Operations Manual
For The Delivery and Use of
Recycled Water at the
Rancho Murieta Country Club

Prepared for:

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1.0 Introduction

This Operations Manual for the Delivery and Use of Recycled Water at the Rancho Murieta Country Club (the Manual) has been prepared on behalf of the Rancho Murieta Community Services District (RMCSD) and the Rancho Murieta Country Club (RMCC). The purpose of the Manual is to:

1. Provide the background and the basis for using recycled water and supplemental raw river water for the irrigation of the two golf courses at the RMCC.

2. Identify the regulatory requirements, including the monitoring and reporting obligations of both the RMCSD and the RMCC pursuant to Waste Discharge Requirements (WDR) issued by the Regional Water Quality Control Board (RWQCB) for the use of recycled water on the golf courses.

3. Set forth the responsibilities and obligations of the RMCSD and RMCC for the operation and maintenance of facilities used to provide for irrigation of the golf courses, including certain drainage facilities installed to help insure compliance with regulatory requirements affecting the use of the irrigation lakes.

4. Set forth the procedures to be used by both the RMCSD and RMCC staffs for irrigation of the RMCC's golf courses in conformance with the WDR issued by the RWQCB and the agreements between the parties.

5. Identify areas of the golf courses that will be subject to reduced irrigation during periods of drought and additional areas within the golf courses that may be utilized to dispose of excess recycled water, if necessary.

This Manual does not address the operation of the irrigation system at the golf courses by the RMCC staff or the operation of the wastewater treatment facilities (WWTF) by the RMCSD staff; it addresses those matters of the common concern for use of recycled water at Rancho Murieta. This Manual will require periodic updates to reflect, for example, such changes that may be made to the monitoring requirements, revisions to water balances or changes to the Contact Directory. The RMCSD will serve as custodian of the electronic file of the Manual and issue such updates as may be required from time to time.

1.1 Background

The two RMCC golf courses are irrigated primarily with recycled water provided by the RMCSD wastewater treatment and recycling facilities. These facilities provide tertiary treated recycled water in accordance with the requirements of Title 22 of the California Code of Regulations. The secondary treated and then filtered and disinfected wastewater must meet the following criteria for application on the golf courses:

Table 1-1 Recycled Wastewater Quality Criteria at Rancho Murieta

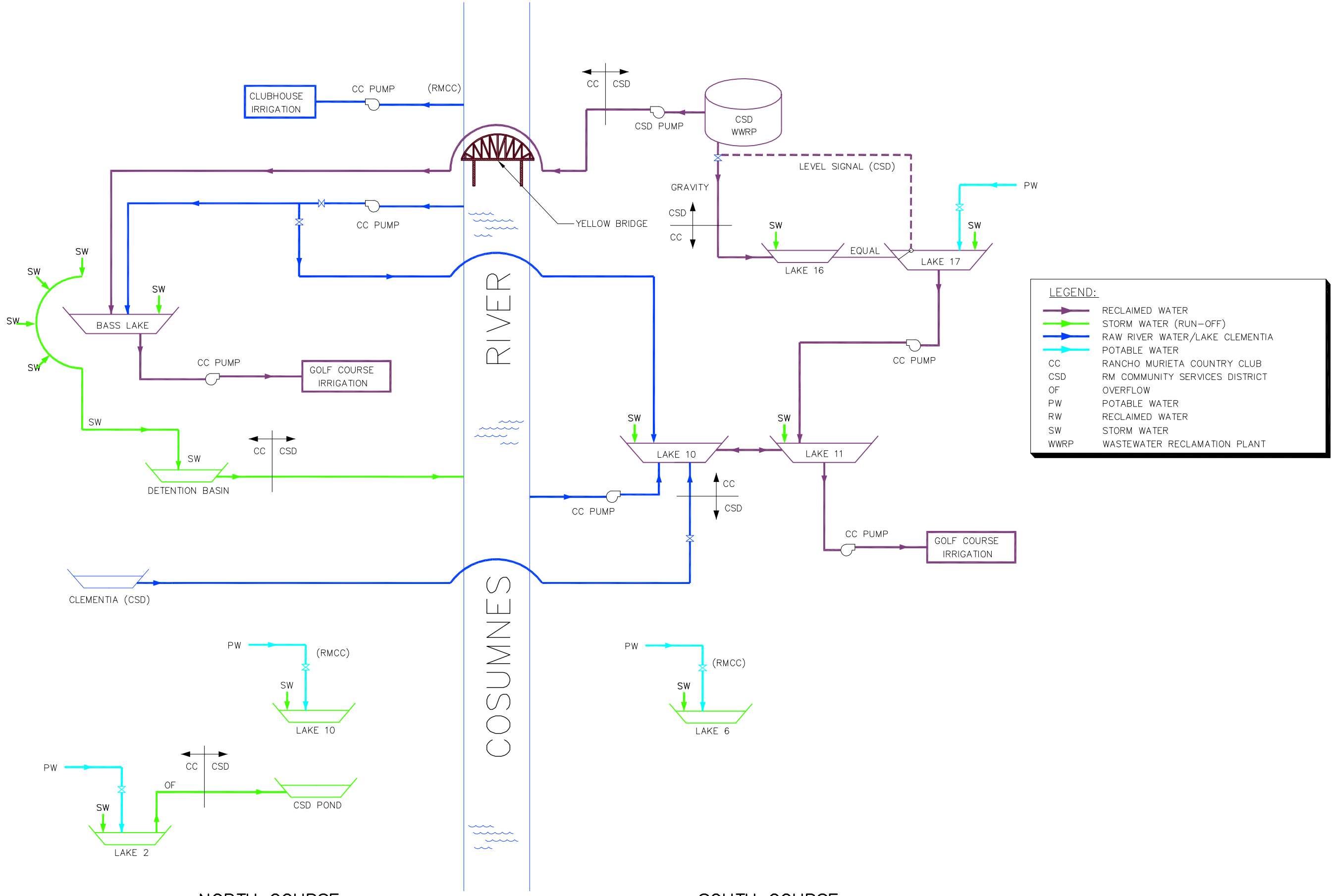
Total Coliform Bacteria* (Most Probable Number-MPN)	Must not exceed: i) 2.2 per 100 milliliters -7 day median; ii) 23 per 100 milliliters in one sample in 30 days; iii) 240 per milliliters at any time
Turbidity (NTU)	Must not exceed: i) average of 2 within a 24 hour period; ii) 5 more than 5% of the time within a 24 period; iii) 10 at any time

*- In addition, the recycled water must have a CT (the product of total chlorine residual and modal contact time of not less than 450 milligram-minutes per liter at all times with a modal contact time of at least 90 minutes.

During certain times of the year, primarily before the tertiary facilities at the RMCSD are put in operation in the spring and recycled water is not yet available for irrigation, or late in the irrigations season, untreated (raw) water may be needed for golf course irrigation. Raw water, subject to certain limitations, can be pumped directly from the Cosumnes River and gravity fed from Lake Clementia to the golf course recycled water storage reservoirs (lakes). **Figure 1-1** is a graphic overview of the sources and uses of recycled water, raw river water, and potable water used on the RMCC golf courses.

This Manual discusses the volumes of water to be applied to the golf courses under various conditions; the times of the year that water from the various sources are available or may be used, and the regulations and monitoring and reporting requirements that attach to the uses of recycled water.

The RMCSD and the developers of the RMCC golf courses entered into an “Agreement for Availability and Use of Reclaimed Wastewater” (May 1988) and an “Amendment to Agreement for Availability and Use of Reclaimed Water” (sic) (May 1994). These agreements, as modified by the Waste Discharge Requirements (WDR) issued by the Regional Water Quality Control Board (RWQCB) 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. The key provisions of those agreements and the WDR are summarized in this Manual. The WDR is provided in Appendix 1of this Manual.



LEGEND:

	RECLAIMED WATER
	STORM WATER (RUN-OFF)
	RAW RIVER WATER/LAKE CLEMENTIA
	POTABLE WATER
CC	RANCHO MURIETA COUNTRY CLUB
CSD	RM COMMUNITY SERVICES DISTRICT
OF	OVERFLOW
PW	POTABLE WATER
RW	RECLAIMED WATER
SW	STORM WATER
WWRP	WASTEWATER RECLAMATION PLANT

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Figure 1-1
Sources and Uses of Water

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2.0 Golf Course Irrigation

This section of the Manual discusses the irrigation demands of the two golf courses and the water available to irrigate the golf course at various times of the year and under varying hydrologic conditions (i.e. drought periods as well as extreme wet years). This will allow the RMCC and RMCSD staffs to properly coordinate available irrigation water supplies to meet irrigation demands.

2.1 Irrigation Demands

For the two golf courses, there are approximately 250 golf course acres currently under irrigation. In about 2007, RMCC began planting a Bermuda grass which is more drought tolerant than the Rye grass that had previously been the primary grass on the golf course. Thus, the RMCC now has greater flexibility regarding irrigation of the golf courses. Based upon historical irrigation data from RMCC, during an average year (i.e. approximately 23 inches of rainfall normally distributed), the golf courses will require approximately 550 acre feet (ac-ft) of water.

However, during wet years (having rainfall of such frequency that irrigation of the golf course during the wet season with recycled water is neither permitted nor necessary, except perhaps for very short periods) the irrigation volume applied to the golf course is estimated at approximately 450 ac-ft.

Table 2-1, summarizes the golf course irrigation demands for varying hydrologic conditions[1]. However, because of the ongoing changes to the golf course turf, these estimated demands should be compared to actual demands incurred over several years. If there are significant variances from the estimated demands, usage should be analyzed, and if appropriate, the estimated demands should be revised to reflect changes in field practices and conditions[2].

[1] Irrigation demands do not include water evaporated out of the golf course storage lakes and other ponds.

[2] Water applied to the golf courses are required to be recorded daily (see Standard Procedures in Appendix 2) and should be totaled by the Golf Course Superintendent annually.

Table 2-1 Annual Golf Course Irrigation

Estimated Irrigation Demand (ac-ft)	Normal Year	Wet Year	Dry Year
	550	450	650

2.1.1 Recycled Water Supply

The amount of recycled water available for irrigating the golf courses depends upon the wastewater flow to the RMCSD's wastewater treatment facility. This flow in turn is dependent on several factors:

- Number of connections to the wastewater collection system;
- Amount of water used within the homes by water customers of the RMCSD; and
- Hydrologic conditions – rainfall (and its distribution) and evaporation.

Table 2-2, below, summarizes wastewater flow to the treatment facility for the period 2000- 2008; also shown on **Table 2-2** are the number of domestic wastewater customers served by RMCSD over the same period and the amount of rainfall for each year.

Table 2-2 Wastewater Flow at the WWTF

Calendar Year	Wastewater Flow to WWTF (ac-ft)	Number of Wastewater Customers (residential and commercial)	Rainfall at the WWTF (inches)
2000	505.60	2,013	27.63
2001	489.82	2,131	21.93
2002	519.28	2,281	18.12
2003	520.24	2,371	17.19
2004	536.70	2,440	19.17
2005	578.39	2,520	29.48
2006	624.20	2,542	24.50
2007	558.62	2,548	14.17
2008	529.75	2,541	14.77
2009	537.18	2,544	17.52

It can be seen that the wastewater flow to the WWTF was reduced substantially over the last two years, even though the number of wastewater customers remained nearly constant. This reduced wastewater flow and the resultant reduction in recycled water available for irrigation of the golf courses was caused by a reduction in water usage in homes, as well as less water entering the wastewater collection system via inflow and infiltration (I&I), all due to substantially lower rainfalls in the period 2007-2009, as well as improvements to the wastewater collection system made by the RMCSD that reduced I&I.

Figure 2-1 shows the volumes in the wastewater reservoirs at the WWTF during the recent low rainfall years 2007-2009. Available wastewater for tertiary treatment and recycling was not sufficient to meet the irrigation demand of the golf courses and needed to be supplemented with raw water. **Figure 2-1** also shows that the recycled water is not used for irrigation until mid April or May when the regular (daily or nearly daily) irrigation season starts. The use and limitations of raw water from the Cosumnes River for maintaining golf course reservoir levels before start-up of the tertiary facilities at the WWTF and for supplementing available recycled water late in the irrigation season is discussed in more detail in **Section 2.3**.

2.1.2 Adjusting Irrigation Practices for Recycled Water Shortages and Surpluses

Extreme dry or wet years, or upsets or outages at the WWTF can result in either a shortage of recycled water or excess of stored wastewater that must be recycled for disposal. During such conditions the irrigation practices for the golf courses will need to be modified. During extreme dry years, golf course irrigation will need to be curtailed and the golf course acreage under irrigation will need to be reduced. The RMCSD Director of Field Operation will provide notice of the need to curtail irrigation to the RMCC Golf Course Superintendent in the space provided for the RMCSD response on the Request for Delivery of Recycled Water Form (Appendix 2 – Standard Procedures and Forms). If possible, the notice shall be provided after the Operations Manager and the Golf Course Superintendent have had an opportunity to meet and review rainfall data and projections.

Figures 2-2 and 2-3, North and South Golf Course Irrigation Plans, respectively, show the areas of the golf courses (hatched areas) that the RMCC Golf Course Superintendent has designated to not be irrigated during drought years by turning off specific sprinkler heads. Removal of these areas from irrigation will reduce water consumption by approximately 15-18%, when combined with other drought conservation practices to be employed by the RMCC (e.g. reduced irrigation of the more tolerant Bermuda grass).

Should the RMCSD have an excess of stored secondary wastewater that requires disposal, irrigation rates of the more tolerant Bermuda grass can be increased within agronomic limits to facilitate disposal.

Volume of Secondary Wastewater in Reservoirs−Dry Period 2008-2009

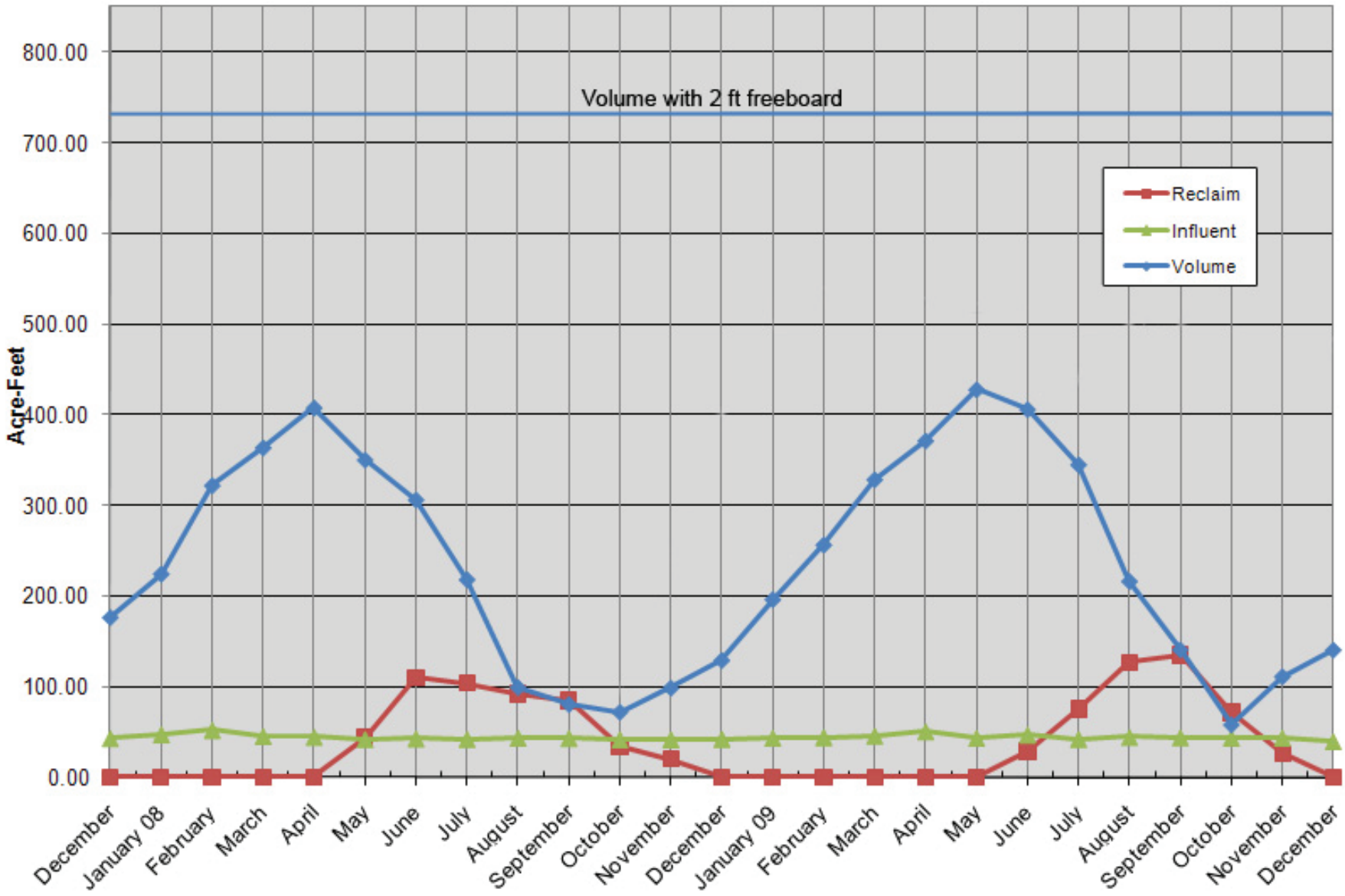

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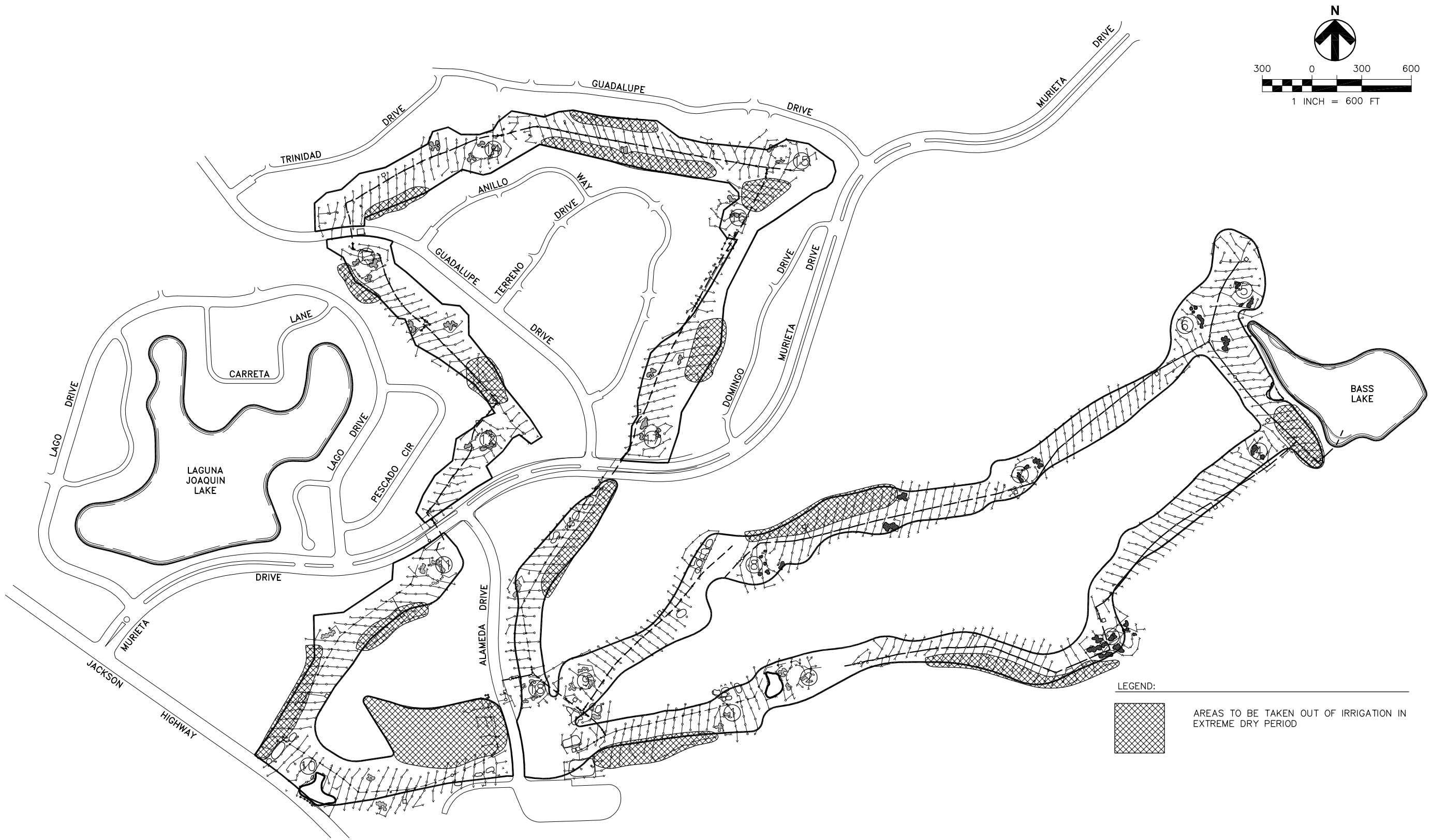
Figure 2-1



