CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER R5-2013-0114

WASTE DISCHARGE REQUIREMENTS

FOR
LAKE BERRYESSA RESORT IMPROVEMENT DISTRICT
LAKE BERRYESSA WASTEWATER TREATMENT FACILITY
NAPA COUNTY

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

1. On 30 January 2013, Lake Berryessa Resort Improvement District (hereafter "Discharger" or "LBRID") submitted a Report of Waste Discharge (RWD) to apply for revised Waste Discharge Requirements (WDRs) for an existing wastewater treatment facility (WWTF), which serves the Berryessa Estates Subdivision in Napa. Additional information was submitted on 3 April 2013 and 16 April 2013.

2. LBRID owns and operates the WWTF and is responsible for compliance with these Waste Discharge Requirements (WDRs).

3. The WWTF is located along the northwestern shoreline of Lake Berryessa in Napa County, near Putah Creek, at the end of Stagecoach Canyon Road (Section 25, T10N, R5E, MDB&M). The WWTF occupies Assessor's Parcel Numbers (APN) 015-080-013-000 and 015-080-009-000. The general location of the facility is shown on Attachment A, which is attached hereto and made part of this Order by reference.

4. WDRs Order R5-2008-0068, adopted by the Central Valley Water Board on 25 April 2008, prescribes requirements for the WWTF. Order R5-2008-0068 allows a monthly average dry weather flow to the WWTF up to 42,000 gallons per day (gpd).

5. The Discharger proposes to expand the WWTF by increasing the storage and disposal capacity to accommodate the Berryessa Estates Subdivision at full buildout and comply with the Revised Administrative Civil Liability Order (ACL) R5-2011-0538 Revision No. 1. Therefore, Order R5-2008-0068 will be rescinded and replaced with this Order.

Existing Facility and Discharge

6. The existing WWTF currently treats and disposes of wastewater from the Berryessa Estates Subdivision, which consists of 180 single-family dwellings. There will be a total of 339 service connections at full buildout. The residential influent flow is approximately 30,000 gpd as an annual average, including backwash water from LBRID's water treatment plant.

7. Wastewater enters the WWTF and gravity flows through three aerated treatment ponds (Ponds 1, 2, and 3) that are connected in series. Treated effluent is conveyed to four storage ponds (Ponds 4, 5, 6, and 7) that total approximately 8 million gallons (MG) of storage capacity. From Pond 3, wastewater gravity flows to Pond 4 and then to Pond 5. Wastewater is pumped from either Pond 4 or Pond 5 to Pond 6. From Pond 6, wastewater is pumped to Pond 7. Pond 4 serves as a polishing pond and Ponds 5, 6, and 7 serve as storage ponds.

8. Wastewater from Pond 7 is disinfected using a chlorine injection metering pump and chlorine contact tank to maintain a chlorine residual between 0.3 and 0.6 mg/L and a total coliform organism concentration of less than 23 MPN/100 mL.

9. The treated, disinfected wastewater is land applied via spray irrigation to two separate land application areas (LAAs) totaling approximately six acres. The Discharger owns the land application areas, which comprise native grasslands interspersed with oak trees. All tailwater from the land application areas is captured by two tailwater collection ditches and diverted to either Pond 4 or Pond 7 for recirculation into the spray field system. Sludge generated at the WWTF is disposed of offsite at a permitted landfill facility.

10. The following table summarizes recent influent flows at the WWTF.

	Total Monthly Influent Flow, MG				
Month	2008	2009	2010	2011	2012
January	1.947	0.424	2.050	1.539	0.818
February	1.718	1.539	1.215	1.752	0.525
March	0.987	1.195	1.120	3.703	1.528
April	0.636	0.566	0.926	1.168	0.961
May	0.754	0.537	0.361	0.856	0.646
June	0.739	0.534	0.444	0.654	0.637
July	0.818	0.587	0.623	0.592	0.634
August	0.856	0.675	0.528	0.593	0.586
September	0.599	0.478	0.615	0.572	0.544
October	0.617	0.665	0.422	0.580	0.558
November	0.507	0.443	0.239[1]	0.557	0.750
December	0.285	0.535	1.632	0.523	2.391
Total:	10.462	8.178	10.175	13.088	10.58

[1] Influent flow data for November 2010 includes several flows recorded as 0 mgd, and the total flow for the month, excluding the zero values, is uncharacteristically low. The low total for that month is thus assumed to be inaccurate.

The influent flows observed in March 2011 and December 2012 were unusually high. Rainfall during these months was 8.5 inches and 7.5 inches, respectively.

11. A summary of the effluent quality data collected from November 2008 through September 2012 is presented in the table below.

	Summary of Effluent Quality, mg/L unless noted			
Constituents	Average[1]	Median[2]	Maximum[3]	Minimum[3]
BOD_5	< 21.0	--	77	5.0
Total Hardness	375	--	410	320
TDS	492	500	820	240
Chloride	62	64	130	17
Sodium	63	62	130	26
Nitrate as N	< 0.4	< 0.2	1.7	< 0.2
TKN	4.5	4.1	12.0	1.9
Total nitrogen	5.1	4.3	12.6	2.5
Boron	0.82	0.79	0.98	0.72
Iron	< 0.23	0.28	0.42	< 0.10
Magnesium	66	68	72	54
Manganese	0.10	0.10	0.18	0.03
Total Trihalomethanes, µg/L[4]	0.84	0.84	0.84	0.84

"--" denotes no value reported in the RWD.

[1] For parameters with non-detect (ND), the average is reported as "<" the average value with each ND data point set equal to the minimum detection limit.

[2] ND values are shown with a "<" and the value of the maximum detection limit (MDL).

[3] For parameters with maxima or minima corresponding to ND data points, the maximum or minimum is reported as "< MDL".

[4] Total trihalomethanes (THMs) values have been calculated as a sum of concentrations for detected components. THMs have been analyzed twice, once in 2009 (chloroform detection) and 2011 (non-detect). THMs value is equal to the chloroform value for the one detectable data set.

Enforcement History

12. The Discharger has had a long history of spills as a result of infiltration/inflow (I/I) issues at the wastewater collection system and lack of storage and disposal capacity. These violations of the WDRs resulted in Administrative Civil Liability Complaints issued by the Executive Officer, Board-adopted Administrative Civil Liability Orders, and a Cease and Desist Order, as summarized in the following findings.

13. Administrative Civil Liability (ACL) Complaint 95-516 was issued on 28 December 1995 for a raw sewage spill to Putah Creek estimated at approximately 50,000 gallons for the amount of $25,000. The ACL Complaint was withdrawn in January 1996 following submittal of a revised compliance schedule.

14. Cease and Desist Order (CDO) 96-233 was adopted on 20 September 1996, which reflected the Discharger's revised compliance schedule to complete the facility upgrades by 15 September 2011 and achieve full compliance with the WDRs. The Discharger did not comply with the CDO.

15. Administrative Civil Liability Complaint R5-2005-0507 was issued on 4 March 2005 resulting from the Discharger's violations of its WDRs and CDO, including a month

long discharge of approximately 4.1 MG of partially treated wastewater into Stone Corral Creek, a tributary of Lake Berryessa. The complaint was in the amount of $400,000.

16. On 29 April 2005, the Central Valley Water Board adopted ACL Order R5-2005-0072 in the amount of $400,000. The Discharger petitioned the ACL Order to the State Water Board, and following its dismissal, filed suit in Court. Following several months of negotiations, a Stipulated Judgment was signed by the Executive Officer and later issued by the Superior Court on 7 September 2007.

17. As of May 2010, compliance with relevant requirements of the Stipulated Judgment was as follows:

    a. The Discharger submitted a RWD which resulted in the adoption of WDRs Order R5-2008-0068.

    b. The Discharger completed upgrades to three of the lift stations, including new motors and pumps, control systems, and a mobile backup generator.

    c. The Discharger repaired or replaced multiple sections of sewer pipelines to reduce I/I.

    d. Since September 2009, the Discharger has been paying the $400,000 liability in monthly installments.

    e. The Discharger did not prevent wastewater discharges to surface water as required by the Stipulated Judgment.

18. On 17 May 2010, the Executive Officer issued Administrative Civil Liability Complaint R5-2010-0516 for violations of the WDRs and CDO, including spills of 3.8 MG of partially treated wastewater. The complaint was in the amount of $375,000.

