of water. For example, avoid excessive application volumes, use after heavy rains, or application to excessively uneven (sloped) areas.

- Recycled water must not run off the site where it is intended to be applied. Conduct visual inspections to determine the necessary delivery rates and volumes. If runoff cannot be restricted by application method (for example, if the ground surface is sloped or the soil has low water permeability), runoff needs to be collected via a drainage system and reapplied.
- If hand washing is used, keep the hose low to the ground and point it in the direction of the wind to prevent spray drift.
- Signage should be displayed at site of storage, during watering, and while the area is still wet (see "Signage Requirements" on next page).
- When watering is completed, drain hose and return hose to secure position. Ensure that there is no risk that recycled water may be used for drinking purposes or animal water supply.

HEALTH AND SAFETY GUIDELINES

- All workers that are likely to be present during dust control activities are required to have training in the proper use of recycled water. Supervisory personnel and Site Supervisors shall be held accountable for ensuring that employees are using recycled water properly.
- It is the responsibility of the User to train all operations personnel so they are familiar with the proper use of recycled water. Training for operations personnel should include, but not be limited to, awareness of the following:
    1. Working with recycled water IS SAFE if common sense is used and if appropriate regulations are followed.
    2. Recycled water, although highly treated, is non-potable.
    3. Conditions such as ponding and runoff are not allowed.
    4. Good personnel hygiene must be followed (e.g., wash hands immediately after working with recycled water, do not consume food or drink while working with recycled water, cover wounds to prevent contact with recycled water).
    5. Cross-connections between the recycled water system and the potable water system must not be allowed to exist at any time.

Report any accidental spills of recycled water or personnel hygiene issues that have received medical attention to the Rancho Murieta Community Services District for action and record keeping. RMCSD will initiate normal incident management procedures.

SIGNAGE REQUIREMENTS

Vehicle Mounted Recycled Water Storage Tanks

While using vehicle-mounted recycled water for dust control, the User must install, maintain, and keep in place three magnetic signs (on both sides and the read of each vehicle, at the outlet) indicating that recycled water is in use. The signs must contain the words: "RECYCLED WATER – DO NOT DRINK" in 2-inch high letters on a purple background and the "Do Not Drink" symbol, as illustrated in Recycled Water Standard Detail RW-16.

Other Equipment and Devices

All stationary pipe, materials, and equipment used to carry recycled water onsite (such as pipes, air vacuum relief valves, pressure reducing valves, pumps, pump control valves, etc.) must be properly identified in accordance with the District's Recycled Water Standards.

USER AGREEMENT

All potential recycled water users in Rancho Murieta must meet the District's requirements and must enter into a written agreement with the RMCSD. RMCSD reserves the right to take any action necessary, with respect to the operation of the User's onsite recycled water operations, in order to safeguard public health and to meet applicable regulations and permits.