OVERALL SITE PLAN

NOTES:

1. SPRINKLER HEADS ARE SHOWN IN THEIR APPROXIMATE LOCATION.

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Figure 2-2
North Course Irrigation Plans

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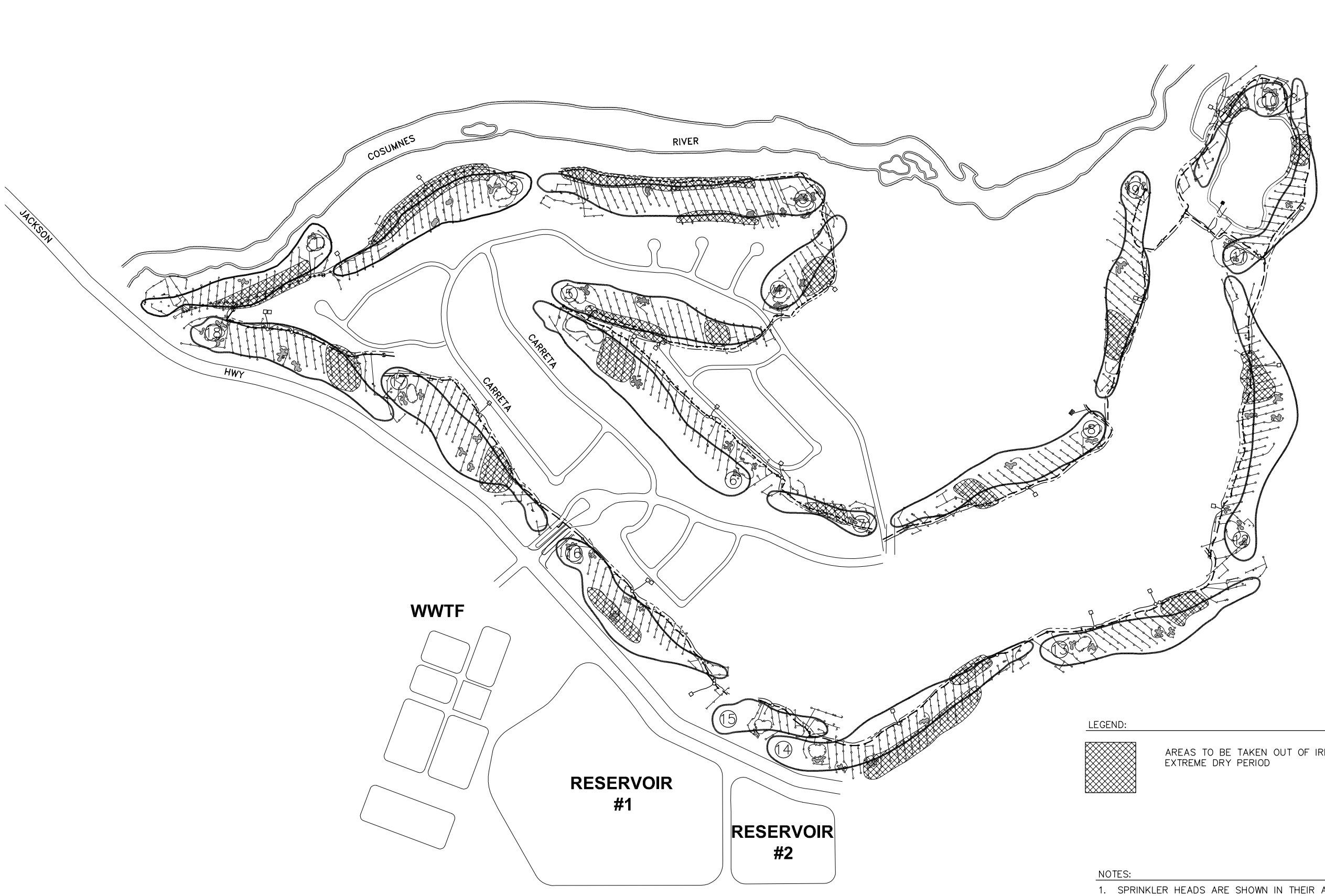

OVERALL SITE PLAN

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Figure 2-3
South Course Irrigation Plans

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2.2 Irrigation Seasons

There are no regulations or rules controlling the seasons of the year that the golf course may be irrigated. Irrigation of the golf courses, rather, depends on the hydrologic conditions and the resulting moisture of the soil.

For example, the golf courses may be irrigated with either recycled water during the winter, which is generally considered the wet season, if there has not been sufficient rainfall. Conversely, even during the dry season, the golf courses may not be irrigated under certain conditions relating to periods of anticipated precipitation, or following actual precipitation. Specifically, Reclamation Requirements # 7 of WDR No. 5-01-124 (Appendix 2) provides:

> RMCC may not discharge recycled water 24 hours before precipitation, during periods of precipitation, and for at least 24 hours after cessation of precipitation, **or when soils are saturated** (*emphasis added*).

For a typical rainfall year (a range of 22-26 inches), with normal distribution - regular (daily or nearly daily) irrigation of the golf courses would be expected to start in late March or early April, with perhaps occasional irrigation of the golf courses during dry periods throughout the winter season; irrigation would be anticipated to be curtailed significantly by mid-October and cease (except for the occasional irrigation during extended dry periods) by mid November.

For a wet year, irrigation of the golf courses will likely not commence until late April or early May, while in a dry year the golf courses will require intermittent irrigation throughout the fall and winter and be regularly irrigated with the onset of warm weather.

2.3 Irrigation Water Sources and Volumes

Recycled water constitutes the primary source of irrigation water for the golf course. However, the tertiary treatment facilities at the RMCSD treatment facilities are not in operation when the demand for irrigation water is minimal or intermittent. During these periods, if the lake levels in Bass Lake and Lake 10/11 are such that additional water is required in the lakes, raw water can be pumped to Bass Lake and to Lake 10/11 from the pump in the Cosumnes River; water from Lake Clementia can also be fed to Lake 10/11.

There are conditions in the water diversion permits that affect the times of the year that surface water may be diverted; the rates at which water may be diverted, and the amounts of surface water that may be diverted. These limitations have been incorporated in the Standard Procedure for the Diversion of Raw Water to the Golf Course Lakes (Appendix 2). The basic regiment for the supply of irrigation water is summarized in **Table 2-3**, below.

Table 2-3 Sources of Water for Golf Course Irrigation

	Source of Irrigation Water		
Irrigation Water Reservoir	Recycled Water	Lake Clementia	Cosumnes River
Bass Lake (North Course)	Primary source- typically late March or early April to October	NONE	November 1- May 31
Lake 10/11 (South Course)	Primary source- typically late March or early April to October	November 1- May 31 – limited to 40 ac-ft.	November 1- May 31

The respective volumes of irrigation water provided by recycled water and raw water from the Cosumnes River and Lake Clementia in any given year will depend on not only the amount of rainfall during the year, but also on the distribution of that rainfall. For example, if significant rainfall is experienced in late winter and early spring, irrigation of the golf course will be minimal and the water levels in the golf course reservoirs will be relatively high, thus there would be little need to pump raw water to the golf course reservoirs before the start up of reclamation facilities.

Table 2-4 presents the amount of recycled sent to the golf course reservoirs over the past several years, including wet years (2005, 2006) and dry years (2008, 2009) as well as the volume of raw water for the years 2007 -2009 for which data is readily available.

Table 2-4 Volumes of Recycled Water and Raw Water Delivered to Golf Course Lakes

Year	Volume of Recycled Water (ac-ft)	Volume of Raw Water (ac-ft)		Total Volume of Water to Golf Course Lakes (ac-ft)
		Cosumnes River	Lake Clementia	
2000	813.0			
2001	505.5			
2002	594.7			
2003	194.5			
2004	752.1			
2005	483.6			
2006	548.1			
2007	586.1	9.9	21.0	617.0
2008	487.9	59.0	0.52	547.4
2009	447.7	100.1	11.2	559.0

It should be noted that the recycled water sent to the golf course lakes is not equivalent to the irrigation volume applied to the golf course; lake levels are not necessarily the same at the beginning of each year and evaporation losses are included in the amount of water delivered to the golf course lakes. However, **Table 2-4** demonstrates the effects of a plant outage (tertiary and disinfection facilities in 2003) resulting in a minimal amount of recycled water being available in 2003 and carry-over water in the secondary reservoirs requiring greater volumes of recycled water in the years following to adjust for the surplus (**Section 2.1.2)**.

The effects of two relatively dry years (2008 and 2009) are evidenced by the fact that only 448 ac-ft of recycled water was sent to the golf course in 2009 with raw water accounting for 20 percent of the water supplied to the golf course.

3.0 Criteria for Operation of Golf Course Lakes Containing Recycled Water

The WDR contains the requirements for the operation of the golf course lakes that contain recycled water. These include:

- Containment of Recycled Water

  i.) There shall be no discharge to surface waters from Bass Lake, Lake 10, Lake 11, Lake 16 and Lake 17 and any golf course lake, pond, or water feature that receives recycled water for either storage or aesthetic purposes.

  ii.) *Not less than two (2) feet of freeboard shall be maintained in all lakes and ponds that contain recycled water.*

- Health and Aesthetic Considerations

  i.) Aid in mosquito control by controlling weeds, dead algae and lake circulation.

  ii.) Prevent nuisance odors by maintaining adequate dissolved oxygen levels in the lakes.

3.1 Operating Considerations and Parameters

The containment criteria for the RMCC recycled water storage lakes is based on the 100-year, 365 day rainfall event, which is approximately 45 inches. That is, 45 inches of rainfall over the course of a year is expected to occur only once in 100 years, and this amount of rainfall and resulting runoff into the lakes that store recycled water must be contained. If the lakes overflow during a year having rainfall that will be exceeded less frequently than once in 100 years (i.e. 50 inches of rainfall occurs less frequently than the once in 100 years, 45 inch event) the discharge from the lakes is not considered a violation of the WDR.

The 100-year, 365 day rainfall of 45 inches, together with other hydrologic data, has been used to calculate water balances for the lakes and the volume of water that must be stored during the 100 year event. The water balances for the Bass Lake and Lake 10/11 watersheds are presented in the Appendix 3. The water balances are based upon a number of assumptions, including the distribution of the 45 inches of rainfall monthly. Therefore, the Golf Course Superintendent must take care to observe and report any significant variations in the water levels estimated by the water balances and those observed so that the reasons for any differences may be determined and the water balances re-calibrated, if necessary. See **Table 3-1** for estimated minimum freeboard required through the course of the 100-year, 365 day rainfall event.

3.1.1 Lake Levels at Beginning of Wet Season

In order to assure that there will be no overflow of the lakes for any water year (the period July 1 to June 30) having rainfall less than the 100-year, 365 day event, the water level in the lakes at the beginning of the wet season must be such that the useful operational storage capacity in the lake (the maximum volume that could be stored with an allowance for two feet of freeboard) is greater than the water that will enter the lake due to direct rainfall and the runoff that will enter the lake during the wet season, less any irrigation and evaporation that may be expected during the 100 year event.

Based upon the water balances, at the start of the wet season (October 1), Bass Lake and Lakes 10/11 should be drawn down to levels of 7.9 feet and 7.4 feet below their respective overflow elevations- the spillway elevation of 187.75 feet in Bass Lake and the stand pipe overflow elevation of 153.00 feet in Lake 10/11. See **Figures 3-1** and **3-2** for a graphic depiction of the water levels in the lakes at the start of the wet season.

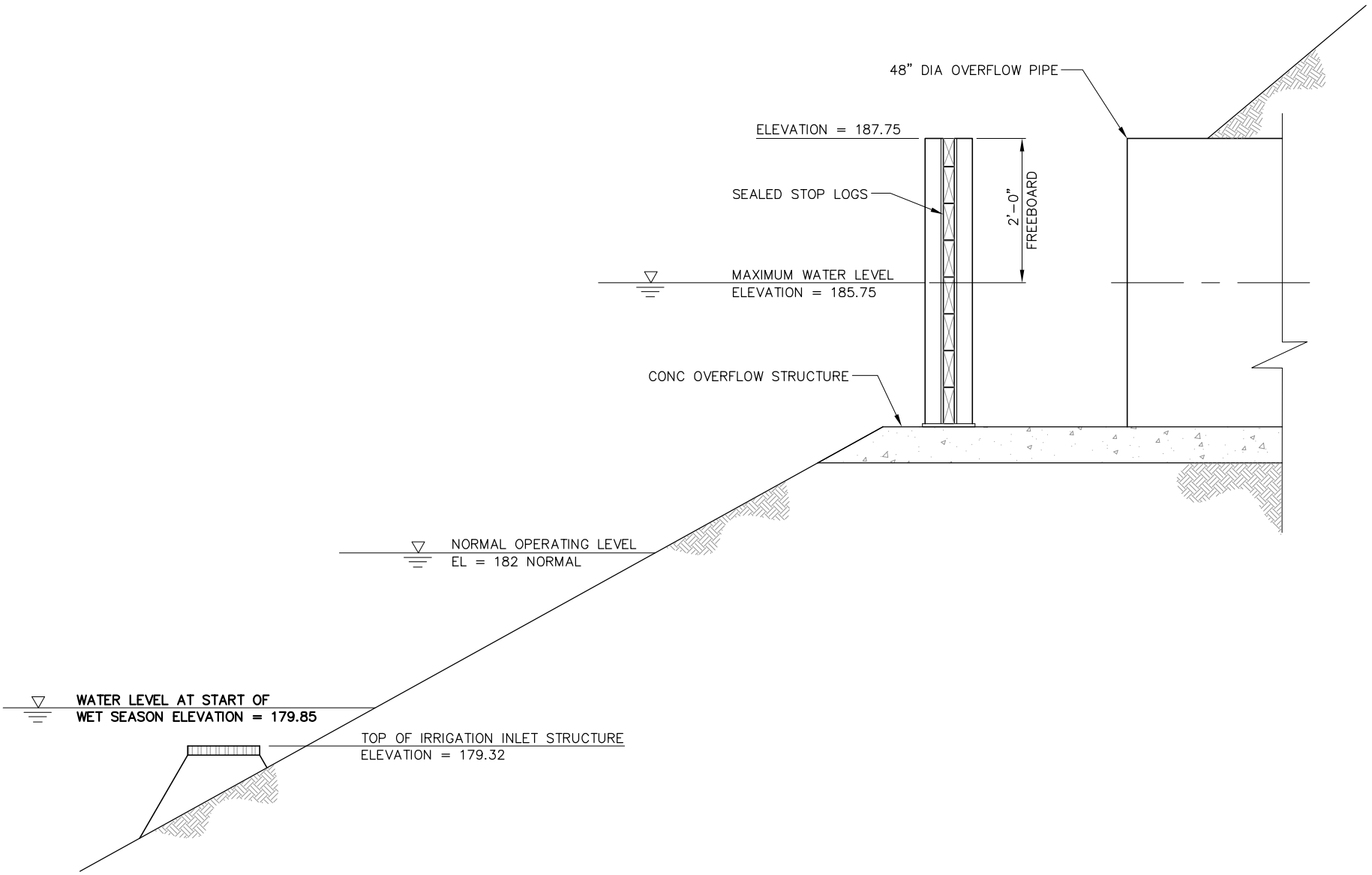

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Figure 3-1
Bass Lake Water Elevation
at Beginning of Wet Season

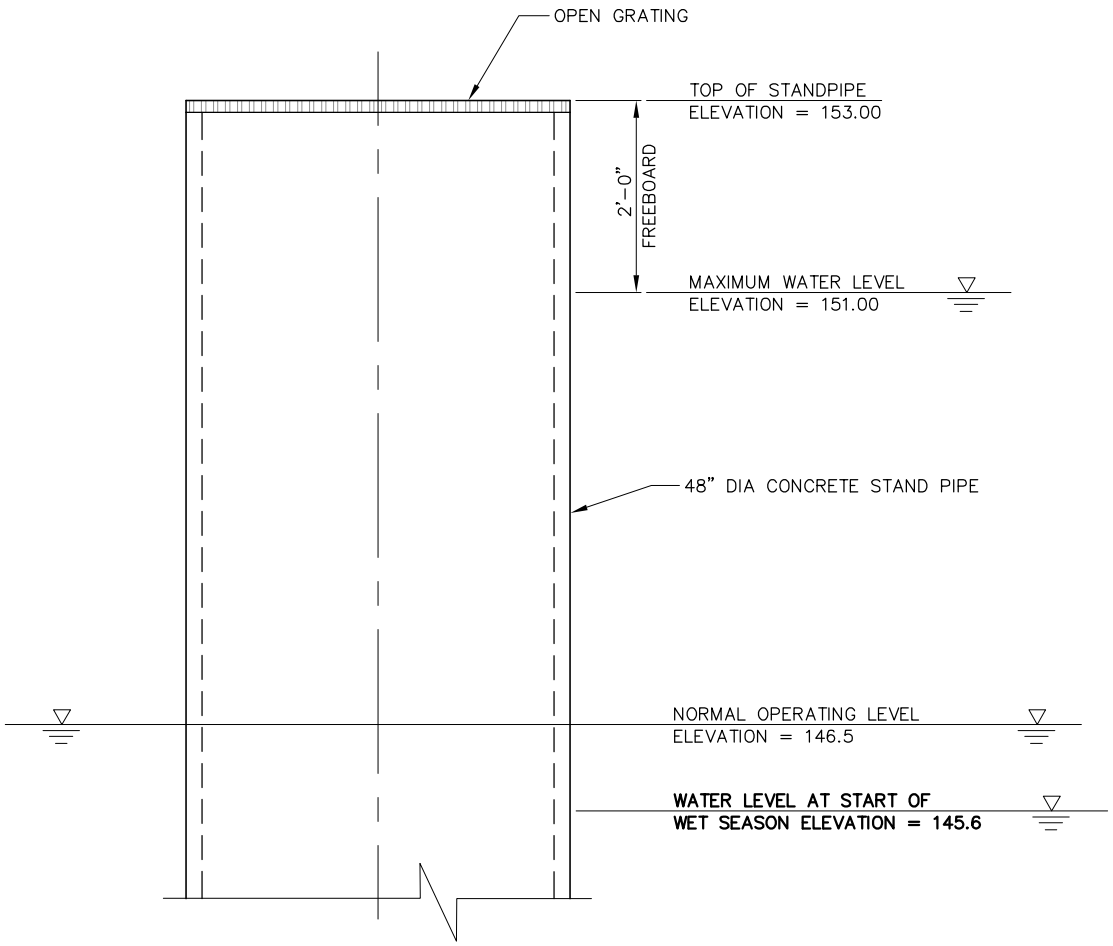

Figure 3-2
Lake 10/11 Water Elevation
at Beginning of Wet Season

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3.1.2 Water Levels in the Storage Lakes in the Wet Season

The water levels in the lakes must be regularly monitored during the critical wet season and must not be allowed to rise to levels such that the useful storage in the lakes becomes less, at any point in time, than the volume required to store the balance of the 100 year event.