19. On 5 March 2012, ACL Order R5-2011-0538 Revision 1 was issued by the Assistant Executive Officer. ACL Order R5-2011-0538 Revision 1 settled ACL Complaint R5-2010-0516 by requiring the Discharger to complete certain tasks, including:

    a. Submit Quarterly Progress Reports describing the work completed regarding the required tasks in the ACL Order and those described in the *Wastewater Facilities Improvement Plan*.

    b. Install new groundwater monitoring wells and monitor quarterly.

    c. Complete repairs to the sewer collection system to reduce I/I.

    d. Submit a *Report of Waste Discharge* to reflect the proposed improvements to the WWTF's storage and disposal capacity that meet "Design Condition 3-II" as

specified in the *Inflow/Infiltration Capacity Evaluation Report and Wastewater Facilities Improvement Plan* dated September 2011. Those design conditions are:

i. 28.17 MG total influent flow as an annual maximum during the 100-year precipitation event;

ii. 17.33 MG of rainfall derived I/I entering the wastewater treatment plant as an annual maximum during the 100-year precipitation event;

iii. 15.2 acres of total land application area; and

iv. 27.1 MG total pond storage volume.

e. Submit a *Wastewater Facilities Improvements Completion Report*, describing measures taken to increase the storage and disposal capacity and reduce I/I to less than 17.33 MG per year of rainfall derived I/I.

The 2013 RWD describes facility improvements that the Discharger has proposed to comply with ACL Order R5-2011-0538 Revision 1.

Planned Changes in the Facility and Discharge

20. The improvements project will increase effluent storage and disposal capacity from approximately 7.4 MG to 27.1 MG. Existing Ponds 6 and 7 will be removed and replaced with two new, larger ponds (designated as Ponds 7 and 8). In addition, a completely new Pond 6 will be constructed. Appurtenances will be provided to allow flexibility in transfering wastewater between storage ponds. Parameters of the proposed storage ponds are summarized below. A wastewater treatment flow schematic is presented on Attachment B and a facility site plan is shown on Attachment C, which are attached hereto and made part of this Order by reference.

Available Storage Pond Capacity [1]

Storage Pond No.	Volume, MG
Pond 4	1.55
Pond 5	2.72
Pond 6	4.85
Pond 7	14.13
Pond 8	3.81
Total Storage Capacity:	27.1

[1] Volume at 2-foot of freeboard.

21. The land application area will be expanded from two spray fields totaling six acres to four spray fields totaling approximately 16 acres. The location of the spray fields is shown on Attachment C and the acreages are summarized below.

Spray Field Designations and Areas

Name	Area, acres
Spray Field 1	3.3
Spray Field 2	3.7
Spray Field 3	2.4
Spray Field 4	6.7
Total:	16.1

Tailwater from the land application area will be captured and returned to the storage ponds, as shown on Attachment B. With the exception of Spray Field 1, all tailwater flows by gravity from the spray field areas to the storage ponds. The storage ponds are connected hydraulically; therefore overflow from one pond enters the next downstream pond with Pond 5 being the lowest pond in the system. Tailwater from Spray Field 1 is conveyed to a tailwater lift station, which pumps flow into Pond 7. During the months of November through March, when no irrigation occurs on the land application areas, storm water runoff from the spray fields is directed toward Stone Coral Creek.

22. The improvements project will include automatic control of the transfer pump station to maintain capacity in Pond 5. A local system controller at the WWTF will monitor and control irrigation operations and cease irrigation operations when an alarm condition is detected based on inputs from flow meters, pressure sensors, and an on-site weather station. Alarm notifications will be transmitted to the local control system at the WWTF, the SCADA system located at the Discharger's Water Treatment Plant, and to the WWTF operations staff's mobile phones.

23. To mitigate the loss of potential oak woodlands because of land disturbance associated with the improvements project, oak trees will be replanted on District-owned property as shown on Attachment D, which is attached hereto and made part of this Order by reference. To allow for the new trees and vegetation to become established, the Discharger proposes temporary irrigation using treated effluent from the WWTF. Subsurface drip irrigation is proposed to minimize the potential for surface runoff from the mitigation areas. To maximize the survivability of the trees, irrigation would likely be applied for the first three years after planting. Irrigation would only be required during the summer months during a normal precipitation year. However, some irrigation may be required at other times of the year if rainfall is low.

24. No changes will be made to the collection system or treatment processes. Therefore, influent and effluent quality are expected to remain the same.

25. Improvements were made to the water treatment plant. Based on recent data following operation of the new water treatment plant, backwash flows have reduced by half.

26. The Discharger's 15 April 2013 revised water balance was based on a 100-year return period 365-day precipitation event with at least two feet of freeboard in every pond and full buildout of the Berryessa Estates Subdivision for a total of 339 service connections. Reasonable estimates of normal influent flows, precipitation, evaporation, evapotranspiration, and inflow/infiltration were used. The water balance indicates that the improvements to the WWTF will provide at least the following capacities:

Condition	Capacity
Average daily dry weather flow [1]	0.042 mgd
Total annual flow	28.2 MG

[1] Based on the months of June through August, inclusive.

Site-Specific Conditions

27. The community water supply is from Lake Berryessa. Water quality results for 2009 through 2011 are summarized below:

	Water Supply Analytical Results, mg/L unless noted			
Parameter	Jun 2009	Dec 2009	Jun 2010	Jul 2011
pH, std units	--	8.2	8.6	8.5
Total hardness	220	150	270	240
TDS	250	170	280	300
Chloride	7.5	--	7.0	8.0
Sodium	12	--	9.2	7.8
Sulfate	16	13	17	16
Nitrate as N	< 2.0	8.3	< 2.0	< 2.0
Boron	--	0.37	--	0.31
Iron	< 0.10	0.43	< 0.10	< 0.10
Magnesium	45	29	52	52
Manganese	< 0.02	< 0.03	< 0.02	< 0.02

TDS denotes total dissolved solids. "—" denotes no data reported.

28. The topography in the vicinity of the WWTF is hilly, with a fairly steep slope to the south-southeast towards Putah Creek. The WWTF site is located on the floor of a small valley adjacent to Stone Corral Creek. Land surface elevations range from 640 feet mean sea level to the north of the ponds and near the land application areas to approximately 530 feet near Stone Corral Creek.

29. Surrounding land uses are primary open space. The National Oceanic and Atmospheric Administration (NOAA) Markley Cove weather station is the nearest rain gauge with rainfall patterns similar to those occurring in the LBRID service area.

Annual precipitation in the vicinity averages approximately 28 inches, the 100-year total annual precipitation is approximately 54 inches, and the reference evapotranspiration rate is approximately 55 inches per year. All portions of the WWTF are outside the 100-year floodplain.

Groundwater Conditions

30. According to the *Geologic Map of the Santa Rosa Quadrangle, CA*, the geologic structural trends in the vicinity of the WWTF exhibit a northwest-southwest alignment, consistent with regional structural trends in the Coast Range Province. These trends are expressed in the northwesterly alignment of major geomorphic features, including ridges and stream alignments, and the orientations of folds, faults and geologic contact. The rock units and geologic structures consist of the following:

    a. Rocks of the Great Valley Sequence are located east of the WWTF, along Putah Creek and consist of marine mudstone, siltstone, sandstone, and conglomerate. In this type of geology, available groundwater often has high TDS concentrations and elevated sodium and boron, especially near fault zones. Chloride and sulfate concentrations may also be elevated.

    b. The WWTF ponds and spray fields are underlain by sedimentary and metamorphic rocks of the Franciscan Complex mélange and serpentinite. These rocks typically consist of complexly faulted assemblage of shale, sandstone, conglomerate, chert, greenstone and serpentinized ultramafic rocks. Available groundwater within this geological formation, particularly near fault zones, exhibit high TDS concentrations and elevated sodium and boron. Chloride and sulfate concentrations may also be elevated.

    c. Rocks of the Clear Lake Volcanics are present on ridge tops to the northwest and southeast of the LBRID ponds and spray fields.

31. Based on soil surveys published by the Natural Resource Conservation Service (NRCS), the WWTF is located in following areas:

    a. The ponds are located in areas where predominant surficial soils are of the Bressa-Dibble Complex (5 to 15 percent slopes). The Bressa-Dibble complex is characterized by fine loams formed from weathered sandstone and shale with approximately 0 to 10 inches of silty clay loam, underlain by approximately 10 to 34 inches of silty clay. Weathered bedrock is located at a depth approximately 34 to 38 inches. The NRCS characterizes these soils as well-drained and nonsaline.

    b. The spray fields are located in areas where predominant surficial soils are of the Maymen-Millsholm-Lodo Association (30 to 75 percent slopes). The Maymen-Millsholm-Lodo Association is characterized by shallow coarse loams formed from weathered sandstone and shale with approximately 0 to 12 inches of loam or

gravelly loam, underlain with 12 to 16 inches unweathered bedrock. The NRCS characterizes these soils as well drained and nonsaline.

32. There are a total of seven groundwater monitoring wells which monitor shallow groundwater at the site, as shown on Attachment C. MW-1 through MW-5 were installed in 2006, and MW-6 and MW-7 were installed in 2012. MW-2 is upgradient of the site and considered a background groundwater monitoring well. Well MW-7 is upgradient of the proposed additional spray fields, and also represents background groundwater quality. The remaining wells are downgradient of the ponds and/or spray fields. MW-6 was installed as an alternative to MW-5, which has historically contained higher levels of salinity and mineral constituents than any other well. Well locations are shown in Attachment C.

33. The depth to groundwater ranges from approximately 0 to 30 feet below ground surface. The groundwater flow direction generally follows the area topography and trends southeasterly (downhill) toward Stone Corral Creek, with some deflection on the southwestern portion of the site toward the natural drainage swale that flows along the western border of the WWTF property.

34. A summary of the groundwater quality at the WWTF is summarized in the table below:

	Median Groundwater Concentration, mg/L unless noted							
	Background[1]		Downgradient[1]					
Constituent	MW2	MW7[2]	MW1	MW3	MW4	MW5	MW6[2]	Protective WQL
pH, std units	7.4	7.8	7.5	8.3	7.7	7.6	8.4	6.5-8.4[4]
TDS	520	620	550	520	485	5,650	2,200	450[6]-1,500[4]
Chloride	12	16	41	25	20	1,300	300	106[6]-250[4]
Sodium	52	121	57	190	24	1,230	448	69[6]
Nitrate as N	0.27	ND	ND	ND	4.7	ND	ND	10[5]
TKN	0.14	1.3	0.36	0.42	0.11	5.4	4.7	None
Arsenic [3]	ND	ND	ND	ND	ND	0.02	0.02	10[5]
Boron	0.29	1.3	0.43	2.4	0.16	15	5.8	0.7[6]
Iron [3]	ND	ND	ND	ND	ND	ND	ND	0.3[4]
Manganese [3]	ND	0.05	0.17	ND	ND	0.18	0.34	0.05[4]-0.2[6]
Total Coliform, MPN/100 mL	ND	ND	ND	ND	ND	ND	240	2.2
Trihalomethanes, µg/L	ND	ND	ND	ND	ND	ND	ND	80[5]

ND denotes not detected. WQL denotes water quality limit.

1 Based on data from September 2006 to June 2012.

2 MW-6 and MW-7 were recently installed; values represent results from a single sampling event in June 2012.

3 Data for arsenic, iron, and manganese prior to January 2009 cannot be confirmed as being filtered; therefore medians reflect data collected between January 2009 and June 2012.

4 Secondary Maximum Contaminant Level (MCL).

5 Primary MCL.

6 Agricultural Water Quality Goals.

35. Background groundwater quality is spatially variable between MW-2 and MW-7. Background groundwater appears to be good quality water, with the exception of sodium and boron, for which there has been only one sampling event. The sodium and boron concentrations detected in background well MW-7 exceed the lowest agricultural water quality goals, but do not in MW-2.

36. Downgradient groundwater quality exhibits very high spatial variability. Groundwater quality in wells MW-1, MW-3, and MW-4 indicates little apparent degradation, with the exception of sodium and boron. The median sodium and boron concentrations detected in MW-3 exceed the lowest agricultural water quality goals. Groundwater quality in wells MW-5 and MW-6 exceeds protective groundwater quality limits with respect to salinity (in particular TDS, chloride, and sodium), boron, and manganese. The high mineral concentrations present in these wells are likely naturally occurring, rather than degradation caused by the discharge. Therefore, wells MW-5 and MW-6 will not be used to determine the threat to groundwater quality or compliance with the groundwater limitations of this Order. However, it is appropriate to continue monitoring MW-5 and MW-6 for groundwater elevations and gradient direction.

37. Based on effluent quality, groundwater monitoring data, and geologic conditions within the area, it appears that the discharge has not caused groundwater degradation with respect to boron, manganese, and trihalomethanes. It appears that the discharge has caused degradation of groundwater with respect to nitrate, but has not caused exceedance of the secondary Maximum Contaminant Level (MCL) of 10 mg/L. Total coliform organisms have been detected in only one of the downgradient wells based on the result from one sampling event in June 2012. This detection may be the result of sample contamination and may resolve without intervention.

Basin Plan, Beneficial Uses, and Regulatory Considerations

38. 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 reference plans and policies adopted by the State Water Board. Pursuant to Water Code section 13263 (a), waste discharge requirements must implement the Basin Plan.

39. Local drainage is to Lake Berryessa. The beneficial uses of Lake Berryessa, as stated in the Basin Plan, are municipal and domestic supply; agricultural supply; water contact recreation; non-contact water recreation; warm freshwater habitat; cold freshwater habitat; spawning, reproduction, and/or early development; and wildlife habitat.

40. The beneficial uses of underlying groundwater as set forth in the Basin Plan are municipal and domestic supply, agricultural supply, and industrial supply.

41. The Basin Plan establishes narrative water quality objectives for chemical constituents, tastes and odors, and toxicity in groundwater. It also sets forth a numeric objective for total coliform organisms.

42. The Basin Plan's numeric water quality objective for bacteria requires that the most probable number (MPN) of coliform organisms over any seven-day period shall be less than 2.2 per 100 mL in MUN groundwater.

43. The Basin Plan's narrative water quality objectives for chemical constituents, at a minimum, require waters designated as domestic or municipal supply to meet the MCLs specified in Title 22 of the California Code of Regulations (hereafter Title 22). The Basin Plan recognizes that the Central Valley Water Board may apply limits more stringent than MCLs to ensure that waters do not contain chemical constituents in concentrations that adversely affect beneficial uses.

44. The narrative toxicity objective requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, animal, plant, or aquatic life associated with designated beneficial uses.

45. Quantifying a narrative water quality objective requires a site-specific evaluation of those constituents that have the potential to impact water quality and beneficial uses. The Basin Plan states that when compliance with a narrative objective is required to protect specific beneficial uses, the Central Valley Water Board will, on a case-by-case basis, adopt numerical limitations in order to implement the narrative objective.

46. In the absence of specific numerical water quality limits, the Basin Plan methodology is to consider any relevant published criteria. General salt tolerance guidelines, such as *Water Quality for Agriculture* by Ayers and Westcot and similar references indicate that yield reductions in nearly all crops are not evident when irrigation water has an EC less than 700 µmhos/cm. There is, however, an eight- to ten-fold range in salt tolerance for agricultural crops and the appropriate salinity values to protect agriculture in the Central Valley are considered on a case-by-case basis. It is possible to achieve full yield potential with waters having EC up to 3,000 µmhos/cm if the proper leaching fraction is provided to maintain soil salinity within the tolerance of the crop. No crops are grown in the area of the WWTF.

Antidegradation Analysis

47. State Water Resources Control Board Resolution 68-16 ("Policy with Respect to Maintaining High Quality Waters of the State") (hereafter Resolution 68-16) prohibits degradation of groundwater unless it has been shown that:

a. The degradation is consistent with the maximum benefit to the people of the state.

b. The degradation will not unreasonably affect present and anticipated future beneficial uses.

c. The degradation does not result in water quality less than that prescribed in state and regional policies, including violation of one or more water quality objectives, and

d. The Discharger employs best practicable treatment or control (BPTC) to minimize degradation.

48. Degradation of groundwater by some of the typical waste constituents associated with discharges from a municipal wastewater utility, after effective source control, treatment, and control measures are implemented, is consistent with the maximum benefit to the people of the state. The technology, energy, water recycling, and waste management advantages of municipal utility service far exceed any benefits derived from reliance on numerous, concentrated individual wastewater systems, and the impact on water quality will be substantially less. The economic prosperity of valley communities and associated industry is of maximum benefit to the people of the State, and provides sufficient justification for allowing the limited groundwater degradation that may occur pursuant to this Order.

49. The Discharger has been monitoring groundwater quality at the site since 2006. Based on the data available, it is not possible to determine pre-1968 groundwater quality. Therefore, determination of compliance with Resolution 68-16 for this facility must be based on ambient pre-discharge/background groundwater quality for the monitoring wells that are outside the influence of the current discharge, as represented in background wells MW-2 and MW-7.

50. Constituents of concern that have the potential to degrade groundwater include salts (primarily TDS, chloride, and sodium), minerals (boron and manganese), nitrate, and coliform organisms, as discussed below.