For example, if at a point in time in the wet season, 10 inches of rain has fallen on the golf course, Bass Lake and Lake 10/11 must each have useful storage equal to the volume of water produced by 35.4 inches of rainfall (and runoff) on the lakes; 19.7 and 34.2 ac-ft, with 6.6 and 6.2 feet of freeboard, respectively. **Table 3-1**, below, summarizes the relationship of rainfall, useful storage required and water level needed to achieve the required useful storage. It should be used to maintain adequate storage capacity throughout the wet season.

Table 3-1 Rainfall, Storage and Freeboard Requirements

Rainfall to Date for Current Water Year (inches)	Potential Rainfall for Balance of 100-Year Event (inches)	Acre-Ft of Useful Storage Required For Balance of Potential 100- Year Event		Freeboard Needed to Store Balance of Potential 100-Year Event* (feet)	
		Bass Lake	Lake 10/11	Bass Lake	Lake 10/11
0	45.4	25.6	44.4	7.9	7.4
5	40.4	22.5	39.1	7.3	6.8
10	35.4	19.7	34.2	6.6	6.2
15	30.4	16.9	29.3	6.0	5.6
20	25.4	14.1	24.4	5.3	5.0
25	20.4	11.3	19.5	4.7	4.4
30	15.4	8.4	14.7	4.0	3.8
35	10.4	5.6	9.8	3.4	3.2
40	5.4	2.8	4.9	2.7	2.6
45.4	0.0	0.0	0.0	2.0	2.0

*-includes 2 feet of freeboard per WDR specifications

During the wet season, there may be some opportunity to lower the water level in the storage lakes (i.e. increase the freeboard) by irrigation of the golf courses. However, particularly during the 100-year event, irrigation of the golf course will be limited because the recycled water can only be applied at agronomic rates and, with the limited number of days without precipitation, saturation of the soils would be likely.

3.1.3 Water Levels in the Storage Lakes During the Irrigation Season

During the irrigation season, water levels in the storage lakes is less dependent on storage requirements and is controlled by aesthetic and pumping level considerations. Water levels in the lakes can be increased to assure that there is adequate recycled water in the lakes to satisfy irrigation demands and improve the lake aesthetics. **As the irrigation season comes to an end, however, lake levels must not be so high that the required freeboard can not be achieved by drawing down the lake levels to satisfy the remaining seasonal irrigation demands of the golf courses.**

The lake levels during the irrigation season should be determined by the Golf Course Superintendent or his designee, and those levels will depend on the existing conditions.

For example, if towards the end of September, conditions are dry and there is no rain in the forecast, the Golf Course Superintendent may call for additional recycled water to the storage lakes. The amount of water called for, however, should not exceed the irrigation demands for the forecasted period (e.g., if the forecast is for 5 days and the anticipated irrigation demand is 250,000 gallons per day for each golf course, the amount of water called for should not exceed 1.25 million gallons (3.84 ac-ft) per golf course.

Conversely, if, in early fall, there has been recent precipitation with the forecast for additional precipitation, the Golf Course Superintendent must not call for addition water to be delivered to the lakes in order to assure that lake levels provide sufficient freeboard to store the 100-year event as shown in **Figures 3-1 and 3-2**.

3.2 Water Delivery to the Storage Lakes

Recycled water (or if recycled water is not available, raw water) should be delivered to the storage lakes **only when requested by the Golf Course Superintendent (recycled water) or when authorized by the RMCSD Director of Field Operations pursuant to request by the Golf Course Superintendent (raw water)**. In order to help assure that water is not mistakenly requested by the RMCC or inadvertently delivered to the golf course storage lakes by the RMCSD, written documentation of the request for recycled water delivery and pumping of raw water must made on the forms provided in Appendix 2 of the Manual.

The Request for Recycled Water Delivery and Request for Authorization to Pump River Water or to Transfer Water from Lake Clementia forms are to be sent via email or fax to the Director of Field Operations at RMCSD (see Standard Procedure for Diversion of Raw Water to Golf Course Lakes- Appendix 2). Phone and fax numbers, along with email addresses of current RMCSD and RMCC personnel are listed in the Contact Directory in Appendix 4 of the Manual.

3.3 Preventing Incidental Recycled Irrigation Water Runoff

The WDR for the use of recycled water on the golf courses prohibit the discharge of incidental recycled irrigation water from the golf courses that may occur as a result of irrigation water runoff.

To minimize the potential for recycled water runoff, irrigation of the golf course must be closely managed to assure that excess irrigation is avoided. To further help assure that recycled water runoff does not leave the golf courses, the Project has included additional piping and valves (diversion features) that provide for the collection and diversion of runoff back into the recycled water storage lakes. In the case of Bass Lake, groundwater can also be collected and directed back into the lake for irrigation of the golf course.

Figures 3-3 and 3-4 show the irrigation collection/ subsurface water diversion detail for Bass Lake and Lake 10/11, respectively.

It must be emphasized, that for both Bass Lake and Lake 10/11, **the diversion features must only be operated during the irrigation season**. The valves on the diversion pipes must be closed during the wet season to prevent runoff from entering the recycled water storage lakes and utilizing storage capacity intended to store the 100-year, 365 day event.

The valves on the diversion features should be exercised at least once during both the irrigation season and wet season (but not during a rainfall event).

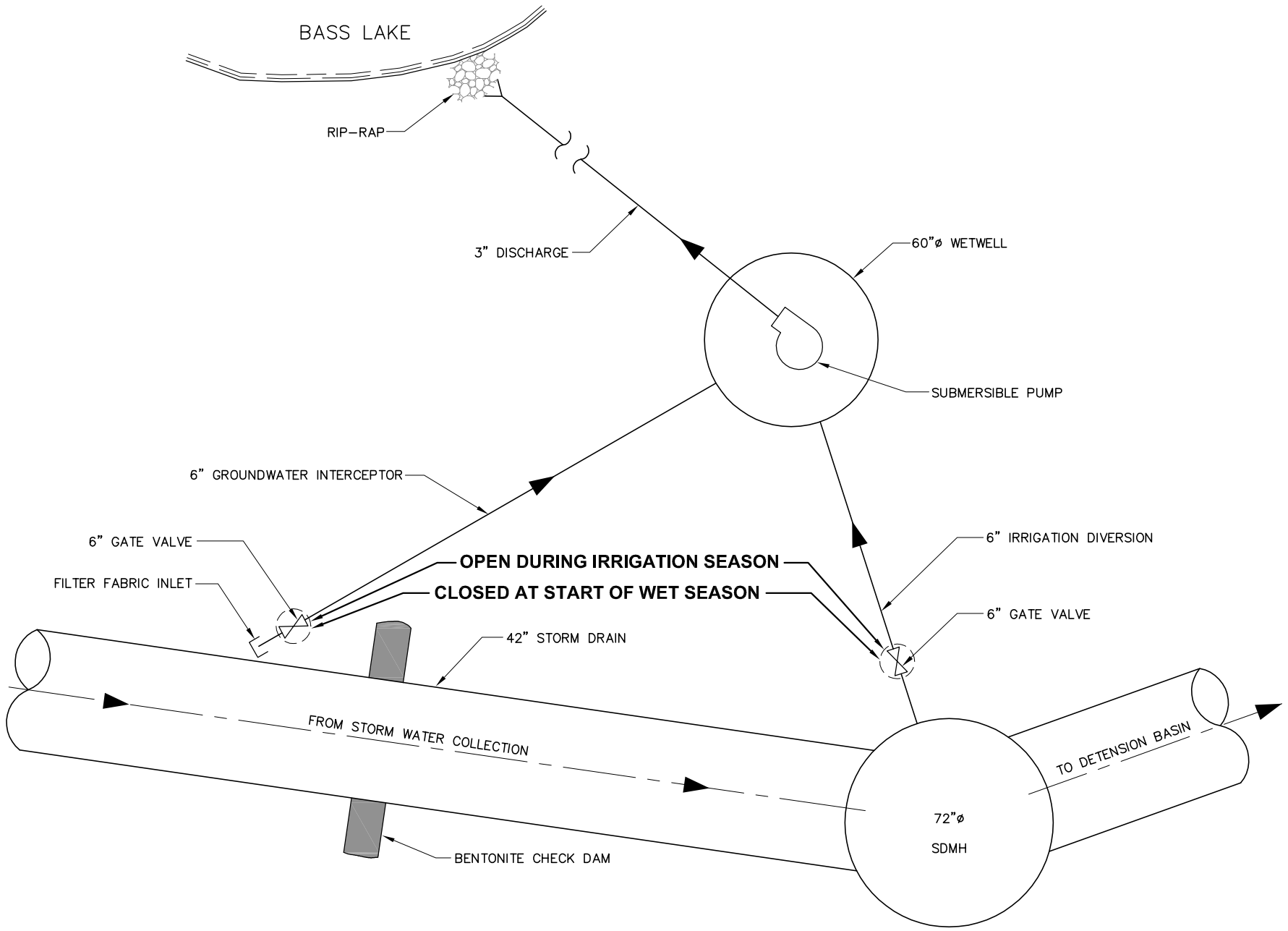

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Figure 3-3
Bass Lake Diversion Feature

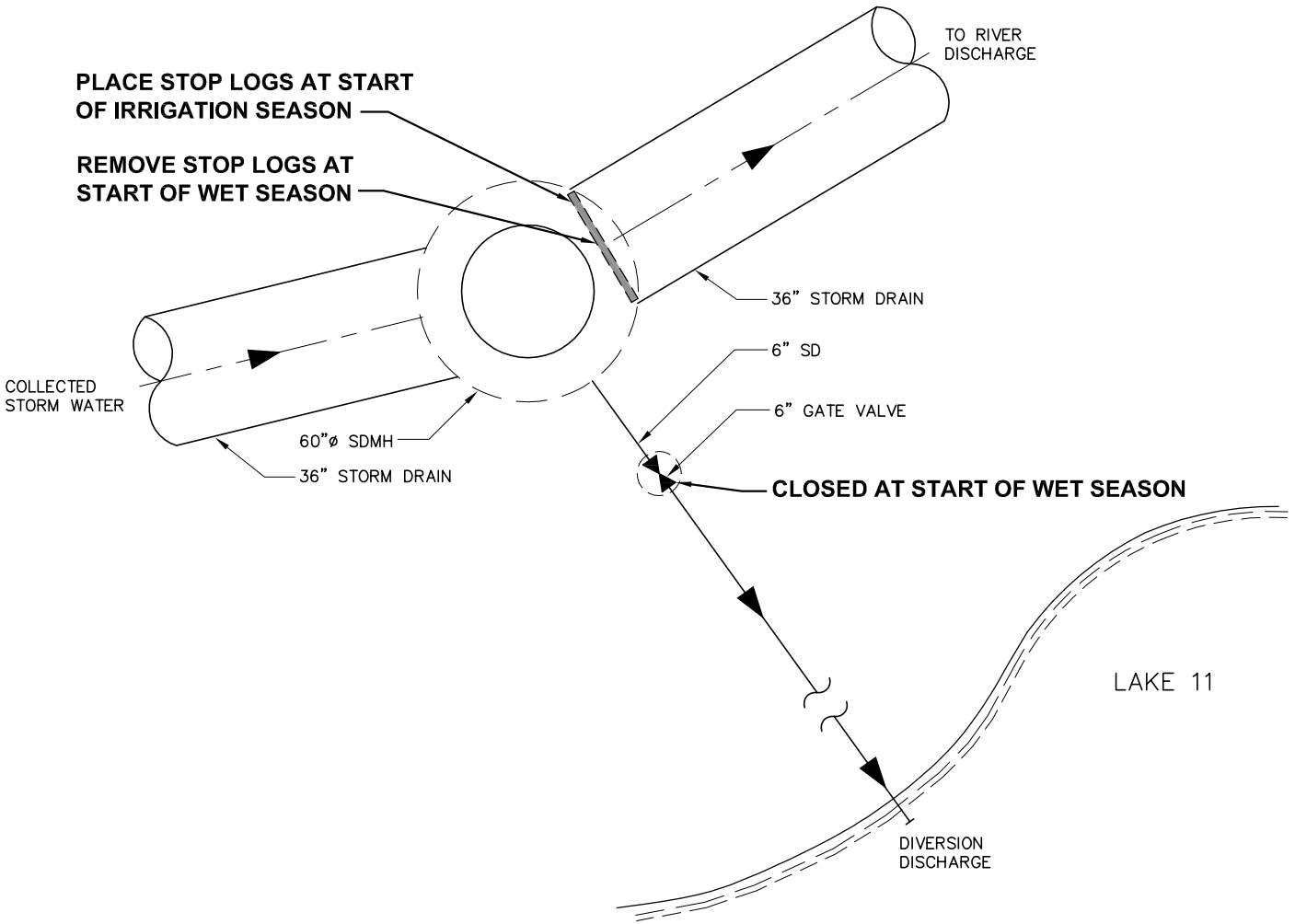

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Figure 3-4
Lake 10/11 Diversion Feature

3.4 Operation of Lakes 16 and 17

Lakes 16 and 17 on the South Course receive recycled water during the irrigation season and are subject to overflow due to inflow and direct rainfall during the wet season. Therefore, these lakes must be pumped down as much as possible so that minimal amounts of recycled water are in the lakes when the wet season begins.

Dates for pumping out the recycled water from Lakes 16 and 17 depends on current irrigation requirements and rainfall conditions as outlined in Section 3.1.3, above.

Once the recycled water has been pumped from the lakes, the lakes can either be refilled with raw water or potable water (but not with recycled water) or allowed to fill from direct rainfall and runoff during the wet season. The Golf Course Superintendent must notify the RMCSD's Director of Field Operations when recycled water will be pumped from the lakes, and the level signal turned off until after the Superintendent has requested recycled water delivery to the Lakes 16 and 17 in the spring. After these lakes have been pumped down at the start of the wet season, any water supplied to Lakes 10/11 for irrigation must be raw water from the Cosumnes River or Lake Clementia.

If Lakes 16 and 17 contain a minimal amount of recycled water (i.e. all the recycled water that could reasonably be removed from the lakes, has been removed), any overflow of the lakes caused by direct rainfall and storm water runoff will not be considered a violation of the WDR.

3.5 Odor and Mosquito Control

Odors, allegedly arising from the use of recycled water on the golf courses, were the subject of complaints and a Notice of Violation of the WDR in 2005. In order to minimize the potential for odor problems, the RMCC has developed certain procedures (See Odor Assessment and Mitigation Report, HydroScience Engineers, October 2005) that include:

- Draining the water in the irrigation system piping back to the storage reservoirs immediately before the start of the annual irrigation cycle and each time daily irrigation with recycled water is interrupted for more than two or three days. This mitigation action is intended to minimize the application of recycled water stored in the pipes that may be low in dissolved oxygen, thereby reducing this potential cause of odor.
- Maintaining adequate circulation and dissolved oxygen levels in the lakes with the use of aeration/mixing equipment in Bass Lake (and the other lakes if necessary). This will also help prevent stagnation of the water and associated algae and mosquito problems.

In order to help assure prompt responses to any potential odor problems and to document those responses, both RMCSD and RMCC staffs will utilize the **Odor Recordation and Action Form** (Appendix 2).

Mosquito control measures require that weeds and other vegetation be regularly cut and removed to avoid breeding areas in the lakes; and those lakes and ponds be periodically dredged in those shallow and isolated areas that have accumulated materials that can, because of resulting stagnation of the water, provide breeding areas for mosquitoes.

4.0 MONITORING AND REPORTING

4.1 Introduction

The monitoring and reporting requirements of the WDR are contained in the Revised Monitoring and Reporting Program No. 5-01-124 (MRP) for the RMCSD and the RMCC. This revised program was issued on February 2, 2006 and was included with the Cease and Desist Order (CDO) issued by the RWQCB that same date.

Conformance with the MRP will help assure that the issues raised in the CDO will not reoccur. These issues were:

1. Discharge of recycled water from the golf courses;
2. Inadequate freeboard (storage) in treated and recycled water storage ponds; and
3. Odors and other nuisance issues resulting from the use of recycled water.

4.2 Responsibilities of RMCSD and RMCC

The MRP delineates the responsibilities of the RMCSD and RMCC respecting the monitoring and reporting of the wastewater treatment facilities, golf course ponds and application of recycled water. The complete MRP is provided in Appendix 1 along with the Standard Provisions and Reporting Requirements for Waste Discharge Requirements[3]. The monitoring and reporting requirements for the RMCSD and the RMCC are summarized below:

RMCSD MONITORING AND REPORTING RESPONSIBILITIES:

1. WWTF influent monitoring;
2. Secondary effluent monitoring;
3. Tertiary effluent monitoring;
4. WWTF pond monitoring;
5. WWTF reclamation monitoring (recycled water used at the WWTF site);
6. Groundwater monitoring;
7. Biosolids monitoring; and
8. Submitting joint monitoring reports (with the RMCC).

RMCC MONITORING AND REPORTING RESPONSIBILITIES:

[3] - The MRP may be revised from time to time by the RWQCB and Appendix 1 should be updated to incorporate any such revisions.

1. Recycled water storage lake monitoring;
2. Golf course irrigation monitoring; and
3. Submitting joint monitoring reports (with the RMCSD).

With the exception of the groundwater monitoring, which is reported quarterly and annually, and the biosolids which is reported annually by the RMCSD, the monitoring results are reported monthly in a report submitted jointly by the RMCSD and RMCC.

4.2.1 Preparation and Submittal of the Monthly Monitoring Report

The Standard Procedure for Preparation of the Monthly Monitoring Report (Appendix 1) has been prepared to facilitate the timely transfer of monitoring data between the RMCC and the RMCSD. The Procedure calls for the RMCC to transmit electronically three monitoring worksheets (daily odor monitoring, weekly lakes monitoring and monthly irrigation monitoring) to the RMCSD. The Director of Field Operations will then enter total nitrogen and dissolved solids data for the recycled water for the month to calculate the loadings of these constituents on the golf courses.

The worksheets are to be transmitted to the RMCSD by the by the 7th day of the following month for which the worksheets apply. The Director of Field Operations shall compile the information provided by the RMCC with the monitoring and reporting data required of the RMCSD and prepare Joint Monthly Monitoring Report for co-signature by RMCC Golf Course Superintendent or authorized representative for transmittal on or before the 23rd of the month to the RWQCB (with a copy provided to RMCC).