	Median Concentrations, mg/L unless noted			
Constituent	Effluent[1]	Background Groundwater[2]	Downgradient Groundwater[3]	Protective WQL
TDS	500	520 - 620	485 - 550	450[4] - 1,500[5]
Chloride	64	12 - 16	20 – 41	106[4] - 250[5]
Sodium	62	52 - 121	24 – 190	69[4]
Nitrate as N	< 0.2	ND - 0.27	ND – 4.7	10[6]
Boron	0.79	0.29 – 1.3	0.16 – 2.4	0.7[4]
Manganese[7]	0.05	ND – 0.054	ND – 0.17	0.05[5] – 0.2[4]
Total coliform, MPN/100 mL	ND - 200[7]	ND	ND	2.2

WQL denotes water quality limit. ND denotes non-detect. "—" denotes data not available.
1 Based on data from Nov 2008 to Jun 2012.
2 Range of data from wells MW-2 and MW-7. Based on data from September 2006 to June 2012. MW-7 based on a single monitoring event in June 2012.
3 Range of data from wells MW-1, MW-3, and MW-4. Based on data from September 2006 to June 2012.
4 Lowest agricultural water quality goal.
5 Secondary MCL.
6 Primary MCL.
7 Based on 2011 to 2012 data. Effluent samples resulted in total coliform concentrations of 600 and 2,419 MPN/100 mL, which appear to be outliers; therefore they were not included in the range.

a. Total Dissolved Solids. Background groundwater quality is good quality and does not exceed protective water quality limits with respect to TDS. TDS concentrations in the representative down gradient wells range from 485 to 550 mg/L, which is similar to background groundwater levels. Effluent quality does not exceed water quality limits and is similar to background groundwater levels. Effluent quality is not likely to change with the completion of the improvements project. The discharge is likely to degrade groundwater quality due to TDS because of evapoconcentration, but is not expected to cause exceedance of the water quality objective in groundwater. Based on the high quality water supply, the history of low TDS in the effluent, and the lack of industrial discharges to the WWTF, a TDS effluent limit is not required to protect groundwater quality. This Order sets a groundwater limitation that allows degradation but not exceedance of a water quality objective.

b. Chloride. Background groundwater quality is good quality and does not exceed protective water quality limits with respect to chloride. Downgradient groundwater quality indicates some degradation, but no exceedance of water quality objectives, except for wells MW-5 and MW-6, which exhibit high minerals concentrations due to naturally occurring conditions. Effluent chloride concentrations are higher than background groundwater but below water quality objectives. Effluent chloride concentrations are not anticipated to increase with the completion of the improvements project. However, the discharge has the potential to degrade groundwater but not cause exceedance of a water quality objective. As with TDS,

an effluent chloride limit is not required to protect groundwater quality. This Order sets a groundwater limitation that allows degradation but not exceedance of a water quality objective.

c. Sodium. Based on MW-2 data, background groundwater quality is good quality with respect to sodium; however, limited data from MW-7 indicates poorer quality background groundwater and exceedance of the lowest agricultural water quality goal. MW-7 is upgradient of the new spray fields and is considered baseline/background groundwater quality. Downgradient groundwater quality varies; with sodium concentrations ranging from 24 to 190 mg/L. Effluent sodium concentrations are less than the lowest agricultural water quality goal of 69 mg/L and are likely to remain the same with the completion of the improvements project. The discharge could cause some degradation due to evapoconcentration, but is not likely to unreasonably degrade groundwater with respect to sodium. As with TDS, a sodium effluent limit is not required to protect groundwater quality. This Order sets a groundwater limitation that allows degradation but not exceedance of a water quality objective.

d. Boron. Background groundwater quality for boron appears to be poor quality as reflected in MW-7, for which there is only one sample available. A boron concentration of 1.3 mg/L was detected in the background groundwater, which exceeds the lowest agricultural water quality goal. Data for MW-3 indicate some evidence of groundwater degradation due to boron. However, as noted in Finding 36, the elevated boron concentrations are likely influenced by the geologic conditions at the site. The median effluent boron concentration in MW-3 was 0.79 mg/L, which exceeds the lowest agricultural water quality goal. The discharge could cause some degradation, but is not likely to unreasonably degrade groundwater with respect to boron. Elevated boron concentrations in groundwater are likely influenced by the geologic conditions at the site. Therefore, an effluent limit is not required to protect groundwater quality. However, this Order does prohibit any statistically significant increases in concentrations for boron in any compliance well.

e. Manganese. Manganese concentrations in background groundwater do not exceed water quality objectives. Manganese concentrations in the downgradient groundwater vary depending on well location, and ranged from not detected to 0.17 mg/L in the representative downgradient wells. Effluent manganese concentrations do not exceed water quality objectives and are lower than both background and downgradient groundwater. The elevated manganese concentrations in groundwater are likely influenced by the geologic conditions at the site. Therefore, the discharge is not likely to degrade groundwater quality due to manganese and an effluent limit is not required to protect groundwater quality. However, this Order does prohibit any statistically significant increases in concentrations for manganese in any compliance well.

f. Nitrate. For nutrients such as nitrate, the potential for degradation depends not only on the quality of the treated effluent, but the ability of the vadose zone below the spray field LAAs to provide an environment conducive to nitrification and

denitrification to convert the effluent nitrogen to nitrate and the nitrate to nitrogen gas before it reaches the water table. A median nitrate detection of 4.2 mg/L was observed in downgradient well MW-4, while the remaining wells indicated non-detections. Baseline/background groundwater and effluent quality are below 0.3 mg/L and do not exceed protective water quality limits for nitrate. The discharge has the potential to degrade groundwater but not exceed a water quality objective. An effluent nitrate limit is not required to protect groundwater quality. However, this Order sets a groundwater limitation that prohibits an exceedance of the water quality objective.

g. Total Coliform Organisms (TCO). For coliform organisms, the potential for exceedance of the Basin Plan's numeric water quality objective depends on the ability of vadose zone soils below the effluent storage/disposal ponds and spray field LAAs and saturated soils within the shallow water bearing zone to provide adequate filtration. No TCO detections were observed in the background groundwater. A 240 MPN/100 mL concentration was detected in the downgradient groundwater as reflected in the MW-6 data set, for which there is only one sample. The Discharger disinfects and analyzes the effluent for compliance with the effluent limits prior to land application. The single TCO detection in MW-6 may be due to cross-contamination of the monitoring well during construction and/or subsequent sampling. The Discharger will continue to disinfect the wastewater and therefore, the discharge is not likely to degrade groundwater quality. This Order requires that the Discharger disinfect treated effluent to achieve a total coliform level no greater than 23 MPN/100 mL prior to discharging to the LAAs and includes a numerical groundwater limitation of 2.2 MPN/100 mL for total coliform organisms to comply with the Basin Plan numeric water quality objective.

51. This Order establishes effluent and groundwater limitations for the WWTF 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.

For salinity constituents (in particular TDS, sodium, and chloride) and nitrate current groundwater monitoring data indicate that groundwater has been degraded by the discharge and that the expanded discharge does not pose a threat of significant additional degradation in the future. Background groundwater quality does not exceed the water quality objectives, and the discharge is not likely to cause exceedance of a water quality objective. Therefore this Order allows degradation, but does not allow exceedance of a water quality objective. This Order authorizes limited groundwater degradation with respect to salinity and nitrate, but requires the Discharger to implement treatment or control measures that will minimize this degradation, and sets groundwater limits that will be fully protective of all beneficial uses.

For boron and manganese, current groundwater monitoring data indicate that groundwater has not been degraded by the discharge and that the expanded discharge does not pose a threat of degradation in the future. Background

groundwater quality does not exceed the water quality objectives with the exception of the single data set from MW-7. However, groundwater quality in wells MW-5 and MW-6 greatly exceeds protective groundwater quality limits for both boron and manganese. The high mineral concentrations present in these wells are likely naturally occurring, rather than degradation caused by the discharge. Therefore this Order does not establish groundwater limitations for these constituents.

For total coliform organisms, the Basin Plan numeric water quality objective is applicable as a groundwater limitation. The Discharger disinfects the treated effluent, which is BPTC for coliform organisms. Therefore, no degradation is expected or allowed.

52. The Discharger currently provides treatment and control of the discharge that incorporates:

a. Secondary treatment of the wastewater;

b. Disinfection of wastewater to maintain a total coliform organism concentration of less than 23 MPN/100 mL as a monthly median;

c. Tailwater return systems to capture all tailwater runoff;

d. The use of certified operators to assure proper operation and maintenance.

The Board considers these measures to constitute “best practicable treatment or control” of the waste constituents associated with this discharge, and finds that the limited groundwater degradation allowed by this Order is consistent with the Antidegradation Policy.

Other Regulatory Considerations

53. Title 27 of the California Code of Regulations (hereafter Title 27) contains regulatory requirements for the treatment, storage, processing, and disposal of solid waste. However, Title 27 exempts certain activities from its provisions. Discharges regulated by this Order are exempt from Title 27 pursuant to provisions that exempt domestic sewage, wastewater, and reuse. Title 27, section 20090 states in part:

> The following activities shall be exempt from the SWRCB-promulgated provisions of this subdivision, so long as the activity meets, and continues to meet, all preconditions listed:
>
> (a) Sewage - Discharges of domestic sewage or treated effluent which are regulated by WDRs issued pursuant to Chapter 9, Division 3, Title 23 of this code, or for which WDRs have been waived, and which are consistent with applicable water quality objectives, and treatment or storage facilities associated with municipal wastewater treatment plants, provided that residual sludges or solid waste from wastewater

> treatment facilities shall be discharged only in accordance with the applicable SWRCB-promulgated provisions of this division.
>
> (b) Wastewater - Discharges of wastewater to land, including but not limited to evaporation ponds, percolation ponds, or subsurface leachfields if the following conditions are met:
>
> (1) the applicable RWQCB has issued WDRs, reclamation requirements, or waived such issuance;
>
> (2) the discharge is in compliance with the applicable water quality control plan; and
>
> (3) the wastewater does not need to be managed according to Chapter 11, Division 4.5, Title 22 of this code as a hazardous waste. (…)

54. The discharge authorized herein except for the discharge of residual sludge and solid waste, and the treatment and storage facilities associated with the discharge, are exempt from the requirements of Title 27 as follows:

    a. Ponds 1, 2, 3, 4, 5, 6, 7, and 8 are exempt pursuant to Title 27, section 20090(a) because they are treatment and storage facilities associated with a municipal domestic wastewater treatment plant.

    b. Spray Fields 1, 2, 3, and 4 are exempt pursuant to Title 27, section 20090(b) because they are used for the discharge of wastewater to land and:

        i. The Central Valley Water Board is issuing WDRs.

        ii. The discharge is in compliance with the Basin Plan, and;

        iii. The treated effluent discharged to the ponds does not need to be managed as hazardous waste.

55. Although the WWTF is exempt from Title 27, the statistical data analysis methods of Title 27, section 20415(e) are appropriate for determining whether the discharge complies with Groundwater Limitations specified in this Order.

56. The State Water Board adopted Order 97-03-DWQ (NPDES General Permit CAS000001) specifying waste discharge requirements for discharges of storm water associated with industrial activities, and requiring submittal of a Notice of Intent by all affected industrial dischargers. The WWTF does not have a design capacity of more than 1.0 MGD, and therefore is not required to obtain coverage under NPDES General Permit CAS000001.

57. On 2 May 2006, the State Water Board adopted Statewide General Waste Discharge Requirements for Sanitary Sewer Systems General Order 2006-0003-DWQ (the General Order). The General Order requires all public agencies that own or operate sanitary sewer systems greater than one mile in length to comply with the

Order. The Discharger's collection system exceeds one mile in length and therefore the General Order is applicable.

58. Water Code section 13267(b) states:

> 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 … 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. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.

The technical reports required by this Order and the attached Monitoring and Reporting Program R5-2013-0114 are necessary to ensure compliance with these waste discharge requirements. The Discharger owns and operates the facility that discharges the waste subject to this Order.

59. The California Department of Water Resources sets 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). These standards, and any more stringent standards adopted by the state or county pursuant to Water Code section 13801, apply to all monitoring wells used to monitor the impacts of wastewater storage or disposal governed by this Order.

60. An Initial Study was prepared by the Discharger in accordance with the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.). The Initial Study describes the improvements project which includes the following:

    a. Storage pond expansion from 7.4 MG to 27.1 MG;

    b. Spray disposal field improvements that include increasing the spray field area from 5.8 acres to 15.5 acres, expanding the spray field lift station capacity, and installing an additional lift station to allow conveyance of wastewater to the new storage ponds; and

    c. Sewer lift station upgrades.

61. The Initial Study evaluated the potential impacts to groundwater quality and determined that the proposed project would result in a less than significant impact on water quality. A Mitigated Negative Declaration was certified by Napa County on 4 April 2013. Compliance with this Order will mitigate or avoid significant impacts to water quality.

62. The United States Environmental Protection Agency (EPA) has promulgated biosolids reuse regulations in 40 CFR 503, *Standard for the Use or Disposal of Sewage Sludge,* which establishes management criteria for protection of ground and surface waters, sets application rates for heavy metals, and establishes stabilization and disinfection criteria.

63. The Central Valley Water Board is using the Standards in 40 CFR 503 as guidelines in establishing this Order, but the Central Valley Water Board is not the implementing agency for 40 CFR 503 regulations. The Discharger may have separate and/or additional compliance, reporting, and permitting responsibilities to the EPA.

64. Pursuant to Water Code 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.

Public Notice

65. All the above and the supplemental information and details in the attached Information Sheet, which is incorporated by reference herein, were considered in establishing the following conditions of discharge.

66. The Discharger and interested agencies and persons have been notified of the Central Valley Water Board's intent to prescribe waste discharge requirements for this discharge, and they have been provided an opportunity to submit written comments and an opportunity for a public hearing.

67. All comments pertaining to the discharge were heard and considered in a public hearing.

IT IS HEREBY ORDERED that Order R5-2008-0068 is rescinded except for purposes of enforcement, and, pursuant to Water Code sections 13263 and 13267, the Lake Berryessa Resort Improvement District, its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the Water Code and regulations adopted hereunder, shall comply with the following:

A. Discharge Prohibitions

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

2. Discharge of hazardous wastes, as that term is defined in California Code of Regulations, title 22, section 66261.1 *et seq*., is prohibited.

3. Discharge of waste classified as 'designated', as defined in Water Code section 13173, is prohibited.

4. Treatment system bypass of untreated or partially treated waste is prohibited, except as allowed by Standard Provision E.2 of the *Standard Provisions and Reporting Requirements for Waste Discharge Requirements*.

5. Discharge of waste at a location or in a manner different from that described in the Findings is prohibited.

6. Discharge of toxic substances into the wastewater treatment system or land application areas such that biological treatment mechanisms are disrupted is prohibited.

B. Flow Limitations

1. **Effectively immediately**, influent flows to the WWTF shall not exceed the following limits:

Flow Measurement	Flow Limit
Monthly Average Dry Weather Flow (ADWF)	42,000 gallons per day

[1] As determined by the total flow during the calendar month divided by the number of days in the month.

2. **Effective on the date of the Executive Officer approval of the *Wastewater Facilities Improvements Completion Report* submitted pursuant to Item 11 of ACL Order R5-2011-0538 Revision 1or subsequent revision thereto,** influent flows to the WWTF shall not exceed the following limits:

Flow Measurement	Flow Limit
Total Annual Flow[1]	28.17 million gallons
Average Dry Weather Flow[2]	0.042 million gallons per day
Maximum Annual I/I Flow[3]	17.33 million gallons

[1] As determined by the total flow for the calendar year.
[2] As determined by the total flow for the months of June through August, inclusive, divided by 92 days.
[3] As determined by the total flow during the calendar year, minus 365 times the average dry weather flow for the year.

C. Effluent Limitations

1. Effluent discharged to the storage ponds shall not exceed the following limits:

Constituent	Units	Limit	Basis of Compliance Determination
BOD_5[1]	mg/L	60	Monthly maximum

[1] 5-day biochemical oxygen demand at 20˚C.

Compliance with this requirement shall be based on samples obtained at the sampling location shown on Attachment B.

2. Prior to discharge to the land application areas, effluent shall not exceed the following limits for total coliform organisms:

   a. The median concentration of total coliform bacteria measured in the disinfected effluent shall not exceed a most probable number (MPN) of 23 per 100 milliliters (mL). Compliance with this requirement will be determined using data for each calendar month.

   b. The number of total coliform bacteria shall not exceed an MPN of 240 per 100 mL in more than one sample in any 30-day period.

   Compliance with this requirement shall be determined based on samples obtained at the sampling locations shown on Attachment B, which shall be representative of the disinfected treated wastewater after full chlorine contact has been achieved.

D. Discharge Specifications

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

2. The discharge shall not cause degradation of any water supply.

3. Wastewater treatment, storage, and disposal shall not cause pollution or a nuisance as defined by Water Code section 13050.

4. The discharge shall remain within the permitted waste treatment/containment structures and land application areas (spray fields) at all times.