4.3 Lake and Pond Monitoring Parameters of Note

Certain monitoring requirements of the revised MRP relate to regulatory issues that have arisen either as a result of irrigation of the golf courses with recycled water or operation of the WWTF. These include:

- Odor Issues - Dissolved Oxygen is to be monitoring weekly in all WWTF ponds AND in all Bass Lake, Lakes 10/11 and in Lakes 16 and 17 (during those times of the year that Lakes 16 and 17 have recycled water in them). The grab sample is to be taken opposite each pond inlet at a depth of one (1) foot between the hours of 0700 and 0900. A minimum of 1 mg/l of dissolved oxygen in the upper one foot of all wastewater ponds is deemed to be compliance with the discharge specification prohibiting objectionable odors.

- Freeboard – in order to prevent discharge of wastewater or recycled wastewater to surface waters or surface water discharge courses, a minimum of two (2) feet of freeboard must be maintained in the all ponds. Unauthorized discharge of wastewater or recycled water is an extremely serious violation of the WDR and can result in significant fines.

  The RMCC golf course Superintendent has the ability to control the freeboard in Bass Lake and Lake 10/11. These ponds are the only golf course ponds that should contain recycled wastewater during the wet season, and thereby have the potential to cause a violation of the WDR. Consult **Section 3.1.2** of this Manual for a detailed explanation of the relation between the amount of rainfall experienced and the freeboard required in order to assure that there will be a minimum of two feet of freeboard during the 100 –year, 365 day rainfall event.

- Rainfall, flows and irrigation water applied – measurement and recording of these parameters is necessary not only in order to satisfy the WDR monitoring and reporting requirements, but it is important that these data be accurate in order to be able to adjust irrigation rates during draught events and provide more accurate water balances needed to assure that there is sufficient storage in ponds.

  Reported irrigation water usage should be based upon metered usage, as opposed to irrigation computer models and should be **summarized annually**.

5.0 Maintenance Responsibilities

This section of the Manual discusses the respective operation, repair and replacement responsibilities of the RMCSD and the RMCC for the facilities and equipment employed in the application of the recycled and raw water to the golf courses and is based upon the Agreements cited in section 1.1 of the Manual and the practices followed by the RMCSD and the RMCC. The facilities and equipment used in the application of the recycled wastewater are discussed in the order that the recycled water passes through on the way to storage in the golf course lakes. (See also **Figure 1-1**).

The facilities that were installed in 2008 by RMCC to divert storm water (the diversion facilities) from entering the golf course lakes and thus prevent overflow of the recycled water storage lakes in violation of the WDR are addressed in **Section 3** of this Manual.

5.1 Recycled Water Facilities and Equipment

1. Transfer Pumps at the WWTF – the three (3) pumps at the WWTF that transfer recycled water to Bass Lake on the North golf course and the motorized control valve that permits recycled water to Lake 16 on the South golf course are owned, operated and maintained by the RMCSD; however, operation and maintenance costs are the responsibility of the RMCC (i.e. – the RMCC reimburses the RMCSD these costs).

2. Transmission Piping to Golf Courses – the pipelines are owned, operated and maintained by the RMCSD; the costs of operation and maintenance are shared equally by RMCSD and RMCC.

    - North Course - from treatment plant equalization pond to Yellow Bridge (including pressure reducing valves)
    - South Course – from the equalization basin to Lakes 16/17; RMCSD operates and maintains level control probes & high level alarm float located in standpipe at Pond 17

3. Recycled Water Transmission Lines Within the Golf Courses and Irrigation Pumping Facilities – these transmission lines and irrigation pumping facilities are owned and maintained by the RMCC.

4. Recycled Water Storage Reservoirs – Bass Lake, Lakes 16 and 17 and Lake 10/11 are maintained by the RMCC, including removal of weeds and mosquito control measures. (Bass Lake is owned by the Rancho Murieta Association)

5. Transfer Pumps between Golf Course Storage Lakes- the transfer pump at Lakes 17 and the recirculation pump at for Lake 10 are owned and maintained by the RMCC.

6. Irrigation Pumps and Ancillary Equipment – The irrigation pumps and related equipment are owned and maintained by the RMCC.

5.2 River Water Facilities and Equipment

1. River Pump to Bass Lake – The RMCC owns the pump and pipeline. However, the RMCSD removes and places the pump in the river, and if requested by the RMCC, maintains the equipment with costs reimbursed by the RMCC.

2. Bass Lake Pipeline - The pipeline is owned by RMCC; it is maintained by the RMCSD.

3. Lake Clementia –Lake 10 Pipeline – The RMCSD owns and operates the pipeline; the costs of operation and maintenance are shared equally by RMCSD and RMCC.

4. River Pump at Old Bridge - This pump is owned, operated, and maintained by the RMCC

Appendices

APPENDIX 1

Waste Discharge Requirements and
Revised Monitoring and Reporting Program

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. 5-01-124

WASTE DISCHARGE REQUIREMENTS FOR RANCHO MURIETA COMMUNITY SERVICES DISTRICT RANCHO MURIETA COUNTRY CLUB WASTEWATER TREATMENT AND RECLAMATION SACRAMENTO COUNTY

The California Regional Water Quality Control Board, Central Valley Region (hereafter Board), finds that:

1. The Rancho Murieta Community Services District and Rancho Murieta Country Club submitted a Report of Waste Discharge (RWD), dated 25 October 2000, for updating Waste Discharge Requirements for the wastewater reclamation plant and golf course disposal area. Supplemental information was received on 8 January 2001, 1 February 2001, and 7 February 2001.

2. The existing collection system, wastewater treatment facility, and tertiary plant (on Assessor's Parcel Numbers 073-180-024-0000, 073-790-017-0000, and 073-790-021-0000) are owned and operated by Rancho Murieta Community Services District. The golf courses and associated irrigation system (on Assessor's Parcel Numbers 073-190-006-0000, 007-0000, 008-0000, 009-0000, 010-0000, 073-790-009-0000, 073-790-021-0000, 073-0190-093-0000 and 073-0190-100-0000) are operated by Rancho Murieta Country Club through a long-term lease with the Pension Trust Fund for Operating Engineers.

3. Each entity shall hereafter be referred to individually ("Rancho Murieta Community Services District" or "Rancho Murieta Country Club") or jointly as "Discharger". Rancho Murieta Community Services District and Rancho Murieta Country Club shall be responsible for compliance with these Waste Discharge Requirements as it applies to each entity's own parcel of land as noted in Finding No. 2, and as described in Findings No. 4 and No. 5.

4. Rancho Murieta Community Services District (RMCSD) shall be responsible for the operation and maintenance of the collection system, wastewater treatment facility, tertiary plant, and wastewater disposal around the treatment facility.

5. Rancho Murieta Country Club (RMCC) shall be responsible for the operation and maintenance of the golf courses irrigation system, irrigation storage ponds, and disposal of wastewater on the two golf courses.

6. The Rancho Murieta community is a 3,500-acre development, which is 20 miles east of Sacramento on State Highway 16. Both the Cosumnes River and State Highway 16 bisect the community.

7. The wastewater reclamation plant (WWRP) and the golf courses are in Sections 2 and 3, T17N, R8E, and Section 34, T8N, R8E, MDM&M as shown on Attachment A, which is attached hereto and made part of this Order by reference. The WWRP is at 15160 Jackson Road.

8. Order No. 90-124, adopted by the Board on 27 April 1990, prescribes requirements for the Discharger's WWRP. This Order is neither adequate nor consistent with the current plans and policies of the Board.

Wastewater Treatment

9. The WWRP receives primarily domestic wastewater from approximately 2,000 residential units. At full build out the community will consist of approximately 5,000 homes (3,800 homes on the north side of the Cosumnes River and 1,200 homes including a mobile home park south of the river). The development is project to be completed by 2009.

10. The collection system consists of gravity sewer lines which flow to seven lift stations situated throughout the community. Five of the lift stations are located on the north side of the Cosumnes River and two are south of the river. The wastewater force main crosses the Cosumnes River via the "old yellow bridge" which is adjacent to the State Highway 16 Bridge. Wastewater is transported to the secondary treatment plant by three lift stations known as Main Lift North, Main Lift South, and Lift Station 6B. These stations are equipped with flow meters, high water level sensors and have remote communication alarms. The two largest stations, Main Lift North and Main Lift South, have backup generators.

11. The WWRP consists of both a secondary wastewater facility and a tertiary treatment plant. Wastewater receives secondary treatment through five aerated facultative ponds that are operated in series. The treated effluent is then stored in two storage reservoirs before receiving tertiary treatment. The tertiary treatment plant has dual treatment systems that are operated in parallel. The tertiary treatment consists of two dissolved air flotation units, two rapid sand filters, a chlorine contact chamber and a concrete lined equalization basin. Wastewater disposal occurs through spray irrigation on 250 acres of land used for two golf courses, as well as landscape around the WWRP, as shown in Attachment B which is attached hereto and made part of this Order by reference.

12. The WWRP was designed for the complete build out of the community. The design flow for the secondary treatment plant is 1.55 million gallons per day (mgd) average dry weather flow and 2.0 mgd peak wet weather flow. The influent flow for the secondary plant is calculated from totalized flow readings from the lift stations. However, not all the lift stations have flow meters and the Discharger uses pump hour run meters to calculate the flow. RMCSD estimates that the current average dry weather inflow to the secondary treatment plant is about 0.6 mgd. The design flow rate for the tertiary plant effluent is 3.0 mgd.

13. Two seepage collection pipes have been installed along the west and south perimeter of the WWRP.

14. The south side seepage collection pipe discharge to a lift station and is transferred back to the storage reservoirs. However, an inspection on 10 January 2001 found that the west side collection system discharged offsite by gravity to a pond on the adjacent property. The pond, known as the Operating Engineer's Pond, also receives stormwater runoff from Rancho Murieta's stormwater ditch. During rain events, the pond overflows and discharges the commingled wastewater to the Consumnes River. The flow rate for the west side collection pipe was found to be around 0.66 gallons per minute. A Notice of Violation was issued, requiring the Discharger to cease discharging pond seepage to surface waters. As of 21 March 2001, RMCSD has installed a collection tank and pump for returning the seepage to the wastewater treatment ponds.

15. RMCSD submitted a preliminary water balance with the RWD. The calculations show that the storage reservoirs currently have sufficient capacity to contain the allowable wastewater flow, inflow/infiltration, and all flows from seasonal precipitation using a 100-year return period.

16. The tertiary treatment plant is in operation from April through November each year. During the winter, secondary treated wastewater is stored in the WWRP storage reservoirs, which have a total capacity of 756 acre-feet.

17. RMCSD has stockpiled WWRP sludge for over two years near the WWRP sludge drying beds. In addition, RMCSD has also stockpiled sludge from the water treatment plant and spent filtration sand in the sludge stockpile area.

18. RMCSD receives recreational vehicle (RV) waste from an RV dump station at the Rancho Murieta Mobile Home Park on Cantova Way. The volume of RV waste received is approximately 3,000 gallons per year.

Reclaimed Water Discharge

19. After receiving tertiary treatment, the reclaimed water is pumped to the golf courses and is stored in unlined irrigation storage reservoirs situated around the golf courses.

20. There are five golf course storage reservoirs, which are known as Lake Seventeen, Lake Sixteen, Lake Ten, Lake Eleven, and Bass Lake. Depending on the irrigation demand, wastewater in Lake Ten and Bass Lake may also be supplemented with water from the Consumes River. After full buildout, all golf course irrigation will be with reclaimed water.

21. RMCC disposes of reclaimed water through computer controlled spray irrigation on two 18-hole golf courses. RMCSD also irrigates landscape around the WWRP with reclaimed

water. Both disposal areas are shown on Attachment B, which is attached hereto and made part of this Order by reference. Bass Lake supplies water for the north golf course irrigation system using three pumps rated at 75 horsepower each. The north irrigation system is designed and maintained for "wall to wall coverage" using adjustable arc spray heads on the perimeter of the golf course and full circle heads inbetween. The spray heads are computer controlled using evapotranspiration rates and manual input for daily water requirements. Lake Ten supplies water for the south golf course irrigation system using three pumps rated at 50 horsepower each. The south irrigation system is designed for nearly "wall to wall coverage" using adjustable arc heads where needed on the perimeter and full circle heads everywhere else.

22. The Lake Seventeen and Lake Sixteen spillways are connected to the stormwater ditch that enters the Operating Engineer's Pond, which overflows to the Consumes River. Lake Eleven is connected to Lake Ten. Lake Ten and Bass Lake are connected to the stormwater system that discharges to the Consumes River.

23. An inspection on 10 January 2001 found that the water level in Bass Lake was at the spillway. During the next rain event, wastewater in Bass Lake was commingled with stormwater and discharged to the Consumes River. Wastewater may not be discharged to surface water unless authorized by an NPDES permit.

24. The golf course contains numerous hills and sloped areas that would promote runoff unless closely managed during irrigation. A computer control system operates the reclaimed water system and golf course personnel are not always present when irrigation is conducted. There is no mechanism for capturing irrigation runoff or preventing it from entering surface watercourse. The golf courses are adjacent to the Consumes River and tailwater runoff will enter the river. The Discharger has commented the golf course drainage features were designed to accommodate "casual irrigation runoff." Such runoff cannot occur unless authorized by an NPDES permit.

25. Staff are preparing a Cease and Desist Order which contains a timeline for the Discharger to either stop the discharge of wastewater from the lakes and tailwater runoff or obtain an NPDES permit to allow such discharge.

26. The Discharger has requested that its use of reclaimed water be expanded to allow recycled water usage equivalent to "nonrestricted recreational impoundments" for disinfected tertiary recycled water. However, the wastewater does not meet this designation, as described by Sections 60305(a) and 60301.170 of Title 22, California Code of Regulations (CCR). If the Discharger upgrades its treatment process to meet this standard, then this Order may be reopened and such use allowed.

27. The irrigation systems are each equipped with a fertilizer injection system installed at the main line to the golf courses. Small amounts of nitrogen and calcium are injected on a regular basis. The pump stations are computer controlled and equipped with pressure

sensors which will automatically shut down the pump station when sensors indicate an extreme pressure drop, such as a break in the main line.

28. The Discharger has not marked the reclaimed wastewater irrigation distribution system such that the conveyance lines can be identified as reclaimed water. The previous Order No. 90-124 required that the reclaimed conveyance system be clearly marked as reclaimed water. The Cease and Desist Order requires the Discharger to install appropriate signage and to label the reclaimed water system in compliance with Title 22, CCR, Section 60310.

29. Residential homes are situated along the golf course irrigated greens. The area between the homes and the golf-course greens is often less than 50 feet. Many of the homes along the golf course had decks and tables for outside picnic areas. This picnic area can be less than ten feet from the irrigated areas. Aerosol mist created by spray irrigation can drift more than 50 feet. Therefore, aerosol mist may periodically enter homes and outdoor picnic areas. This Order requires compliance with Section 60310 of Title 22, CCR, which prohibits the aerosol mist from a reclaimed water system from entering homes or outdoor eating areas.

30. RMCSD operates a water treatment plant for the production of potable water for the community. An inspection on 10 January 2001 found that the water treatment plant was discharging wastewater from filter backwash operations to surface waters. A Notice of Violation was issued to RMCSD to cease discharging waste to surface waters. The Discharger has since modified the water treatment plant operations to allow filter backwash to be returned to the treatment process.

Degradation

31. State Water Resources Control Board (SWRCB) Resolution No. 68-16 (hereafter Resolution 68-16 or the "Antidegradation" Policy) requires the Board in regulating the discharge of waste to maintain high quality waters of the state until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the State, will not unreasonably affect beneficial uses, and will not result in water quality less than that described in the Board's policies (e.g., quality that exceeds water quality objectives).

32. The Board finds that some degradation of groundwater beneath the WWRP is consistent with Resolution 68-16 provided that:

- the degradation is confined to a specified area
- the discharger minimizes the degradation by fully implementing, regularly maintaining, and optimally operating best practicable treatment and control (BPTC) measures
- the degradation is limited to waste constituents typically encountered in municipal wastewater as specified in the groundwater limitations in this Order

- the degradation does not result in water quality less than that prescribed in the Basin Plan

33. Some degradation of groundwater by some of the typical waste constituents released with discharge from a municipal wastewater utility after effective source control, treatment, and control is consistent with maximum benefit to the people of California. The technology, energy, water recycling, and waste management advantages of municipal utility service far exceed any benefits derived from a community otherwise reliant on numerous concentrated individual wastewater systems, and the impact on water quality will be substantially less. Economic prosperity of valley communities and associated industry is of maximum benefit to the people of California, and therefore sufficient reason to accommodate growth and groundwater degradation provided terms of the Basin Plan are met. Degradation of groundwater by constituents (e.g., toxic chemicals) other than those specified in the groundwater limitations in this Order, and by constituents that can be effectively removed by conventional treatment (e.g., total coliform bacteria) is prohibited. When allowed, the degree of degradation allowed depends upon many factors (i.e., background water quality, the waste constituent, the beneficial uses and most stringent water quality objective, source control measures, waste constituent treatability).

Treatment and Control Practices

34. The WWRP described in Finding No. 11 provides treatment and control of the discharge that incorporates:

- technology for treatment for secondary treatment of municipal wastewater
- technology for tertiary treatment of municipal wastewater
- disinfection; and
- recycling of wastewater on golf courses

36. The WWRP aeration ponds and the two storage reservoirs leak wastewater into the groundwater, and, therefore, may not constitute BPTC as used in Resolution 68-16. In addition, the existing impacts on groundwater and the appropriate level of degradation that complies with Resolution 68-16 has not been evaluated.

37. This Order, therefore, establishes schedules of tasks to evaluate BPTC for each treatment, storage, and disposal component of the WWTF and to characterize groundwater for all waste constituents.

Groundwater Considerations

38. This Order establishes interim groundwater limitations that will not unreasonably threaten present and anticipated beneficial uses or result in groundwater quality that exceeds water quality objectives set forth in the Basin Plan. This Order contains tasks for assuring that BPTC and the highest water quality consistent with the maximum benefit to the people of the State will be achieved. Accordingly, the discharge is consistent with the antidegradation provisions of Resolution 68-16. Based on the results of the scheduled tasks, the Board may reopen this Order to reconsider groundwater limitations and other requirements to comply with Resolution 68-16.

39. California Department of Water Resources standards for the construction and destruction of groundwater wells (hereafter DWR Well Standards), as described in *California Well Standards Bulletin 74-90* (June 1991) and *Water Well Standards: State of California Bulletin 94-81* (December 1981), and any more stringent standards adopted by the Discharger or county pursuant to CWC section 13801, apply to all monitoring wells.

40. State regulations that prescribe procedures for detecting and characterizing the impact of waste constituents from waste management units on groundwater are found in Title 27. While the wastewater treatment facility is exempt from Title 27, the data analysis methods of Title 27 are appropriate for determining whether the discharge complies with the terms for protection of groundwater specified in this Order.

Basin Plan, Beneficial Uses, and Regulatory Considerations

41. The *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition*, (hereafter Basin Plan) designates beneficial uses, establishes water quality objectives, contains implementation plans and policies for protecting waters of the basin, and incorporates by references plans and policies adopted by the State Water Resources Control Board. These requirements implement the Basin Plan.

42. The Basin Plan establishes numerical and narrative water quality objectives for surface and groundwaters within the basin, and recognizes that water quality objectives are achieved primarily through the Board's adoption of waste discharge requirements and enforcement orders. Where numerical water quality objectives are listed, these are limits necessary for the reasonable protection of beneficial uses of the water. Where compliance with narrative water quality objectives is required, the Board will, on a case-by case basis, adopt numerical limitations in orders which will implement the narrative objectives to protect beneficial uses of the waters of the state.