5. The Discharger shall operate all systems and equipment to optimize the quality of the discharge.

6. All conveyance, treatment, storage, and disposal systems shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.

7. Public contact with wastewater shall be prevented through such means as fences, signs, or acceptable alternatives.

8. Objectionable odors shall not be perceivable beyond the limits of the WWTF property at an intensity that creates or threatens to create nuisance conditions.

9. As a means of discerning compliance with Discharge Specification D.8, the dissolved oxygen (DO) content in the upper one foot of any wastewater treatment or storage pond shall not be less than 1.0 mg/L for three consecutive weekly

sampling events. If the DO in any single pond is below 1.0 mg/L for three consecutive sampling events, the Discharger shall report the findings to the Regional Water Board in writing within 10 days and shall include a specific plan to resolve the low DO results within 30 days.

10. The Discharger shall operate and maintain all ponds sufficiently to protect the integrity of containment dams and berms and prevent overtopping and/or structural failure. Unless a California-registered civil engineer certifies (based on design, construction, and conditions of operation and maintenance) that less freeboard is adequate, the operating freeboard in any pond shall never be less than two feet (measured vertically from the lowest possible point of overflow). As a means of management and to discern compliance with this requirement, the Discharger shall install and maintain in each pond a permanent staff gauge with calibration marks that clearly show the water level at design capacity and enable determination of available operational freeboard.

11. Wastewater treatment, storage, and disposal ponds or structures shall have sufficient capacity to accommodate allowable wastewater flow, design seasonal precipitation, and ancillary inflow and infiltration during the winter while ensuring continuous compliance with all requirements of this Order. Design seasonal precipitation shall be based on total annual precipitation using a return period of 100 years, distributed monthly in accordance with historical rainfall patterns.

12. On or about **1 October** of each year, available capacity shall at least equal the volume necessary to comply with Discharge Specifications D.10 and D.11.

13. All ponds and open containment structures shall be managed to prevent breeding of mosquitoes. Specifically:

    a. An erosion control program shall be implemented to ensure that small coves and irregularities are not created around the perimeter of the water surface.

    b. Weeds shall be minimized through control of water depth, harvesting, or herbicides.

    c. Dead algae, vegetation, and debris shall not accumulate on the water surface.

    d. The Discharger shall consult and coordinate with the local Mosquito Abatement District to minimize the potential for mosquito breeding as needed to supplement the above measures.

14. Newly constructed or rehabilitated berms or levees (excluding internal berms that separate ponds or control the flow of water within a pond) shall be designed and constructed under the supervision of a California Registered Civil Engineer.

15. Wastewater contained in any pond shall not have a pH less than 6.0 or greater than 10.

16. The Discharger shall monitor sludge accumulation in the wastewater treatment and storage ponds at least every **five years** beginning in **2013**, and shall periodically remove sludge as necessary to maintain adequate storage capacity. Specifically, if the estimated volume of sludge in the ponds exceeds five percent of the permitted pond capacity, the Discharger shall complete sludge cleanout within 12 months after the date of the estimate.

E. Groundwater Limitations

Release of waste constituents from any portion of the WWTF shall not cause groundwater to:

1. Contain boron and manganese in concentrations statistically greater than current groundwater quality.

2. Exceed a total coliform organism level of 2.2 MPN/100 mL.

3. Exhibit a pH of less than 6.5 or greater than 8.4 pH units.

4. For constituents identified in Title 22 (except manganese), contain constituents in concentrations that exceed either the Primary or Secondary MCLs established therein.

5. Except boron, contain taste or odor-producing constituents, toxic substances, or any other constituents in concentrations that cause nuisance or adversely affect beneficial uses.

Compliance with these limitations shall be determined annually based on intrawell analysis of data from monitoring wells MW-1, MW-3, and MW-4 using approved statistical methods.

F. Oak Tree Mitigation Area Irrigation Specifications (Subsurface Drip Only)

1. Vegetation (e.g., native grasses and trees) shall be grown in the oak tree mitigation areas.

2. Mitigation areas shall be inspected as frequently as necessary to ensure continuous compliance with the requirements of this Order.

3. The generation of irrigation runoff (tailwater) is prohibited.

4. Discharge to the mitigation areas shall not be performed during rainfall or when the ground is saturated.

G. Land Application Area (Spray Field) Specifications

1. Any irrigation runoff (tailwater) shall be confined to the LAAs and shall not enter any surface water drainage course or storm water drainage system.

2. Vegetation (which may include pasture grasses, native grasses and trees, and/or ornamental landscaping) shall be grown in the LAAs.

3. Land application of wastewater shall be managed to minimize erosion.

4. The LAAs shall be managed to prevent breeding of mosquitoes. In particular:
   a. There shall be no standing water 48 hours after irrigation ceases;
   b. Tailwater ditches shall be maintained essentially free of emergent, marginal, and floating vegetation; and
   c. Low-pressure and unpressurized pipelines and ditches accessible to mosquitoes shall not be used to store recycled water.

5. LAAs shall be designed, maintained, and operated to comply with the following setback requirements:

Setback Definition	Minimum Irrigation Setback (feet)
Edge of LAA to property boundary.	25
Edge of LAA to public road right of way.	30
Edge of LAA to domestic water supply well.	100
Edge of LAA to residence.	100
Edge of LAA using spray irrigation to public park, playground, school yard, or similar place of potential public exposure.	100

6. LAAs shall be inspected as frequently as necessary to ensure continuous compliance with the requirements of this Order.

7. Spray irrigation with wastewater is prohibited when wind speed (including gusts) exceeds 30 miles per hour (mph).

8. Sprinkler heads shall be designed, operated and maintained to create a minimum amount of mist.

9. Discharge to the LAAs shall not be performed during rainfall or when the ground is saturated.

10. Discharge of storm water runoff from the LAAs to off-site land or surface water drainage courses is allowed if the Discharger complies with Specification H.10 above.

H. Solids Disposal Specifications

Sludge, as used 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 screenings generated during preliminary treatment. Residual sludge means sludge that will not be subject to further treatment at the WWTF. Biosolids refers to sludge that has been treated and tested and shown to be capable of being beneficially used as a soil amendment for agriculture, silviculture, horticulture, and land reclamation activities pursuant to federal and state regulations.

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

2. Any handling and storage of residual sludge, solid waste, and biosolids at the WWTF shall be temporary (i.e., no longer than two years) 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 the groundwater limitations of this Order.

3. Residual sludge, biosolids, and solid waste shall be disposed of in a manner approved by the Executive Officer and consistent with Title 27, division 2. Removal for further treatment, disposal, or reuse at disposal sites (i.e., landfills, WWTFs, composting sites, soil amendment sites) operated in accordance with valid waste discharge requirements issued by a Regional Water Board will satisfy this specification.

4. Use of biosolids as a soil amendment shall comply with valid waste discharge requirements issued by a regional water board or the State Water Board except in cases where a local (e.g., county) program has been authorized by a regional water board. In most cases, this will mean the General Biosolids Order (State Water Resources Control Board Water Quality Order 2004-12-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”). For a biosolids use project to be covered by Order 2004-12-DWQ, the Discharger must file a complete Notice of Intent and receive a Notice of Applicability for each project.

5. Use and disposal of biosolids shall comply with the self-implementing federal regulations of 40 Code of Federal Regulations part 503, which are subject to enforcement by the U.S. EPA, not the Central Valley Water Board. If during the life of this Order, the State accepts primacy for implementation of part 503, the Central Valley Water Board may also initiate enforcement where appropriate.

6. Any proposed change in sludge use or disposal practice shall be reported in writing to the Executive Officer at least 90 days in advance of the change.

I. Provisions

1. The following reports shall be submitted pursuant to Water Code section 13267 and shall be prepared as described in Provision H.5:

   a. In addition to the requirements of Item 11 of ACL Order R5-2011-0538 Revision 1 or subsequent revision thereto, the *Wastewater Facilities Improvements Completion Report* shall include a *Land Application Area (Spray Field) Operations Plan* that details the specific operational procedures that will be used to ensure compliance with each of the Land Application Area (Spray Field) Specifications (F.1 through F.11).

   b. By **1 November 2013**, the Discharger shall submit a *Groundwater Limitations Compliance Assessment Plan*. The plan shall describe and justify the statistical methods used to evaluate compliance with the Groundwater Limitations of this Order for the compliance wells and constituents listed in the groundwater monitoring section of the Monitoring and Reporting Program. Compliance shall be determined annually based on intrawell statistical analysis that uses methods prescribed in Title 27, Section 20415(e)(10) to compare monitoring data collected at each compliance well to the groundwater limitations of this Order.

2. If flow monitoring results for any calendar year show that the total annual I/I flow for the year exceeds 80 percent of Flow Limitation B.2, the Discharger shall submit an *Inflow and Infiltration (I/I) Assessment and Correction Workplan* by **1 July of the following year**. The workplan shall include at a minimum the following:

   a. Identification of known I/I sources;

   b. A detailed scope of work to identify and quantify other I/I sources (e.g., smoke testing, video surveying, manhole surveying, etc.);

   c. A plan to prioritize retrofits and replacements to reduce I/I;

   d. A discussion of options and preliminary unit cost estimates for correcting various sources of I/I;

   e. Identification of minor repairs that will be performed in the field as problems are discovered; and

   f. A detailed schedule for I/I assessment of the entire sewer system and completion of both minor and major repairs.

3. If groundwater monitoring results show that the discharge of waste is causing groundwater to contain any waste constituents in concentrations statistically greater than the Groundwater Limitations of this Order, within 120 days of the request of the Executive Officer, the Discharger shall submit an Action Workplan that sets

forth the scope and schedule for a systematic and comprehensive technical evaluation of each component of the facility's waste treatment and disposal system to determine best practicable treatment and control for each waste constituent that exceeds a Groundwater Limitation. The workplan shall contain a preliminary evaluation of each component of the WWTF and effluent disposal system and propose a time schedule for completing the comprehensive technical evaluation. The schedule to complete the evaluation shall be as short as practicable, and shall not exceed one year.

4. At least **180 days** prior to any sludge removal and disposal, the Discharger shall submit a *Sludge Cleanout Plan*. The plan shall include a detailed plan for sludge removal, drying, and disposal. The plan shall specifically describe the phasing of the project, measures to be used to control runoff or percolate from the sludge as it is drying, and a schedule that shows how all dried biosolids will be removed from the site prior to the onset of the rainy season **(1 October)**. If the Discharger proposes to land apply biosolids at the effluent recycling site, the report shall include a Report of Waste Discharge and filing fee to apply for separate waste discharge requirements.

5. 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 Central Valley Water Board by **31 January**.

6. In accordance with California Business and Professions Code sections 6735, 7835, and 7835.1, engineering and geologic evaluations and judgments shall be performed by or under the direction of registered professionals competent and proficient in the fields pertinent to the required activities. All technical reports specified herein that contain workplans for investigations and studies, that describe the conduct of investigations and studies, or that contain technical conclusions and recommendations concerning engineering and geology shall be prepared by or under the direction of appropriately qualified professional(s), even if not explicitly stated. Each technical report submitted by the Discharger shall bear the professional's signature and stamp.

7. The Discharger shall submit the technical reports and work plans required by this Order for consideration by the Executive Officer, and incorporate comments the Executive Officer may have in a timely manner, as appropriate. Unless expressly stated otherwise in this Order, the Discharger shall proceed with all work required by the foregoing provisions by the due dates specified.

8. The Discharger shall comply with Monitoring and Reporting Program R5-2013-0114, which is part of this Order, and any revisions thereto as ordered by

the Executive Officer. The submittal dates of Discharger self-monitoring reports shall be no later than the submittal date specified in the MRP.

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

10. The Discharger shall comply with all conditions of this Order, including timely submittal of technical and monitoring reports. On or before each report due date, the Discharger shall submit the specified document to the Central Valley Water Board or, if appropriate, a written report detailing compliance or noncompliance with the specific schedule date and task. If noncompliance is being reported, then the Discharger shall state the reasons for such noncompliance and provide an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Central Valley Water Board in writing when it returns to compliance with the time schedule. Violations may result in enforcement action, including Central Valley Water Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or rescission of this Order.

11. The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems that are installed by the Discharger when the operation is necessary to achieve compliance with the conditions of this Order.

12. The Discharger shall use the best practicable cost-effective control technique(s) including proper operation and maintenance, to comply with this Order.

13. The Discharger shall provide certified wastewater treatment plant operators in accordance with Title 23, division 3, chapter 26.

14. As described in the Standard Provisions, the Discharger shall report promptly to the Central Valley Water Board any material change or proposed change in the character, location, or volume of the discharge.

15. The Discharger shall report to the Central Valley Water Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days of reporting the data to the Commission pursuant to section 313 of the "Emergency Planning and Community Right to Know Act of 1986."

16. The Discharger shall comply with the requirements of the Statewide General Waste Discharge Requirements (General WDRs) for Sanitary Sewer Systems

(Water Quality Order 2006-0003), the Revised General WDRs Monitoring and Reporting Program (Water Quality Order 2008-0002-EXEC), and any subsequent revisions thereto. Water Quality Order 2006-0003 and Order 2008-0002-EXEC require the Discharger to notify the Central Valley Water Board and take remedial action upon the reduction, loss, or failure of the sanitary sewer system resulting in a sanitary sewer overflow.

17. The Discharger shall not allow pollutant-free wastewater to be discharged into the wastewater collection, treatment, and disposal systems in amounts that significantly diminish the system's capability to comply with this Order. Pollutant-free wastewater means rainfall, groundwater, cooling waters, and condensates that are essentially free of pollutants.

18. At least **90 days** prior to termination or expiration of any lease, contract, or agreement involving disposal or recycling areas or off-site reuse of effluent, used to justify the capacity authorized herein and assure compliance with this Order, the Discharger shall notify the Central Valley Water Board in writing of the situation and of what measures have been taken or are being taken to assure full compliance with this Order.

19. In the event of any change in control or ownership of the WWTF, the Discharger must notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to the Central Valley Water Board.

20. To assume operation as Discharger under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the state of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Central Valley Water Board, and a statement. The statement shall comply with the signatory paragraph of Standard Provision B.3 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the WATER CODE. If approved by the Executive Officer, the transfer request will be submitted to the Central Valley Water Board for its consideration of transferring the ownership of this Order at one of its regularly scheduled meetings.

21. A copy of this Order including the MRP, Information Sheet, Attachments, and Standard Provisions, shall be kept at the discharge facility for reference by operating personnel. Key operating personnel shall be familiar with its contents.

22. The Central Valley Water Board will review this Order periodically and will revise requirements when necessary.

If, in the opinion of the Executive Officer, the Discharger fails to comply with the provisions of this Order, the Executive Officer may refer this matter to the Attorney General for judicial enforcement, may issue a complaint for administrative civil liability, or may take other enforcement actions. Failure to comply with this Order or with the WDRs may result in the assessment of Administrative Civil Liability of up to $10,000 per violation, per day, depending on the violation, pursuant to the Water Code, including sections 13268, 13350 and 13385. The Central Valley Water Board reserves its right to take any enforcement actions authorized by law.

Any person aggrieved by this action of the Central Valley Water Board may petition the State Water Board to review the action in accordance with Water Code section 13320 and California Code of Regulations, title 23, sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date of this Order, except that if the thirtieth day following the date of this Order falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the Internet at:

http://www.waterboards.ca.gov/public_notices/petitions/water_quality

or will be provided upon request.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify that the foregoing is a full true, and correct copy of an Order adopted by the California Regional Water Quality Control Board on 26 July 2013.

- Original signed by -

PAMELA C. CREEDON, Executive Officer

LLA: 062413

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2013-0114

FOR
LAKE BERRYESSA RESORT IMPROVEMENT DISTRICT
LAKE BERRYESSA WASTEWATER TREATMENT FACILITY
NAPA COUNTY

This Monitoring and Reporting Program (MRP) presents requirements for monitoring influent, effluent, ponds, land application areas, groundwater, sludge, and water supply. This MRP is issued pursuant to Water Code Section 13267. The Discharger shall not implement any changes to this MRP unless and until a revised MRP is issued by the Executive Officer.

Central Valley Water Board staff shall approve specific sampling locations prior to any sampling activities. All samples shall be representative of the volume and nature of the discharge. The time, date, and location of each grab sample shall be recorded on the sample chain of custody form.

Field test instruments (such as those used to measure pH and dissolved oxygen) may be used provided that:

1. The operator is trained in proper use and maintenance of the instruments;
2. The instruments are calibrated prior to each monitoring event;
3. The 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 the MRP.

INFLUENT MONITORING

Influent samples shall be representative of the wastewater prior to treatment. Influent monitoring shall include the following:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Flow [1]	gpd	Continuous Meter	Daily	Monthly
Average Daily Flow [2]	gpd	Calculated	Daily	Monthly
BOD_5 [3]	mg/L	Grab	Monthly	Monthly

[1] Flow represents the daily flow rate.
[2] As determined by the total flow during the calendar month divided by the number of days in the month.
[3] BOD denotes 5-day Biochemical Oxygen Demand.