43. The Basin Plan identifies numerical water quality objectives for waters designated as municipal supply that include the maximum contaminant levels (MCLs) specified in the following provisions of Title 22, California Code of Regulations: Tables 64431-A (Inorganic Chemicals) and 64431-B (Fluoride) of section 64431, Table 64444-A (Organic Chemicals) of section 64444, and Table 64449-A (Secondary Maximum Contaminant

Levels-Ranges) of section 6449. The Basin Plan's incorporated provisions as the changes take effect. The Basin Plan also includes water quality objectives that may be more stringent than MCLs.

44. The Basin Plan contains narrative water quality objectives for chemical constituents and toxicity. The toxicity objective requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in plants or animals. The chemical constituent objective requires that groundwater shall not contain chemical constituents in concentrations that adversely affect beneficial uses.

45. Section 13241 of the Water Code requires the Regional Board to consider various factors, including economic considerations, when adopting water quality objectives into its Basin Plan. Water Code Section 13263 requires the Regional Board to address the factors in Section 13241 in adopting waste discharge requirements. The State Board, however, has held that a Regional Board need not specifically address the Section 13241 factors when implementing existing water quality objectives in waste discharge requirements because the factors were already considered in adopting water quality objectives. These waste discharge requirements implement adopted water quality objectives. Therefore, no additional analysis of Section 13241 factors is required.

46. Surface water drainage is the Cosumnes River.

47. The beneficial uses of Cosumnes River are municipal and domestic supply; agricultural irrigation and stock watering; contact, rafting, and other noncontact recreation; warm and cold freshwater habitat; migration for warm and cold water species; spawning for warm and cold water species; and wildlife habitat.

48. The beneficial uses of underlying groundwaters are municipal, industrial, and agricultural supply.

49. Federal regulations for stormwater discharges were promulgated by the U.S. Environmental Protection Agency on 16 November 1990 (40 CFR Parts 122, 123, and 124). The regulations require specific categories of facilities which discharge stormwater associated with industrial activities to obtain NPDES permits. The flow at this wastewater treatment plant is less than 1.0 mgd and therefore the Discharger is not required to apply for a stormwater NPDES permit until flows reach that volume.

50. The previous Order 94-124 allowed the use of reclaimed water use for the proposed Rancho Murieta Homeowner's Association Corporation yard and the proposed community park. However, information for these projects was not included with the RWD. Therefore, this Order does not authorize the use of reclaimed water for the community park or corporation yard.

51. The California Department of Health Services has established statewide reclamation criteria in Title 22, California Code of Regulations, Section 60301, et seq. (hereafter Title 22) for the use of recycled water. These requirements implement Title 22.

52. Sacramento County has issued a use permit to Rancho Murieta indicating that the primary use of recycled water shall be for watering the golf course.

53. The State Water Resources Control Board's Water Rights permit for Rancho Murieta requires use of wastewater for irrigation purposes in lieu of water from other sources when the flow of wastewater reaches 424 acre-feet per annum.

54. The Basin Plan encourages reclamation.

55. Surrounding land uses are zoned for agriculture and public development to the north of the WWRP (i.e. golf course).

56. The action to update waste discharge requirements for this facility is exempt from the provisions of the CEQA, in accordance with Title 14, California Code of Regulations (CCR), Section 15301.

57. Section 13267(b) of California Water Code provides that: "In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of discharging, or who proposes to discharge within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of discharging, or who proposes to discharge waste outside of its region that could affect the quality of the waters of the state within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the board requires. The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports."

58. Pursuant to CWC section 13263(g), discharge is a privilege, not a right, and adoption of this Order does not create a vested right to continue the discharge.

59. The discharge authorized herein and the treatment and storage facilities associated with the discharge, except for discharges of residual sludge and solid waste, are exempt from the requirements of Title 27, CCR, section 20380 et seq. (hereafter Title 27). The exemption, pursuant to Title 27 CCR section 20090(a), is based on the following:

The waste consists primarily of domestic sewage and treated effluent;

The waste discharge requirements are consistent with water quality objectives; and

The treatment and storage facilities described herein are associated with a municipal wastewater treatment plant.

Public Notice

60. The Board considered all the above and the supplemental information and details in the attached Information Sheet, which is incorporated by reference herein, in establishing the following conditions of discharge.

61. The Board has consulted with DHS and considered its recommendations regarding the public health aspects of water reclamation on the golf courses.

62. The Board has notified the Discharger, and interested agencies and persons of its intent to prescribe waste discharge requirements for this discharge and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

63. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED that Order No. 90-124 is rescinded and Rancho Murieta Community Services District (RMCSD), its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, shall comply with the following:

Note: Other prohibitions, conditions, definitions, and methods of determining compliance are contained in the attached "Standard Provisions and Reporting Requirements for Waste Discharge Requirements" dated 1 March 1991 that are incorporated by reference into this Order.

A. Discharge Prohibitions:

1. Discharge of wastes to surface waters or surface water drainage courses is prohibited.

2. Bypass or overflow of untreated or partially treated waste is prohibited.

3. Neither the treatment nor the discharge shall cause a nuisance or condition of pollution as defined by the California Water Code, Section 13050.

4. The discharge shall not cause the degradation of any water supply, other than as allowed by State Resolution No. 68-16 or the Basin Plan.

5. Discharge of waste classified as 'hazardous,' defined in Section 20164 of Title 27, CCR, or 'designated', as defined in Section 13173 of the California Water Code, is prohibited.

6. Surfacing of wastewater outside or downgradient of the ponds is prohibited.

7. The discharge of any wastewater other than that from domestic sources or domestic equivalent is prohibited.

8. Application of wastewater to areas different than those described in Finding No. 21 is prohibited.

9. The use of reclaimed wastewater for purposes other than irrigation is prohibited.

B. Discharge Specifications:

1. The 30-day average daily dry weather inflow for the secondary plant's wastewater treatment ponds shall not exceed 1.5 million gallons.

2. The 30-day average daily dry weather effluent discharge from the tertiary plant shall not exceed 3.0 million gallons.

3. No waste constituent shall be released or discharged, or placed where it will be released or discharged, in a concentration or mass that causes violation of the Groundwater Limitations.

4. Objectionable odors originating at this facility shall not be perceivable beyond the limits of the wastewater treatment and disposal areas.

5. As a means of discerning compliance with Discharge Specification No. 4, the dissolved oxygen content in the upper zone (one foot) of all wastewater ponds shall not be less than 1.0 mg/l.

6. The wastewater treatment, storage reservoirs, and irrigation storage ponds shall not have a pH of less than 6.5 or greater than 9.0.

7. RMCSD shall operate all systems and equipment to maximize treatment of wastewater and optimize the quality of the discharge.

8. RMCSD shall treat the wastewater such that it complies with Title 22 CCR, Section 60301.230 ("Disinfected Tertiary Recycled Water").

9. The ponds shall be managed to prevent the breeding of mosquitoes. In particular,

   a. An erosion control program should assure that small coves and irregularities are not created around the perimeter of the waste surface.
   b. Weeds shall be minimized through control of water depth, harvesting, and/or herbicides.
   c. Dead algae, vegetation, and debris shall not accumulate on the water surface.

10. RMCSD's wastewater treatment system shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.

11. The freeboard in all ponds shall never be less than two feet as measured vertically from the water surface to the lowest point of overflow.

12. The wastewater ponds shall have sufficient capacity to accommodate allowable wastewater flow, design seasonal precipitation, and ancillary inflow and infiltration. Design seasonal precipitation shall be based on total annual precipitation using a return period of 100 years, distributed monthly in accordance with the historical rainfall patterns.

13. On or about 1 October each year, available pond storage capacity shall at least equal the volume necessary to comply with Discharge Specifications No. 11 and No. 12.

C. Effluent Limitations

1. The discharge of effluent to the secondary plant's storage reservoirs in excess of the following limits is prohibited:

Parameter	30-day Avg. Limit	Daily Maximum Limit
BOD_5[1]	40 mg/L	80 mg/L
Settleable Solids	0.5 ml/l	1.0 ml/l

[1] 5-day 20° C Biochemical Oxygen Demand

2. The discharge of reclaimed water to the tertiary plant's concrete lined equalization basin in excess of the following limits is prohibited:

   a. 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 results 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.

   b. No sample shall exceed an MPN of 240 total coliform bacteria per 100 milliliters.

   c. 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.

D. Reclamation Requirements:

1. Reclaimed wastewater shall meet the criteria contained in Title 22, Division 4, CCR (Section 60301, et seq.).

2. Reclaimed wastewater conveyance lines shall be clearly marked as such. Reclaimed water controllers, valves, etc. shall be affixed with reclaimed water warning signs, and these and quick couplers and sprinkler heads shall be of a type, or secured in such a manner, that permits operation by authorized personnel only.

3. Public contact with reclaimed wastewater shall be precluded through such means as fences, signs, and other acceptable alternatives.

4. To alert the public of the use of reclaimed water, signs with the proper wording of sufficient size shall be placed at areas of access and around the perimeter of all areas used for effluent disposal.

5. Areas irrigated with reclaimed water shall be managed to prevent breeding of mosquitoes. More specifically:

   a. All applied irrigation water must infiltrate completely within 24 hours.

   b. Ditches not serving as wildlife habitat should be maintained free of emergent, marginal, and floating vegetation.

   c. Low-pressure and un-pressurized pipelines and ditches which are accessible to mosquitoes shall not be used to store reclaimed water.

6. Direct or windblown spray shall be confined to the designated reclamation area and prevented from contacting outdoor eating areas, drinking water facilities, homes, or surface watercourses.

7. RMCSD may not discharge reclaimed water 24 hours before precipitation, during periods of precipitation, and for at least 24 hours after cessation of precipitation, or when soils are saturated.

8. RMCSD may not spray irrigate with effluent when wind velocities exceed 30 mph.

9. Supplementing reclaimed water by connection with domestic drinking water source or irrigation or industrial wells requires and air gap device.

10. Reclaimed wastewater treated in accordance with Section 60304(a), Article 4, Division 4, Title 22, CCR may be discharged in the following designated areas: the treatment plant equalization reservoirs and the landscaped areas at the WWRP.

E. Solids Disposal Requirements:

Sludge in this document means the solid, semisolid, and liquid residues removed during primary, secondary, or advanced wastewater treatment processes. Solid waste refers to grit and screening material generated during preliminary treatment. Residual sludge means sludge that will not be subject to further treatment at the WWRP. Biosolids refers to sludge that has undergone sufficient treatment and testing to qualify for reuse pursuant to federal and state regulations as a soil amendment for agriculture, silviculture, horticulture, and land reclamation.

1. Sludge and solid waste shall be removed from screens, sumps, ponds, clarifiers, etc. as needed to ensure optimal plant operation.

2. Treatment and storage of sludge generated by the WWRP shall be confined to the WWRP property and conducted in a manner that precludes infiltration of waste constituents into soils in a mass or concentration that will violate Groundwater Limitations.

3. Any storage of residual sludge, solid waste, and biosolids on property of the WWRP shall be temporary and controlled and contained in a manner that minimizes leachate formation and precludes infiltration of waste constituents into soils in a mass or concentration that will violate Groundwater Limitations.

4. Residual sludge, biosolids, and solid waste shall be disposed of in a manner approved by the Executive Officer and consistent with Title 27. Removal for further treatment, disposal, or reuse at sites (i.e., landfill, WWRP, composting site) operated in accordance with valid waste discharge requirements issued by a regional water quality control board will satisfy this specification.

5. Use of biosolids at the facility as a soil amendment shall comply with General Biosolids Order (State Water Resources Control Board Water Quality Order No. 2000-10-DWQ, *General Waste Discharge Requirements for the Discharge of Biosolids to Land for Use as a Soil Amendment in Agricultural, Silvicultural, Horticultural, and Land Reclamation Activities*) or shall comply with individual WDRs. RMCSD must obtain a "Notice of Applicability" of the General Biosolids Order from the Executive Officer prior to discharge of biosolids to any site.

6. Use and disposal of biosolids should comply with the self-implementing federal regulations of 40 CFR 503, which are subject to enforcement by the U.S. Environmental Protection Agency (EPA), not the Board. If during the life of this Order the State accepts primacy for implementation of 40 CFR 503, the Board may also initiate enforcement where appropriate.

F. Groundwater Limitations:

Release of waste constituents from any storage, treatment, or disposal component associated with the WWRP shall not cause groundwater under and beyond the WWRP and discharge area(s), as determined by an approved well monitoring network, to:

1. Contain any of the following constituents in concentration greater than as listed or greater than background quality, whichever is greater:

Constituent	Units	Limitation
Boron	mg/L	0.6
Chloride	mg/L	106
Iron	mg/L	0.3
Manganese	mg/L	0.05
Sodium	mg/L	69
Total Coliform Organisms	MPN/100 mL	Nondetect
Total Dissolved Solids[1]	mg/L	450
Total Nitrogen	mg/L	10
Nitrite (as N)	mg/L	1
Nitrate (as N)	mg/L	10
Ammonia (as N)	mg/L	0.5
Total Trihalomethanes	µg/L	100
Total Zinc	mg/L	2
Total Phenol	µg/L	5
Formaldehyde	µg/L	100

[1] A cumulative impact limit that accounts for several dissolved constituents in addition to those listed here separately [e.g., alkalinity (carbonate and bicarbonate), calcium, hardness, phosphate, potassium, etc.]

2. Contain any constituent not identified in Groundwater Limitation F.1 in concentrations greater than background quality (whether chemical, physical, biological, bacteriological, radiological, or some other property or characteristic).

3. Exhibit a pH less than 6.5 or greater than 8.5 pH units.

4. Impart taste, odor, or color that creates nuisance or impairs any beneficial use.

G. Surface Water Limitations:

The discharge shall not cause the surface watercourse downstream of the treatment ponds, storage reservoir, or golf courses to contain waste constituents in concentrations statistically greater than background (i.e., upstream) surface water quality.

H. Provisions:

1. All of the following reports shall be submitted pursuant to Section 13267 of the California Water Code.

   a. By **1 August 2001**, RMCSD shall submit a Revenue Plan that describes the costs associated with completing Provisions Numbers H.1.b. through H.1.j. and shows how the Discharger will finance each item. Should the Revenue Plan show that there are inadequate funds, the Discharger must also include an implementation schedule that shows how the Discharger will raise the necessary funds in time to comply with the appropriate due dates.

   b. By **1 August 2001**, RMCSD shall submit a Sludge Disposal Plan. The plan shall provide a detailed program and time schedule for permanent disposal of all solid wastes generated at the wastewater treatment plant and tertiary treatment plant. The plan must include a timeline for the removal of all stockpiled sludge and other wastes (i.e. spent filtration sand) by **1 November 2002**. At a minimum, the Plan must address the items listed in Attachment D of this Order.

   c. By **1 August 2001**, RMCSD shall submit a Groundwater Monitoring Well Installation Workplan. The Workplan shall be prepared by a Registered Civil Engineer or Registered Geologist and shall contain the information listed in the first section of Attachment C, "*Items to be Included in a Monitoring Well Installation Workplan and a Monitoring Well Installation Report of Results.*" The Workplan shall propose a monitoring network consisting of one or more background monitoring wells, as well as compliance monitoring wells immediately downgradient of every treatment, storage, and disposal unit that does or may release waste constituents to groundwater. Every monitoring well shall be constructed to yield representative samples from the uppermost layer of the uppermost aquifer and comply with applicable Well Standards.

   d. By **1 November 2001**, RMCSD shall submit a Reclaimed Water Contingency Plan. The plan shall include notification of the Board and health agencies and outline actions to be taken when tertiary effluent quality fails to meet required standards reclaimed water use specified in this Order.

   e. By **15 November 2001**, RMCSD shall submit a Monitoring Well Installation Report prepared by a Registered Civil Engineer or a Registered Geologist. The report shall

describe the installation of groundwater monitoring wells and shall contain the items found in the second section of Attachment C.

f. By **15 August 2002**, RMCSD shall submit for the Executive Officer's approval a written workplan in the form of a technical report that sets forth a schedule for a systematic and comprehensive technical evaluation of each component of the WWRP's waste treatment and control to determine for each waste constituent best practicable treatment and control as used in Resolution 68-16. The technical report shall contain a preliminary evaluation of each component and propose a time schedule for completing the comprehensive technical evaluation. The technical report shall be prepared and certified by a California Registered Engineer. The schedule to complete all comprehensive technical evaluations shall be as short as practicable, and shall not exceed one year.

g. By **30 December 2002,** RMCSD shall submit a written technical report that uses four quarters of groundwater monitoring to characterize the groundwater quality of each monitoring well. The technical report shall be prepared and certified by a California Registered Engineer or Registered Geologist. The report shall indicate for each constituent identified in the MRP the background concentration in background well(s), and the actual concentration in each compliance monitoring well. Determinations of background quality shall be made using the methods described in Title 27, section 20415(e)(10). The report shall compare actual concentrations in each compliance monitoring well with numeric limitations and background concentrations of Groundwater Limitations F.1 and F.2 and report the compliance results. For purposes of the Report, RMCSD will recommend background limitations for waste constituents not listed in Groundwater Limitation F.1, and for those listed in F.1 where background concentrations are greater than identified. Subsequent use of a concentration as a background limitation will be subject to the discretion of the Executive Officer.

h. By the schedule approved by the Executive Officer pursuant to Provision H.1.g, but no later than **15 February 2004**, the written comprehensive technical evaluation shall be submitted with RMCSD's written recommendations for WWRP modifications (e.g., component upgrade and retrofit). The report shall include specific methods RMCSD proposes as a means to measure processes and assure continuous optimal performance of BPTC measures. Comprehensive technical evaluations shall be prepared and certified by a California Registered Engineer. The source of funding and proposed schedule for modifications shall be identified. The schedule shall be as short as practicable but in no case shall completion of the necessary improvement exceed five years past the Executive Officer's approval of the comprehensive technical evaluation unless the schedule is reviewed and specifically approved by the Board. The component evaluation, recommended improvements, and schedule are subject to the Executive Officer's review and approval.

i. By **15 July 2004**, RMCSD shall submit a technical report that proposes specific numeric groundwater limitations that reflect full implementation of BPTC, and describe how these were determined considering actual data from compliance monitoring wells, impact reductions through full implementation of the BPTC, reasonable growth, etc. The Discharger shall submit results of a validated groundwater model to support its proposal.

j. Upon completion of tasks set forth in Provisions H.1.c. through H.1 j., the Board shall consider the evidence provided and make a determination regarding whether the Discharger has justified BPTC and the appropriate final numeric groundwater limitations that comply with Resolution 68-16.

2. RMCSD shall comply with Monitoring and Reporting Program No. 5-01-124,

3. RMCSD shall comply with the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements", dated 1 March 1991, which are attached hereto and by reference a part of this Order. This attachment and its individual paragraphs are commonly referenced as "Standard Provision(s)."

4. At least 90 days prior to termination or expiration of any lease, contract, or agreement involving the disposal or reclamation areas, used to justify the capacity authorized herein and assure compliance with this Order, RMCSD shall notify the Board in writing of the situation and of what measures have been taken or are being taken to assure full compliance with this Order.

5. RMCSD shall submit to the Board on or before each compliance report due date the specified document, or if appropriate, a written report detailing compliance or noncompliance with the specific schedule date and task. If noncompliance is reported, then RMCSD shall state the reasons for noncompliance and shall provide a schedule to come into compliance.

6. RMCSD shall use the best practicable cost-effective control technique(s) currently available to comply with discharge limits specified in this order.

7. RMCSD shall report promptly to the Board any material change or proposed change in the character, location, or volume of the discharge.

8. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, then the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be forwarded to this office.

9. RMCSD shall comply with all conditions of this Order, including timely submittal of technical and monitoring reports as directed by the Executive Officer. Violations may result in enforcement action, including Regional Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or rescission of this Order.

10. A copy of this Order shall be kept at the discharge facility for reference by operating personnel. Key operating personnel shall be familiar with its contents.

11. The Board will review this Order periodically and may revise requirements when necessary.

IT IS HEREBY ORDERED that Rancho Murieta Country Club (RMCC), its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, shall comply with the following:

Note: Other prohibitions, conditions, definitions, and methods of determining compliance are contained in the attached "Standard Provisions and Reporting Requirements for Waste Discharge Requirements" dated 1 March 1991 that are incorporated by reference into this Order.

I. Discharge Prohibitions:

1. Discharge of wastes to surface waters or surface water drainage courses is prohibited.

2. Bypass or overflow of untreated or partially treated waste is prohibited.

3. Neither the treatment nor the discharge shall cause a nuisance or condition of pollution as defined by the California Water Code, Section 13050.

4. The discharge shall not cause the degradation of any water supply.

5. Discharge of waste classified as 'hazardous,' defined in Section 20164 of Title 27, CCR, or 'designated', as defined in Section 13173 of the California Water Code, is prohibited.

6. Surfacing of wastewater outside or downgradient of the irrigation ponds is prohibited.

7. Application of wastewater to areas different than those described in Finding No. 21 is prohibited.

8. The use of reclaimed wastewater for purposes other than irrigation is prohibited.

J. Discharge Specifications:

1. No waste constituent shall be released or discharged, or placed where it will be released or discharged, in a concentration or mass that causes violation of the Groundwater Limitations.

2. Objectionable odors originating at this facility shall not be perceivable beyond the limits of the wastewater treatment and disposal areas.

3. As a means of discerning compliance with Discharge Specification No. 2, the dissolved oxygen content in the upper zone (one foot) of all wastewater ponds shall not be less than 1.0 mg/l.

4. The irrigation storage ponds shall not have a pH of less than 6.5 or greater than 9.0.

5. RMCC shall operate all systems and equipment to maximize treatment of wastewater and optimize the quality of the discharge.

6. The ponds shall be managed to prevent the breeding of mosquitoes. In particular,

   a. An erosion control program should assure that small coves and irregularities are not created around the perimeter of the waste surface.
   b. Weeds shall be minimized through control of water depth, harvesting, and/or herbicides.
   c. Dead algae, vegetation, and debris shall not accumulate on the water surface.

7. The freeboard in all ponds shall never be less than two feet as measured vertically from the water surface to the lowest point of overflow.

8. The irrigation ponds shall have sufficient capacity to accommodate allowable wastewater flow, design seasonal precipitation, and ancillary inflow and infiltration. Design seasonal precipitation shall be based on total annual precipitation using a return period of 100 years, distributed monthly in accordance with the historical rainfall patterns.

9. On or about 1 October each year, available pond storage capacity shall at least equal the volume necessary to comply with Discharge Specifications No. 7 and No. 8.

K. Reclamation Requirements:

1. Reclaimed wastewater shall meet the criteria contained in Title 22, Division 4, CCR (Section 60301, et seq.).

2. Reclaimed wastewater conveyance lines shall be clearly marked as such. Reclaimed water controllers, valves, etc. shall be affixed with reclaimed water warning signs, and these and quick couplers and sprinkler heads shall be of a type, or secured in such a manner, that permits operation by authorized personnel only.

3. Public contact with reclaimed wastewater shall be precluded through such means as fences, signs, and other acceptable alternatives.

4. To alert the public of the use of reclaimed water, signs with the proper wording of sufficient size shall be placed at areas of access and around the perimeter of all areas used for effluent disposal.

5. Areas irrigated with reclaimed water shall be managed to prevent breeding of mosquitoes. More specifically:

    a. All applied irrigation water must infiltrate completely within 24 hours.

    b. Ditches not serving as wildlife habitat should be maintained free of emergent, marginal, and floating vegetation.

    c. Low-pressure and un-pressurized pipelines and ditches which are accessible to mosquitoes shall not be used to store reclaimed water.

6. Direct or windblown spray shall be confined to the designated reclamation area and prevented from contacting outdoor eating areas, drinking water facilities, homes, or surface watercourses.

7. RMCC may not discharge reclaimed water 24 hours before precipitation, during periods of precipitation, and for at least 24 hours after cessation of precipitation, or when soils are saturated.

8. RMCC may not spray irrigate with effluent when wind velocities exceed 30 mph.

9. Reclaimed wastewater treated in accordance with Section 60304(a), Article 4, Division 4, Title 22, CCR may be discharged in the following designated areas: the north golf course and the south golf course.

10. Supplementing reclaimed water by connection with domestic drinking water source or irrigation or industrial wells requires and air gap device.

11. Application of reclaimed wastewater to the reclamation areas shall be at reasonable rates considering crop, soil, climate, and irrigation management system. The nutrient loading of the reclamation areas, including nutritive value of organic and chemical fertilizers and of the reclaimed water shall not exceed the crop demand.

L. Solids Disposal Requirements:

1. Sludge from the irrigation ponds and other solids removed from liquid wastes shall be disposed of in a manner approved by the Executive Officer, and consistent with *Consolidated Regulations for Treatment, Storage, Processing, or Disposal of Solid Waste*, as set forth in Title 27, CCR, Division 2, Subdivision 1, Section 20005, et seq.

M. Groundwater Limitations:

The discharge, in combination with other sources, shall not cause underlying groundwater to contain waste constituents in concentration statistically greater than background water quality, except for coliform bacteria. For coliform bacteria, increases shall not cause the most probable number of total coliform organisms to exceed 2.2 MPN/100 ml over any 7-day period.

N. Surface Water Limitations:

The discharge shall not cause the surface watercourse downstream of the treatment ponds, storage reservoir, or golf courses to contain waste constituents in concentrations statistically greater than background (i.e., upstream) surface water quality.

M. Provisions:

1. The following report shall be submitted pursuant to Section 13267 of the California Water Code. By **30 October 2002**, RMCC shall submit a report describing how the storage and application of wastewater on the golf courses is undertaken in such a manner as to comply with the Groundwater Limitations. The report shall be prepared by a California Registered Engineer or Registered Geologist, and shall describe wastewater loading rates of each constituent listed in Groundwater Limitation M.1, the agronomic uptake of each constituent, and the anticipated concentration of each constituent which will reach groundwater. If the report concludes that groundwater may be impacted (or if there is not enough data to determine whether groundwater will be impacted) then the report shall also include a Monitoring Well Installation Workplan consistent with the first section of Attachment C.

2. RMCC shall comply with Monitoring and Reporting Program No. 5-01-124,

3. RMCC shall comply with the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements", dated 1 March 1991, which are attached hereto and by reference a part of this Order. This attachment and its individual paragraphs are commonly referenced as "Standard Provision(s)."
4. At least 90 days prior to termination or expiration of any lease, contract, or agreement involving the disposal or reclamation areas, used to justify the capacity authorized herein and assure compliance with this Order, RMCC shall notify the Board in writing of the situation and of what measures have been taken or are being taken to assure full compliance with this Order.

5. RMCC shall submit to the Board on or before each compliance report due date the specified document, or if appropriate, a written report detailing compliance or noncompliance with the specific schedule date and task. If noncompliance is reported, then RMCC shall state the reasons for noncompliance and shall provide a schedule to come into compliance.

6. RMCC shall use the best practicable cost-effective control technique(s) currently available to comply with discharge limits specified in this order.

7. RMCC shall report promptly to the Board any material change or proposed change in the character, location, or volume of the discharge.

8. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by RMCC, then RMCC shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be forwarded to this office.

9. RMCC shall comply with all conditions of this Order, including timely submittal of technical and monitoring reports as directed by the Executive Officer. Violations may result in enforcement action, including Regional Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or rescission of this Order.

10. A copy of this Order shall be kept at the discharge facility for reference by operating personnel. Key operating personnel shall be familiar with its contents.

11. The Board will review this Order periodically and may revise requirements when necessary.

I, GARY M. CARLTON, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 11 May 2001.

GARY M. CARLTON, Executive Officer

Attachments

ASB:15 May 2001

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

REVISED MONITORING AND REPORTING PROGRAM NO. 5-01-124
FOR
RANCHO MURIETA COMMUNITY SERVICES DISTRICT
RANCHO MURIETA COUNTRY CLUB
WASTEWATER TREATMENT AND RECLAMATION
SACRAMENTO COUNTY

This Monitoring and Reporting Program (MRP) describes requirements for monitoring domestic wastewater treatment, reclaimed water, groundwater, surface water, and biosolids. This MRP is issued pursuant to Water Code Section 13267. The Dischargers shall not implement any changes to this MRP unless and until a revised MRP is issued by the Executive Officer.

Rancho Murieta Community Services District (RMCSD) shall be responsible for implementation of monitoring and reporting requirements for the following:

1. WWTF influent monitoring;
2. Secondary effluent monitoring;
3. Tertiary effluent monitoring;
4. WWTF pond monitoring;
5. WWTF reclamation monitoring
6. Groundwater monitoring;
7. Biosolids monitoring; and
8. Submitting joint monitoring reports.

Rancho Murieta Country Club (RMCC) shall be responsible for implementation of monitoring and reporting requirements for the following:

1. Reclaimed water storage lake monitoring;
2. Golf course irrigation monitoring; and
3. Submitting joint monitoring reports.

Specific sample station locations shall be approved by Regional Board staff prior to implementation of sampling activities. All samples shall be representative of the volume and nature of the discharge or matrix of material sampled. The time, date, and location of each sample shall be recorded on the sample chain of custody form.

Field test instruments (such as those used to test pH and electrical conductivity) may be used provided that:

1. The user is trained in proper use and maintenance of the instruments;
2. The instruments are field calibrated prior to monitoring events at the frequency recommended by the manufacturer;
3. Instruments are serviced and/or calibrated by the manufacturer at the recommended frequency; and

4. Field calibration reports are submitted as described in the "Reporting" section of this MRP.

WWTF INFLUENT MONITORING

RMCSD shall monitor influent wastewater in accordance with the following. Samples shall be collected at the same frequency and at approximately the same time as effluent samples and shall be representative of the influent to the first treatment pond. Grab samples are considered adequately composited to represent the influent. Influent monitoring shall include, at a minimum, the following:

Constituents	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Flow	gpd	Continuous	Daily	Monthly
BOD [1]	mg/L	Grab	Weekly	Monthly
Total Suspended Solids	mg/L	Grab	Weekly	Monthly

[1] Five-day, 20° Celsius biochemical oxygen demand.

SECONDARY EFFLUENT MONITORING

RMCSD shall monitor secondary effluent in accordance with the following. Secondary effluent samples shall be collected downstream from the last wastewater treatment pond prior to discharge to the secondary effluent storage reservoirs. Grab samples are considered adequately composited to represent the secondary effluent. Secondary effluent monitoring shall include, at a minimum, the following:

Constituents	Units	Type of Sample	Sampling Frequency	Reporting Frequency
BOD	mg/L	Grab	Weekly	Monthly
Total Settleable Solids	ml/L/hr	Grab	Weekly	Monthly
Total Dissolved Solids	mg/L	Grab	Monthly	Monthly
Nitrate nitrogen	mg/L	Grab	Monthly	Monthly
Ammonia nitrogen	mg/L	Grab	Monthly	Monthly
Standard Minerals [1]	mg/L	Grab	Annually	Annually

[1] Standard Minerals shall include, at a minimum, the folbwing 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. Analytical methods shall be selected to provide reporting limits below the Water Quality Limit for each constituent.

TERTIARY EFFLUENT MONITORING

During operation of the tertiary treatment system, RMCSD shall monitor tertiary effluent in accordance with the following. Tertiary effluent samples shall be taken downstream of the concrete lined tertiary effluent equalization basin. Grab samples are considered adequately composited to represent the tertiary effluent. Tertiary effluent monitoring shall include, at a minimum, the following:

Constituents	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Flow	gpd	Continuous	Daily	Monthly
Turbidity [1]	NTU	Continuous	Daily	Monthly [1]
Total Chlorine Residual	mg/L	Continuous	Daily	Monthly
Total Coliform Organisms [2]	MPN/100 ml	Grab	Daily	Monthly
pH	pH units	Grab	Weekly	Monthly
Total Dissolved Solids	mg/L	Grab	Monthly	Monthly
Nitrate nitrogen	mg/L	Grab	Monthly	Monthly
Total Kjeldahl nitrogen	mg/L	Grab	Monthly	Monthly

[1] For each day, report the minimum and maximum recorded turbidity, the total amount of time that turbidity exceeded 5 NTU, and the total amount of time that turbidity exceeded 10 NTU.

[2] Using a minimum of 15 tubes.

WWTF POND MONITORING

RMCSD shall monitor all ponds at the WWTF in accordance with the following. Samples shall be collected from permanent monitoring locations that will provide samples representative of the wastewater in the aeration ponds, polishing ponds, secondary effluent storage reservoirs, and tertiary effluent equalization basin. Freeboard shall be measured vertically from the water surface to the lowest elevation of pond berm (or spillway/overflow pipe invert), and shall be measured to the nearest 0.10 feet. Pond monitoring shall include, at a minimum, the following:

Constituent/Parameter	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Freeboard	0.1 Feet	Measurement	Weekly	Monthly
Dissolved Oxygen [1]	mg/L	Grab	Weekly	Monthly
pH	pH units	Grab	Weekly	Monthly

[1] Samples shall be collected opposite each pond inlet at a depth of one foot between 0700 and 0900 hours.

WWTF RECLAMATION MONITORING

RMCSD shall monitor reclamation activities at the WWTF in accordance with the following. Reclamation monitoring shall be performed daily and the results shall be included in the monthly monitoring report. Erosion, ground saturation, tailwater runoff, and nuisance conditions shall be noted in the report. Reclaimed water shall also be monitored to determine loading rates at the irrigated areas. Reclamation monitoring shall include the following:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Flow to irrigated areas [1]	gpd	Continuous	Daily	Monthly
Rainfall	inches	Measurement	Daily	Monthly
Acreage Applied	acres	Calculated	Daily	Monthly
Application Rate	gal/acre/day	Calculated	Daily	Monthly
Total Nitrogen [2]	lbs/month	Calculated	Monthly	Monthly
Total Dissolved Solids	lbs/month	Calculated	Monthly	Monthly

[1] Specific irrigation areas shall be identified.

[2] Including chemical fertilizers.

GROUNDWATER MONITORING

Upon adoption of this Revised MRP, RMCSD shall establish a quarterly sampling schedule for groundwater monitoring, with samples obtained approximately every three months. Upon completion of the additional monitoring wells required pursuant to Cease and Desist Order No. R5-2006-0001, RMCSD shall institute **monthly** groundwater sampling for a period of ten consecutive months. Thereafter, the groundwater monitoring frequency shall be **quarterly**. Regardless of the sampling frequency, the reporting frequency shall be quarterly.

This monitoring program applies to all existing monitoring wells. Prior to construction of any additional groundwater monitoring wells, the Discharger shall submit plans and specifications to the Regional Board for review and approval. Once installed, all new monitoring wells shall be added to the MRP, and shall be sampled and analyzed according to the schedule below.

Prior to well purging, groundwater elevations shall be measured. Depth to groundwater shall be measured to the nearest 0.01 feet. Water table elevations shall be calculated and used to determine groundwater gradient and direction of flow. The monitoring wells shall be purged of at least three well volumes or until temperature, pH, and electrical conductivity have stabilized. Samples shall be collected and analyzed using approved EPA methods. Groundwater monitoring shall include, at a minimum, the following:

Constituent	Units	Type of Sample	Sampling and Reporting Frequency [1]
Depth to groundwater	0.01 feet	Measurement	Quarterly
Groundwater elevation [2]	0.01 feet	Calculated	Quarterly
Gradient	feet/feet	Calculated	Quarterly
Gradient direction	Degrees	Calculated	Quarterly
PH	pH units	Grab	Quarterly
Total Dissolved Solids	mg/L	Grab	Quarterly
Nitrates nitrogen	mg/L	Grab	Quarterly
Ammonia nitrogen	mg/L	Grab	Quarterly
Total Coliform Organisms [3]	MPN/100 ml	Grab	Quarterly
Standard minerals [4, 5]	mg/L	Grab	Quarterly
Metals [6, 7]	ug/L	Grab	Quarterly
Total Trihalomethanes	ug/L	Grab	Quarterly

1 Upon adoption of this Revised MRP, RMCSD shall establish a quarterly sampling schedule for groundwater monitoring. Upon completion of the additional monitoring wells required pursuant to Cease and Desist Order No. R5-2006-0001, RMCSD shall institute monthly groundwater sampling for a period of ten consecutive months. Thereafter, the groundwater monitoring frequency shall be quarterly. Regardless of the sampling frequency, the reporting frequency shall be quarterly.

2 Groundwater elevations shall be determined based on depth-to-water measurements using a surveyed measuring point elevation on the well and a surveyed reference elevation.

3 Using a minimum of 15 tubes or three dilutions

4 Standard Minerals shall 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 $CaCO_3$.

5 Following ten consecutive months of monthly sampling, the sampling frequency for these constituents shall be annually.

6 At a minimum, the following metals shall be included: aluminum, arsenic, cadmium, copper, lead, iron, manganese, nickel, and zinc. Analytical methods shall be selected to provide reporting limits below the Water Quality Limit for each constituent.

7 Following ten consecutive months of monthly sampling, monitoring for these constituents is no longer required.

BIOSOLIDS MONITORING

RMCSD shall keep records regarding the quantity of biosolids generated by the treatment processes; any sampling and analytical data; the quantity of biosolids stored on site; and the quantity removed for disposal. The records shall also indicate the steps taken to reduce odor and other nuisance conditions. Records shall be stored onsite and available for review during inspections.

If biosolids are transported off-site for disposal, then RMCSD shall submit records identifying the hauling company, the amount of biosolids transported, the date removed from the facility, the location of disposal, and copies of all analytical data required by the entity accepting the waste. All records

shall be submitted as part of the Annual Monitoring Report.

RECLAIMED WATER STORAGE LAKE MONITORING

RMCC shall monitor all reclaimed water storage lakes in accordance with the following. Samples shall be collected from permanent monitoring locations that will provide samples representative of the reclaimed water in Bass Lake and Lakes 10, 11, 16, and 17. Freeboard shall be measured vertically from the water surface to the lowest possible point of overflow (or spillway/overflow pipe invert), and shall be measured to the nearest 0.10 feet. Pond monitoring shall include, at a minimum, the following:

Constituent/Parameter	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Freeboard [1]	Feet	Measurement	Weekly	Monthly
Dissolved Oxygen [2]	mg/L	Grab	Weekly	Monthly
pH	pH units	Grab	Weekly	Monthly
Odors	---	observation	Daily	Monthly

1 For each lake, report each date of overflow.

2 Samples shall be collected opposite the pond inlet at a depth of one foot between 0700 and 0900 hours.

GOLF COURSE RECLAMATION MONITORING

RMCC shall monitor reclamation activities at both golf courses in accordance with the following. Reclamation monitoring shall be performed daily and the results shall be included in the monthly monitoring report. Erosion, ground saturation, tailwater runoff, reclaimed water storage lake overflows, and nuisance conditions shall be noted in the report. Reclaimed water shall also be monitored to determine loading rates at the golf courses. Reclamation monitoring shall include the following:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Flow from golf course ponds to irrigation areas	gpd	Continuous	Daily	Monthly
Rainfall	Inches	Measurement	Daily	Monthly
Acreage Applied [1]	acres	Calculated	Daily	Monthly
Application Rate	gal/acre/day	Calculated	Daily	Monthly
Total Nitrogen [2]	lbs/month	Calculated	Monthly	Monthly
Total Dissolved Solids	lbs/month	Calculated	Monthly	Monthly

1 Specific irrigation areas shall be identified.

2 Including chemical fertilizers.

REPORTING

In reporting monitoring data, the Dischargers shall arrange the data in tabular form so that the date, sample type (e.g., effluent, pond, etc.), and reported analytical result for each sample are readily discernible. The data shall be summarized in such a manner to clearly illustrate compliance with waste discharge requirements and spatial or temporal trends, as applicable. The results of any monitoring done more frequently than required at the locations specified in the Monitoring and Reporting Program shall be reported to the Regional Board.

As required by the California Business and Professions Code Sections 6735, 7835, and 7835.1, all Groundwater Monitoring Reports shall be prepared under the direct supervision of a registered Professional Engineer or Geologist and signed by the registered professional.

A. Monthly Monitoring Reports

Monthly reports shall be submitted to the Regional Board on the **1st day of the second month following sampling** (i.e. the January Report is due by 1 March). RMCSD and RMCC shall submit combined monthly monitoring reports. Such reports shall bear the certification and signature of designated representatives of both RMCSD and RMCC. At a minimum, the monthly monitoring reports shall include:

1. Results of the following monitoring conducted by RMCSD:
    a. Influent monitoring;
    b. Secondary effluent monitoring;
    c. Tertiary effluent monitoring;
    d. WWTF pond monitoring;
    e. WWTF reclamation monitoring
    f. Groundwater monitoring; and
    g. Biosolids monitoring.
2. Results of the following monitoring conducted by RMCC:
    a. Reclaimed water storage lake monitoring; and
    b. Golf course irrigation monitoring.
3. A comparison of monitoring data to the discharge specifications and an explanation of any violation of those requirements. Data shall be presented in tabular format.
4. If requested by staff, copies of laboratory analytical report(s).

B. Quarterly Monitoring Reports

After completion of the monthly groundwater monitoring period specified above, RMCSD shall

establish a quarterly sampling schedule for groundwater monitoring such that samples are obtained approximately every three months. Regardless of the groundwater sampling frequency, RMCSD shall submit quarterly monitoring reports to the Regional Board by the **1st day of the second month after the quarter** (i.e. the January-March quarter is due by May 1st) each year. The Quarterly Monitoring Report shall include the following:

1. Results of groundwater monitoring;

2. A narrative description of all preparatory, monitoring, sampling, and analytical testing activities for the groundwater monitoring. The narrative shall be sufficiently detailed to verify compliance with the WDRs, this MRP, and the Standard Provisions and Reporting Requirements. The narrative shall be supported by field logs for each well documenting depth to groundwater; parameters measured before, during, and after purging; method of purging; calculation of casing volume; and total volume of water purged;

3. Calculation of groundwater elevations, an assessment of groundwater flow direction and gradient on the date of measurement, comparison of previous flow direction and gradient data, and discussion of seasonal trends, if any;

4. A narrative discussion of the analytical results for all groundwater locations monitored including spatial and temporal tends, with reference to summary data tables, graphs, and appended analytical reports (as applicable);

5. A comparison of monitoring data to the groundwater limitations and an explanation of any violation of those requirements;

6. Summary data tables of historical and current water table elevations and analytical results;

7. A scaled map showing relevant structures and features of the facility, the locations of monitoring wells and any other sampling stations, and groundwater elevation contours referenced to mean sea level datum;

8. Copies of laboratory analytical report(s) for groundwater monitoring.

C. Annual Report

An Annual Report shall be prepared as the fourth quarter monitoring report. The Annual Report shall include all monitoring data required in the monthly/quarterly schedule. The Annual Report shall be submitted to the Regional Board by **1 February** each year. In addition to the data normally presented, the Annual Report shall include the following:

1. The contents of the regular quarterly monitoring report for the last quarter of the year.

2. Analytical results for all annual monitoring.

3. If requested by staff, tabular and graphical summaries of all data collected during the year;

4. An evaluation of the performance of the WWTF which demonstrates the facility's ability to consistently meet treatment standards for recycled water use on a public golf course specified in Title 22, Division 4, CCR (Section 60301, et seq.), as well as a forecast of the flows anticipated in the next year;

5. An evaluation of the groundwater quality beneath the wastewater treatment facility;

6. A discussion of compliance and the corrective action taken, as well as any planned or proposed actions needed to bring the discharge into full compliance with the waste discharge requirements;

7. A discussion of any data gaps and potential deficiencies/redundancies in the monitoring system or reporting program;

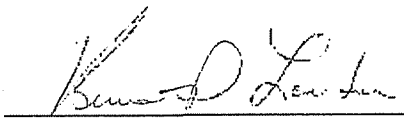
8. Summary of information on the disposal of biosolids as described in the "Biosolids Monitoring" section;

9. A discussion of whether RMCSD anticipates removing biosolids from wastewater treatment ponds in the coming year, and if so, the anticipated schedule for cleaning, drying, and disposal; and

10. A forecast of influent flows for the coming year, as described in Standard Provision No. E.4;

A letter transmitting the self-monitoring reports shall accompany each report. The letter shall include a discussion of requirement violations found during the reporting period, and actions taken or planned for correcting noted violations, such as operation or facility modifications. If the Dischargers have 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. The transmittal letter shall contain the penalty of perjury statement by the Dischargers, or the Dischargers' authorized agents, as described in the Standard Provisions General Reporting Requirements Section B.3.

The Dischargers shall implement the above monitoring program as of the date of this Order.

Ordered by: 

KENNETH D. LANDAU, Acting Executive Officer

1-26-2006

(Date)

ALO:02/02/2006

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

STANDARD PROVISIONS AND REPORTING REQUIREMENTS FOR WASTE DISCHARGE REQUIREMENTS

1 March 1991

A. General Provisions:

1. The requirements prescribed herein do not authorize the commission of any act causing injury to the property of another, or protect the Discharger from liabilities under federal, state, or local laws. This Order does not convey any property rights or exclusive privileges.

2. The provisions of this Order are severable. If any provision of this Order is held invalid, the remainder of this Order shall not be affected.

3. After notice and opportunity for a hearing, this Order may be terminated or modified for cause, including, but not limited to:

   a. Violation of any term or condition contained in this Order;

   b. Obtaining this Order by misrepresentation, or failure to disclose fully all relevant facts;

   c. A change in any condition that results in either a temporary or permanent need to reduce or eliminate the authorized discharge;

   d. A material change in the character, location, or volume of discharge.

4. Before making a material change in the character, location, or volume of discharge, the discharger shall file a new Report of Waste Discharge with the Regional Board. A material change includes, but is not limited to, the following:

   a. An increase in area or depth to be used for solid waste disposal beyond that specified in waste discharge requirements.

   b. A significant change in disposal method, location or volume, e.g., change from land disposal to land treatment.

   c. The addition of a major industrial, municipal or domestic waste discharge facility.

   d. The addition of a major industrial waste discharge to a discharge of essentially domestic sewage, or the addition of a new process or product by an industrial facility resulting in a change in the character of the waste.

5. Except for material determined to be confidential in accordance with California law and regulations, all reports prepared in accordance with terms of this Order shall be available for public inspection at the offices of the Board. Data on waste discharges, water quality, geology, and hydrogeology shall not be considered confidential.

6. The discharger shall take all reasonable steps to minimize any adverse impact to the waters of the state resulting from noncompliance with this Order. Such steps shall include accelerated or additional monitoring as necessary to determine the nature and impact of the noncompliance.

7. The discharger shall maintain in good working order and operate as efficiently as possible any facility, control system, or monitoring device installed to achieve compliance with the waste discharge requirements.

8. The discharger shall permit representatives of the Regional Board (hereafter Board) and the State Water Resources Control Board, upon presentations of credentials, to:

   a. Enter premises where wastes are treated, stored, or disposed of and facilities in which any records are kept,

   b. Copy any records required to be kept under terms and conditions of this Order,

   c. Inspect at reasonable hours, monitoring equipment required by this Order, and

   d. Sample, photograph and video tape any discharge, waste, waste management unit, or monitoring device.

9. For any electrically operated equipment at the site, the failure of which would cause loss of control or containment of waste materials, or violation of this Order, the discharger shall employ safeguards to prevent loss of control over wastes. Such safeguards may include alternate power sources, standby generators, retention capacity, operating procedures, or other means.

10. The fact that it would have been necessary to halt or reduce the permitted activity in Order to maintain compliance with this Order shall not be a defense for the discharger's violations of the Order.

11. Neither the treatment nor the discharge shall create a condition of nuisance or pollution as defined by the California Water Code, Section 13050.

12. The discharge shall remain within the designated disposal area at all times.

B. General Reporting Requirements:

1. In the event the discharger does not comply or will be unable to comply with any prohibition or limitation of this Order for any reason, the discharger shall notify the Board by telephone at **(916) 464-3291** *[Note: Current phone numbers for all three Regional Board offices may be found on the internet at http://www.swrcb.ca.gov/rwqcb5/contact_us.]* as soon as it or its agents

have knowledge of such noncompliance or potential for noncompliance, and shall confirm this notification in writing within **two weeks**. The written notification shall state the nature, time and cause of noncompliance, and shall include a timetable for corrective actions.

2. The discharger shall have a plan for preventing and controlling accidental discharges, and for minimizing the effect of such events.

   This plan shall:

   a. Identify the possible sources of accidental loss or leakage of wastes from each waste management, treatment, or disposal facility.

   b. Evaluate the effectiveness of present waste management/treatment units and operational procedures, and identify needed changes of contingency plans.

   c. Predict the effectiveness of the proposed changes in waste management/treatment facilities and procedures and provide an implementation schedule containing interim and final dates when changes will be implemented.

   The Board, after review of the plan, may establish conditions that it deems necessary to control leakages and minimize their effects.

3. All reports shall be signed by persons identified below:

   a. <u>For a corporation</u>: by a principal executive officer of at least the level of senior vice-president.

   b. <u>For a partnership or sole proprietorship</u>: by a general partner or the proprietor.

   c. <u>For a municipality, state, federal or other public agency</u>: by either a principal executive officer or ranking elected or appointed official.

   d. A duly authorized representative of a person designated in 3a, 3b or 3c of this requirement if;

      (1) the authorization is made in writing by a person described in 3a, 3b or 3c of this provision;

      (2) the authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a waste management unit, superintendent, or position of equivalent responsibility. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and

      (3) the written authorization is submitted to the Board

Any person signing a document under this Section shall make the following certification:

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

4. Technical and monitoring reports specified in this Order are requested pursuant to Section 13267 of the Water Code. Failing to furnish the reports by the specified deadlines and falsifying information in the reports, are misdemeanors that may result in assessment of civil liabilities against the discharger.

5. The discharger shall mail a copy of each monitoring report and any other reports required by this Order to:

California Regional Water Quality Control Board
Central Valley Region
11020 Sun Center Drive, #200
Rancho Cordova, CA 95670-6114
Note: Current addresses for all three Regional Board offices may be found on the internet at http://www.swrcb.ca.gov/rwqcb5/contact_us.
or the current address if the office relocates.

C. Provisions for Monitoring:

1. All analyses shall be made in accordance with the latest edition of: (1) *Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater* (EPA 600 Series) and (2) *Test Methods for Evaluating Solid Waste* (SW 846-latest edition). The test method may be modified subject to application and approval of alternate test procedures under the Code of Federal Regulations (40 CFR 136).

2. Chemical, bacteriological, and bioassay analysis shall be conducted at a laboratory certified for such analyses by the State Department of Health Services. In the event a certified laboratory is not available to the discharger, analyses performed by a noncertified laboratory will be accepted provided a Quality Assurance-Quality Control Program is instituted by the laboratory. A manual containing the steps followed in this program must be kept in the laboratory and shall be available for inspection by Board staff. The Quality Assurance-Quality Control Program must conform to EPA guidelines or to procedures approved by the Board.

   Unless otherwise specified, all metals shall be reported as Total Metals.

3. The discharger shall retain records of all monitoring information, including all calibration and maintenance records, all original strip chart recordings of continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to

complete the application for this Order. Records shall be maintained for a minimum of three years from the date of the sample, measurement, report, or application. This period may be extended during the course of any unresolved litigation regarding this discharge or when requested by the Regional Board Executive Officer.

Record of monitoring information shall include:

a. the date, exact place, and time of sampling or measurements,
b. the individual(s) who performed the sampling of the measurements,
c. the date(s) analyses were performed,
d. the individual(s) who performed the analyses,
e. the laboratory which performed the analysis,
f. the analytical techniques or methods used, and
g. the results of such analyses.

4. All monitoring instruments and devices used by the discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated at least yearly to ensure their continued accuracy.

5. The discharger shall maintain a written sampling program sufficient to assure compliance with the terms of this Order. Anyone performing sampling on behalf of the discharger shall be familiar with the sampling plan.

6. The discharger shall construct all monitoring wells to meet or exceed the standards stated in the State Department of Water Resources *Bulletin 74-81* and subsequent revisions, and shall comply with the reporting provisions for wells required by Water Code Sections 13750 through 13755.22

D. Standard Conditions for Facilities Subject to California Code of Regulations, Title 23, Division3, Chapter 15 (Chapter 15)

1. All classified waste management units shall be designed under the direct supervision of a California registered civil engineer or a California certified engineering geologist. Designs shall include a Construction Quality Assurance Plan, the purpose of which is to:

   a. demonstrate that the waste management unit has been constructed according to the specifications and plans as approved by the Board.

   b. provide quality control on the materials and construction practices used to construct the waste management unit and prevent the use of inferior products and/or materials which do not meet the approved design plans or specifications.

2. Prior to the discharge of waste to any classified waste management unit, a California registered civil engineer or a California certified engineering geologist must certify that the waste management unit meets the construction or prescriptive standards and performance goals in Chapter 15, unless an engineered alternative has been approved by the Board. In the case of an engineered alternative, the registered civil engineer or a certified engineering geologist must

certify that the waste management unit has been constructed in accordance with Board-approved plans and specifications.

3. Materials used to construct liners shall have appropriate physical and chemical properties to ensure containment of discharged wastes over the operating life, closure, and post-closure maintenance period of the waste management units.

4. Closure of each waste management unit shall be performed under the direct supervision of a California registered civil engineer or a California certified engineering geologist.

E. Conditions Applicable to Discharge Facilities Exempted from Chapter 15 Under Section 2511

1. If the discharger's wastewater treatment plant is publicly owned or regulated by the Public Utilities Commission, it shall be supervised and operated by persons possessing certificates of appropriate grade according to California Code of Regulations, Title 23, Division 4, Chapter 14.

2. By-pass (the intentional diversion of waste streams from any portion of a treatment facility, except diversions designed to meet variable effluent limits) is prohibited. The Board may take enforcement action against the discharger for by-pass unless:

   a. (1) By-pass was unavoidable to prevent loss of life, personal injury, or severe property damage. (Severe property damage means substantial physical damage to property, damage to the treatment facilities that causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a by-pass. Severe property damage does not mean economic loss caused by delays in production); and

   (2) There were no feasible alternatives to by-pass, such as the use of auxiliary treatment facilities or retention of untreated waste. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a by-pass that would otherwise occur during normal periods of equipment downtime or preventive maintenance; or

   b. (1) by-pass is required for essential maintenance to assure efficient operation; and

   (2) neither effluent nor receiving water limitations are exceeded; and

   (3) the discharger notifies the Board ten days in advance.

   The permittee shall submit notice of an unanticipated by-pass as required in paragraph B.1. above.

3. A discharger that wishes to establish the affirmative defense of an upset (see definition in E.6 below) in an action brought for noncompliance shall demonstrate, through properly signed, contemporaneous operating logs, or other evidence, that:

a. an upset occurred and the cause(s) can be identified;

b. the permitted facility was being properly operated at the time of the upset;

c. the discharger submitted notice of the upset as required in paragraph B.1. above; and

d. the discharger complied with any remedial measures required by waste discharge requirements.

In any enforcement proceeding, the discharger seeking to establish the occurrence of an upset has the burden of proof.

4. A discharger whose waste flow has been increasing, or is projected to increase, shall estimate when flows will reach hydraulic and treatment capacities of its treatment, collection, and disposal facilities. The projections shall be made in January, based on the last three years' average dry weather flows, peak wet weather flows and total annual flows, as appropriate. When any projection shows that capacity of any part of the facilities may be exceeded in four years, the discharger shall notify the Board by **31 January**.

5. Effluent samples shall be taken downstream of the last addition of wastes to the treatment or discharge works where a representative sample may be obtained prior to disposal. Samples shall be collected at such a point and in such a manner to ensure a representative sample of the discharge.

6. Definitions

   a. Upset means an exceptional incident in which there is unintentional and temporary noncompliance with effluent limitations because of factors beyond the reasonable control of the Discharger. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper action.

   b. The monthly average discharge is the total discharge by volume during a calendar month divided by the number of days in the month that the facility was discharging. This number is to be reported in gallons per day or million gallons per day.

      Where less than daily sampling is required by this Order, the monthly average shall be determined by the summation of all the measured discharges by the number of days during the month when the measurements were made.

   c. The monthly average concentration is the arithmetic mean of measurements made during the month.

   d. The "daily maximum" **discharge** is the total discharge by volume during any day.

e. The "daily maximum" **concentration** is the highest measurement made on any single discrete sample or composite sample.

f. A "grab" sample is any sample collected in less than 15 minutes.

g. Unless otherwise specified, a composite sample is a combination of individual samples collected over the specified sampling period;

(1) at equal time intervals, with a maximum interval of one hour

(2) at varying time intervals (average interval one hour or less) so that each sample represents an equal portion of the cumulative flow.

The duration of the sampling period shall be specified in the Monitoring and Reporting Program. The method of compositing shall be reported with the results.

7. Annual Pretreatment Report Requirements:

Applies to dischargers required to have a Pretreatment Program as stated in waste discharge requirements.)

The annual report shall be submitted **by 28 February** and include, but not be limited to, the following items:

a. A summary of analytical results from representative, flow-proportioned, 24-hour composite sampling of the influent and effluent for those pollutants EPA has identified under Section 307(a) of the Clean Water Act which are known or suspected to be discharged by industrial users.

The discharger is not required to sample and analyze for asbestos until EPA promulgates an applicable analytical technique under 40 CFR (Code of Federal Regulations) Part 136. Sludge shall be sampled during the same 24-hour period and analyzed for the same pollutants as the influent and effluent sampling analysis. The sludge analyzed shall be a composite sample of a minimum of 12 discrete samples taken at equal time intervals over the 24-hour period. Wastewater and sludge sampling and analysis shall be performed at least annually. The discharger shall also provide any influent, effluent or sludge monitoring data for nonpriority pollutants which may be causing or contributing to Interference, Pass Through or adversely impacting sludge quality. Sampling and analysis shall be performed in accordance with the techniques prescribed in 40 CFR Part 136 and amendments thereto.

b. A discussion of Upset, Interference, or Pass Through incidents, if any, at the treatment plant which the discharger knows or suspects were caused by industrial users of the system. The discussion shall include the reasons why the incidents occurred, the corrective actions taken and, if known, the name and address of the industrial user(s) responsible. The discussion shall also include a review of the applicable pollutant limitations to determine whether any

additional limitations, or changes to existing requirements, may be necessary to prevent Pass Through, Interference, or noncompliance with sludge disposal requirements.

c. The cumulative number of industrial users that the discharger has notified regarding Baseline Monitoring Reports and the cumulative number of industrial user responses.

d. An updated list of the discharger's industrial users including their names and addresses, or a list of deletions and additions keyed to a previously submitted list. The discharger shall provide a brief explanation for each deletion. The list shall identify the inddustrial users subject to federal categorical standards by specifying which set(s) of standards are applicable. The list shall indicate which categorical industries, or specific pollutants from each industry, are subject to local limitations that are more stringent that the federal categorical standards. The discharger shall also list the noncategorical industrial users that are subject only to local discharge limitations. The discharger shall characterize the compliance status through the year of record of each industrial user by employing the following descriptions:

(1) Complied with baseline monitoring report requirements (where applicable);

(2) Consistently achieved compliance;

(3) Inconsistently achieved compliance;

(4) Significantly violated applicable pretreatment requirements as defined by 40 CFR 403.8(f)(2)(vii);

(5) Complied with schedule to achieve compliance (include the date final compliance is required);

(6) Did not achieve compliance and not on a compliance schedule;

(7) Compliance status unknown.

A report describing the compliance status of any industrial user characterized by the descriptions in items (d)(3) through (d)(7) above shall be **submitted quarterly from the annual report date** to EPA and the Board. The report shall identify the specific compliance status of each such industrial user. This quarterly reporting requirement shall commence upon issuance of this Order.

e. A summary of the inspection and sampling activities conducted by the discharger during the past year to gather information and data regarding the industrial users. The summary shall include but not be limited to, a tabulation of categories of dischargers that were inspected and sampled; how many and how often; and incidents of noncompliance detected.

f. A summary of the compliance and enforcement activities during the past year. The summary shall include the names and addresses of the industrial users affected by the following actions:

(1) Warning letters or notices of violation regarding the industrial user's apparent noncompliance with federal categorical standards or local discharge limitations. For each industrial user, identify whether the apparent violation concerned the federal categorical standards or local discharge limitations;

(2) Administrative Orders regarding the industrial user's noncompliance with federal categorical standards or local discharge limitations. For each industrial user, identify whether the violation concerned the federal categorical standards or local discharge limitations;

(3) Civil actions regarding the industrial user's noncompliance with federal categorical standards or local discharge limitations. For each industrial user, identify whether the violation concerned the federal categorical standards or local discharge limitations;

(4) Criminal actions regarding the industrial user's noncompliance with federal categorical standards or local discharge limitations. For each industrial user, identify whether the violation concerned the federal categorical standards or local discharge limitations.

(5) Assessment of monetary penalties. For each industrial user identify the amount of the penalties;

(6) Restriction of flow to the treatment plant; or

(7) Disconnection from discharge to the treatment plant.

g. A description of any significant changes in operating the pretreatment program which differ from the discharger's approved Pretreatment Program, including, but not limited to, changes concerning: the program's administrative structure; local industrial discharge limitations; monitoring program or monitoring frequencies; legal authority of enforcement policy; funding mechanisms; resource requirements; and staffing levels.

h. A summary of the annual pretreatment budget, including the cost of pretreatment program functions and equipment purchases.

i. A summary of public participation activities to involve and inform the public.

j. A description of any changes in sludge disposal methods and a discussion of any concerns not described elsewhere in the report.

Duplicate signed copies of these reports shall be submitted to the Board and:

Regional Administrator
U.S. Environmental Protection Agency W-5
75 Hawthorne Street
San Francisco, CA 94105

and

State Water Resource Control Board
Division of Water Quality
P.O. Box 100
Sacramento, CA 95812

Revised January 2004 to update addresses and phone numbers

APPENDIX 2

Standard Procedures and Forms

1- Standard Procedure for Diversion of Raw Water with Form

2- Form for Requesting Recycled Water to Golf Course Lakes

3- Standard Procedure for Monthly Monitoring Report

4- Odor Recordation and Action Form

Standard Procedure for Diversion of Raw Water to Golf Course Lakes

Purpose: This procedure, together with the accompany form are to be used to coordinate river water diversions to Bass Lake and Lake 10/11 and/ or water transfer from Lake Clementia to Lake 10/10. The procedure will help assure compliance with water rights permits and Waste Discharge Requirements (WDR) (as respects overflow of the golf course lakes).

Personnel: RMCC - Golf Course Superintendent or his designee.

RMCSD - Director of Field Operations or his designee.

Overview: Reclaimed water is the primary source of irrigation water for the RMCC golf courses. However, during dry winter periods, and in early spring before the tertiary treatment facilities necessary to produce Title 22 reclaimed water are put on-line at the RMCSD wastewater treatment facility, RMCC may require raw water delivery to the golf course lakes for irrigation of the golf courses. Also, towards the end of the irrigation season, depending upon the volume of reclaimed wastewater that can be made available, water from Lake Clementia may be needed to augment the reclaimed water.

The RMCSD Director of Field Operations will oversee and coordinate all pumping of Cosumnes River water and transfer of water from Lake Clementia in order to document the volumes of raw water used for irrigation and compliance with water rights.

Procedure: 1) Upon determining that additional raw water is required in the golf course lakes, the Golf Course Superintendent completes and forwards the attached form to the RMCSD Director of Field Operations.

2) The Director of Field Operations reviews the form and verifies (as appropriate):

i) Flows in the Cosumnes are greater than minimum (70cfs) required for withdrawal;

ii) The requested withdrawal, together with RMCSD's withdrawal for water supply, will not exceed entitlements; and

Standard Procedure for Diversion of Raw Water to Golf Course Lakes (continued)

iii) Transfer from Lake Clementia will not exceed 40 ac-ft for the water year.

3) The Director of Field Operations returns the form to the Golf Course Superintendent indicating approval or the reason for denial.

4) The Golf Course Superintendent records, based upon the meter(s), the volume pumped or transferred and returns a copy of the form to the Director of Field Operations for documentation of withdrawals.

REQUEST FOR AUTHORIZATION TO PUMP RIVER WATER or to TRANSFER WATER FROM LAKE CLEMENTIA

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1. Date _____; Time_____

Note: Water from the Cosumnes may be pumped only from November 1 to May 31

Current Flow of Cosumnes River at Michigan Bar: _____cfs.

(http://cdec.water.ca.gov/cgi-progs/queryF?s=mhb)

Note: flow must be 70 cfs or greater to pump from the Cosumnes

2. Request is to: a) Pump River Water to: Bass Lake___; Lake 10/11____

b) Transfer Water from Lake Clementia to Lake 10/11____

3. Amount of water requested: from 1) River _____ 1000 gallons _____acre-ft

2) Lake Clementia _____1000 gallons _____acre-ft

(note: maximum transfer from Lake Clementia 40 acre-ft/year)

4. Volume pumped or transferred from November 1 to date:

Cosumnes River____ acre-ft Lake Clementia ___ acre-ft

(note: 1 acre-ft = 325,829 gallons) or (1,000,000 gallons = 3.07 acre ft.)

The River pump will deliver approximately 33,000 gallons per hour or approximate 0.1 acre-ft per hour.

5. Current Freeboard in (measured to 0.0'): Bass Lake: _____ Lake 10/11_____

6. Request made by:_____

This Form is to be emailed or Faxed to: fax: _____ email:_____

This part of the form is to be completed by RMCSD and a copy returned to RMCC:

Request to Pump/transfer _____acre ft is: _____approved; denied _____ for the following reason: _____

By:_____ Date: _____ Returned via ___ fax; email___

Volume of water pumped (in gallons) _____ or transferred _____

(to be completed by Golf Course Superintendent end returned to RMCSD Director of Field Operations for record keeping)

REQUEST FOR DELIVERY OF RECYCLED WATER FORM

1. Date _____

2. Requested for (check one) Bass Lake _____ Lake 10/11_____

3. Amount of water requested _____ million gallons (_____ acre-ft).

4.Current Freeboard in Bass Lake_____ or Lake 10/11_____.

5. Estimated Freeboard in Bass Lake_____ or Lake 10/11 ____after delivery of requested water. (see Storage-Capacity Chart)

6. If request for delivery is made after September 30, verify that estimated freeboard is sufficient to provide useful storage sufficient to store 100 year event (unless currently experience dry period)

   Is estimated freeboard in Bass Lake at least ___ or at least___ in Lake 10/11 after delivery. Yes__ No___

Water Delivery Requested by: _____

Phone:_____ Fax:_____ email address:

This part of the Form is to be completed by RMCSD and a copy returned to the RMCC.

Receipt of the Request for Water Delivery is acknowledged. Delivery of the requested water will be made _____ or can not be made for the following reason(s):_____

By:_____ for the RMCSD Date:_____

Return to RMCC via ____fax _____ email

Standard Procedure for Preparation of the Monthly Monitoring Report

Purpose: This procedure identifies the data to be collected by RMCC and the schedule for transmittal of the data to the RMCSD for inclusion in the Monthly Monitoring Report submitted to the Regional Water Quality Control Board.

Personnel: RMCC - Golf Course Superintendent or authorized representative

RMCSD - Director of Field Operations or authorized representative

Overview: The Waste Discharge Requirements (WDR) issued jointly to the RMCSD and the RMCC requires that the permittees submit a joint Monthly Monitoring Report to the RWQCB (Revised Monitoring and Reporting Program No. 5-01-124; copy attached).

The RMCSD Director of Field Operations will compile the data required to be reported by the RMCSD together the data required of the RMCC, which is provided by the RMCC Golf Course Superintendent pursuant to the procedure outlined below.

The RMCC is required to monitor and report on:

1. Reclaimed Water Storage Lakes
2. Golf Course Reclamation Monitoring

Procedure: 1) Daily Monitoring of Lakes for Odors: The Golf Course Superintendent will monitor daily, or cause his staff to monitor the golf course lakes daily for odors and complete the attached Daily Odor Monitoring Worksheet (1).

2) Weekly Monitoring of Lakes for Freeboard, Dissolved Oxygen and pH:

The Golf Course Superintendent will monitor weekly, or cause his staff to monitor weekly for freeboard, dissolved oxygen and pH and complete the attached Weekly RMCC Lakes Monitoring Worksheet (2).

3) Golf Course Reclamation Monitoring: This task consists of daily monitoring of the volume of water applied to the golf courses, rainfall, and

the calculation of nitrogen and dissolved solids applied to the golf course on a monthly basis.

i) The Golf Course Superintendent enters the daily values for columns 2, 3, 5, and 9 of the Golf Course Reclamation Monitoring Worksheet (3).

ii) The Director of Field Operations enters the values of the monthly grab samples for Total Nitrogen (Total Kjeldalh nitrogen + Nitrate nitrogen) and Total Dissolved Solids.

iii) The values for the daily entries in columns 7, 10, 11 and 12 will then be automatically calculated, as will be the reportable monthly totals in columns 11 and 12.

4) The Golf Course Superintendent shall transmit worksheets 1, 2 and 3 in electronic format to the Director of Field Operations by the 7th day of the following month for which the worksheets apply.

5) The Director of Field Operations shall compile the information provided with the monitoring and reporting data required of the RMCSD and transmit the Joint Monthly Monitoring Report to the RWQCB by 23rd of the month, co-signed by RMCC Golf Course Superintendent or authorized representative. A copy of the Joint Monthly Monitoring Report shall be provided to Golf Course Superintendent.

DAILY ODOR MONITORING OF RMCC LAKES WORKSHEET (1)

month year

	Bass Lake					Lake 10/11				Lake 16/17			
			ODOR				ODOR				ODOR	
Date	Time	By: RMCC Staff	YES	NO	Time	By: RMCC Staff	YES	NO	Time	By: RMCC Staff	YES	NO
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												
31												

Note: If odor detected explain what action was taken below:

WEEKLY RMCC LAKES MONITORING WORKSHEET (2)

Month of _____ Year _____

			Date	Time	Employee	4.00	7.00	10.00
week 1	**pH Meter Calibration**							
Date	Time	Employee	ID	Freeboard	DO (mg/L)	pH	Temperature	Conditions
			Lake #10/11					
			Lake #16					
			Lake #17					
			Bass Lake					
			Date	Time	Employee	4.00	7.00	10.00
week 2	**pH Meter Calibration**							
Date	Time	Employee	ID	Freeboard	DO (mg/L)	pH	Temperature	Conditions
			Lake #10/11					
			Lake #16					
			Lake #17					
			Bass Lake					
			Date	Time	Employee			
week 3	**pH Meter Calibration**					4.00	7.00	10.00
Date	Time	Employee	ID	Freeboard	DO (mg/L)	pH	Temperature	Conditions
			Lake #10/11					
			Lake #16					
			Lake #17					
			Bass Lake					
			Date	Time	Employee			
week 4	**pH Meter Calibration**					4.00	7.00	10.00
Date	Time	Employee	ID	Freeboard	DO (mg/L)	pH	Temperature	Conditions
			Lake #10/11					
			Lake #16					
			Lake #17					
			Bass Lake					

GOLF COURSE RECLAMATION MONITORING WORKSHEET(3)

Month _____

Total Nitrogen in Recycled Water - mg/l	
Dissolved Solids in Recycled Water - mg/l	

1	2	3	4	5	6	7	9	10	11	12
Day	**Irrigation on North Course (gal)**	**Irrigation on South Course (gal)**	**Total Irrigation (gal)**	**Rainfall (inches)**	**Acreage Irrigated (acres)**	**Application Rate (gal/acre/day)**	**Nitrogen Fertilizer Applied (lbs)**	**Nitrogen Applied in Recycled Water (lbs)**	**Total Nitrogen Applied (lbs)**	**Total Dissolved Solids Applied (lbs)**
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
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16										
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18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										
31										
					MONTHLY TOTALS		**0.0**	**0.0**	**0.0**	**0.0**

ODOR RECORDATION and ACTION FORM

Date of Call: _____ Taken By: _____

From: _____

Address of Caller: _____

Phone No. _____

Nature of Odor Complaint:

Date Odor was experienced: _____

Time: _____

Location

Description of Odor: _____

Weather Conditions _____

Irrigation

were the golf courses being irrigated at the time of the odor _____

had the irrigation system been in use with the past couple of days _____

Response: Investigated by:_____ Date: _____

Visited: Area of Odor_____ Recycled Water Ponds_____

Samples At spray head:_____ From Pond:_____

From Treatment Plant:_____ Odor Detected Where:_____

Inspected: Manholes:_____ Pump Station:_____

Findings: Cause of Odor:_____ Recommended Action:_____ _____

_____ _____

Call Returned to Complainant with Findings _____ Date:_____

Comments:_____

_____

_____

APPENDIX 3

Water Balances for Golf Course Recycled Water Storage Lakes

BASS LAKE

RAINFALL, STORAGE, AND FREEBOARD REQUIREMENTS

Rancho Murieta Country Club

			100-YEAR ANNUAL PRECIPITATION RETURN CALCULATIONS								
		START	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Climate Inputs	**Units**										
Precipitation (Cumulative)	in	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.4
Precipitation (100-YR)	in	0.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.4
Average Lake Evap - 100YR Eff.	in	na	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58
Percolation	in	na	0	0	0	0	0	0	0	0	0
RMCC Bass Lake											
Lake Water Shed Run-off	ac-ft	na	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3
Lake Precipitation (direct)	ac-ft	na	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9
Irrig. Lake Evaporation	ac-ft	na	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2
Disposal											
RMCC Golf Course Demand	ac-ft	0	0	0	0	0	0	0	0	0	0
Effluent Storage											
Beginning Water Volume in Reservc	ac-ft	0.0	0.0	2.8	5.6	8.4	11.3	14.1	16.9	19.7	22.5
Change in Water Volume	ac-ft	0.0	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	3.1
Final Water Volume in Reservoirs	ac-ft	0.0	2.8	5.6	8.4	11.3	14.1	16.9	19.7	22.5	***25.6***
Approximate Freeboard Required		START									
Freeboard Needed to Store	feet	***7.9***	7.3	6.6	6.0	5.3	4.7	4.0	3.4	2.7	2.0

Assumptions:

1) 100-yr Precipitation divided into nine (9) equal periods, spread over approximately half of a month for each period
2) No Irrigation during the precipitation event
3) No hydraulic influence from groundwater
4) Rational Method used to estimate run-off. Coefficient of 0.35 (Unimproved, slopes > 7%)
5) 100-yr precipitation, 20% reduction of evaporation
6) Five-Month Average for Evaporation calculations (1.15 in/mth). Each period is approximately half a month which results in half the monthly average evaoporation
7) 100-year return = 45.4 in/yr from DWR for Rancho Murieta Station B00724892
8) Pan evaporation data taken from Western Regional Climate Center (WRCC) for Folsom Dam (1955-1993)

Pan Evap Coefficient	0.75 unitless
Surface Water Area	4.3 acres
Contributing Watershed	8.4 acres
Run-off Coefficient	0.35 unitless

LAKE 10/11

RAINFALL, STORAGE, AND FREEBOARD REQUIREMENTS

Rancho Murieta Country Club

			100-YEAR ANNUAL PRECIPITATION RETURN CALCULATIONS								
	Units	**START**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Climate Inputs											
Precipitation (Cumulative)	in	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.4
Precipitation (100-YR)	in	0.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.4
Average Lake Evap - 100YR Eff.	in	na	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58
Percolation	in	na	0	0	0	0	0	0	0	0	0
RMCC Lake 10/11											
Lake Water Shed Run-off	ac-ft	na	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0
Lake Precipitation (direct)	ac-ft	na	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.7
Irrig. Lake Evaporation	ac-ft	na	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4
Disposal											
RMCC Golf Course Demand	ac-ft	0	0	0	0	0	0	0	0	0	0
Effluent Storage											
Beginning Water Volume in Reservc	ac-ft	0.0	0.0	4.9	9.8	14.7	19.5	24.4	29.3	34.2	39.1
Change in Water Volume	ac-ft	0.0	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	5.3
Final Water Volume in Reservoirs	ac-ft	0.0	4.9	9.8	14.7	19.5	24.4	29.3	34.2	39.1	***44.4***
Approximate Freeboard Required		START									
Freeboard Needed to Store	feet	***7.4***	6.8	6.2	5.6	5.0	4.4	3.8	3.2	2.6	2.0

Assumptions:

1) 100-yr Precipitation divided into nine (9) equal periods, spread over approximately half of a month for each period
2) No Irrigation between October 15-May 1st (During all rain events)
3) No hydraulic influence from groundwater
4) Rational Method used to estimate run-off. Coefficient of 0.25 (Turf, 7% slopes, conservative)
5) 100-yr precipitation, 20% reduction of evaporation
6) Five-Month Average for Evaporation calculations (1.15 in/mth). Each period is approximately half a month which results in half the monthly average evaoporation
7) 100-year return = 45.4 in/yr from DWR for Rancho Murieta Station B00724892
8) Pan evaporation data taken from Western Regional Climate Center (WRCC) for Folsom Dam (1955-1993)

Pan Evap Coefficient	0.75 unitless
Surface Water Area	8.2 acres
Contributing Watershed	17.8 acres
Run-off Coefficient	0.25 unitless

APPENDIX 4

CONTACT INFORMATION

Contact Information

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