UNDISINFECTED EFFLUENT MONITORING

Undisinfected effluent samples shall be collected immediately downstream of Pond 4 before discharge into the storage ponds and shall be representative of the volume and nature of the discharge. Effluent monitoring shall include at least the following:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
BOD_5	mg/L	Grab/Composite [1]	Monthly	Monthly
Total Dissolved Solids	mg/L	Grab/Composite [1]	Monthly	Monthly
Sodium	mg/L	Grab/Composite [1]	Monthly	Monthly
Chloride	mg/L	Grab/Composite [1]	Monthly	Monthly
Nitrate as Nitrogen	mg/L	Grab/Composite [1]	Monthly	Monthly
Total Kjeldahl Nitrogen	mg/L	Grab/Composite [1]	Monthly	Monthly
Standard Minerals [2]	mg/L	Grab/Composite [1]	Annually	Annually

[1] Indicates samples may be collected by composite sampler or grab method.
[2] Standard Minerals shall include, at a minimum, the following elements/compounds: boron, calcium, magnesium, potassium, sulfate, iron, manganese, total alkalinity (including alkalinity series), and hardness. Samples for metals shall be filtered prior to digestion, preservation, and analysis.

DISINFECTED EFFLUENT MONITORING

During periods of land application to the spray fields, disinfected effluent samples shall be collected immediately downstream of the chlorine contact tank before the effluent is applied to the land application areas. Effluent samples shall be representative of the disinfected treated wastewater after full chlorine contact has been achieved. At a minimum, effluent monitoring shall include the following:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Total Coliform Organisms [1]	MPN/100 mL	Grab	Weekly	Monthly
Chlorine Residual	mg/L	Grab	Daily [2]	Monthly
Chloroform	mg/L	Grab	Annually	Annually

[1] Using a minimum of 15 tubes or three dilutions.
[2] Samples collected 5 days per week.

POND MONITORING

Samples shall be collected from an established sampling station located in an area that will provide a sample representative of the wastewater in each pond. Freeboard shall be measured vertically from the surface of the pond water to the lowest elevation of the surrounding berm and shall be measured to the nearest 0.1 feet. Monitoring of all ponds shall include, at a minimum, the following:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
pH	Standard	Grab	Weekly	Monthly
Dissolved Oxygen [1]	mg/L	Grab	Weekly	Monthly
Freeboard	0.1 feet	Measurement	Weekly	Monthly
Berm condition [2]	--	Observation	Monthly	Monthly
Odors [3]	--	Observation	Weekly	Monthly

[1] Samples shall be collected at a depth of one foot from each pond in use, opposite the inlet. Samples shall be collected between 0700 and 0900 hours.
[2] Containment berms shall be observed for signs of seepage or surfacing water along the exterior toe of the berms. If surfacing water is found, then a sample shall be collected and tested for total coliform organisms and total dissolved solids.
[3] The presence of strong or unusual odors shall be reported.

LAND APPLICATION AREA MONITORING

Monitoring of the land application areas (LAAs) shall be conducted **daily** during effluent application, and the results shall be included in the monthly monitoring report. All land application areas (including spray fields and oak tree mitigation areas) shall be inspected following an effluent application event to identify any equipment malfunction or other circumstance that might allow the wastewater to runoff the land application areas and/or create ponding conditions that violate the Waste Discharge Requirements. Evidence of erosion, saturation, wastewater runoff, or the presence of nuisance conditions shall be noted in the report. A log of these inspections as well as any public complaints of runoff shall be kept at the facility and made available for review upon request. The monthly report shall clearly state whether or not the LAAs were used during that month.

Effluent monitoring results shall be used in calculations to determine loading rates at the LAAs. Monitoring of the LAAs shall include the following:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Flow to each LAAs	gallons	Continuous	Daily	Monthly
Local Rainfall	inches	Observation [1]	Daily	Monthly
Acreage Applied [2]	acres	Calculated	Daily	Monthly
Water Application Rate [3]	gal/acre/day	Calculated	Daily	Monthly

[1] Rainfall data collected from the weather station that is nearest to the LAAs or a properly maintained on-site rain gauge.
[2] Land application areas shall be identified.
[3] For each of the land application area.

GROUNDWATER MONITORING

Prior to construction and/or sampling of any groundwater monitoring wells, the Discharger shall submit plans and specifications to the Regional Water Board for review and approval. Once installed, all new wells shall be added to the compliance monitoring network. The following table lists all existing monitoring wells and designates the purpose of each well.

MW-1 [2] MW-2 [1] MW-3 [2] MW-4 [2] MW-5 [3] MW-6 [3] MW-7 [1]

[1] Background well not used for compliance monitoring.
[2] Compliance well.
[3] Existing well not suitable for use as a compliance well. Existing well shall be monitored only for groundwater elevation and gradient direction.

Prior to sampling, depth to groundwater shall be measured in each monitoring well to the nearest 0.01 feet. Groundwater elevations shall then be calculated to determine groundwater gradient and flow direction.

Low or no-purge sampling methods are acceptable, if described in an approved Sampling and Analysis Plan. Otherwise, each well shall be purged of at least three casing volumes until temperature, pH, and electrical conductivity have stabilized. Samples shall be collected and analyzed using standard EPA methods. Except as noted in the table above, groundwater monitoring shall include, at a minimum, the following:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Depth to Groundwater	0.01 feet	Measurement	Quarterly	Quarterly
Groundwater Elevation [1]	0.01 feet	Calculated	Quarterly	Quarterly
Gradient	feet/feet	Calculated	Quarterly	Quarterly
Gradient Direction	degrees	Calculated	Quarterly	Quarterly
pH	pH units	Grab	Quarterly	Quarterly
Total Dissolved Solids	mg/L	Grab	Quarterly	Quarterly
Chloride	mg/L	Grab	Quarterly	Quarterly
Sodium	mg/L	Grab	Quarterly	Quarterly
Nitrate as Nitrogen	mg/L	Grab	Quarterly	Quarterly
Total Coliform Organisms [2]	MPN/100 mL	Grab	Quarterly	Quarterly
Chloroform	mg/L	Grab	Annually	Annually
Standard Minerals [3]	mg/L	Grab	Annually	Annually

[1] Groundwater elevation shall be determined based on depth-to-water measurements using a surveyed measuring point elevation on the well and a surveyed reference elevation.
[2] Using a minimum of 15 tubes or three dilutions.
[3] Standard Minerals shall include, at a minimum, the following elements/compounds: boron, calcium, iron, manganese, magnesium, potassium, sulfate, total alkalinity (including alkalinity series), and hardness. Samples for metals shall be filtered prior to digestion, preservation, and analysis.

SLUDGE MONITORING

A composite sample of digested sludge shall be collected at least once per year when sludge is removed from the wastewater treatment system for disposal in accordance with EPA's POTW Sludge Sampling and Analysis Guidance Document, August 1989, and analyzed for cadmium, copper, nickel, chromium, lead, and zinc.

The Discharger shall keep records regarding sludge generated by the treatment processes, including any analytical test results; the quantity of sludge removed for disposal; the quantity of sludge removed from the ponds and temporarily stored onsite; and steps taken to prevent nuisance conditions. Records shall be stored onsite and available for review during inspections. If sludge is transported off-site for disposal, then the Discharger shall submit records identifying the hauling company, the amount of sludge transported, the date removed from the facility, the disposal facility name and address, and copies of all analytical data required by the entity accepting the water. These records shall be submitted as part of the Annual Monitoring Report.

WATER SUPPLY MONITORING

A sampling station shall be established where a representative sample of the municipal water supply can be obtained. Water supply monitoring shall include at least the following for each water source used during the previous year. As an alternative to annual water supply monitoring, the Discharger may submit results of the most current Department of Public Health Consumer Confidence Report.

Constituents	Units	Sampling Frequency
pH	Std. Unit	Annually
Total Dissolved Solids	mg/L	Annually
Standard Minerals [1]	mg/L	Annually

[1] Standard Minerals shall include, at a minimum, the following elements/compounds: boron, calcium, chloride, iron, magnesium, manganese, nitrogen, potassium, sodium, sulfate, total alkalinity (including alkalinity series), and hardness.

REPORTING

In reporting monitoring data, the Discharger 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 Water 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 Engineer or Professional Geologist and signed by the registered professional.

A. Monthly Monitoring Reports

Daily, weekly, and monthly monitoring data shall be reported in monthly monitoring reports. Monthly reports shall be submitted to the Regional Water Board on the **1st day of the second month following sampling** (i.e. the January Report is due by 1 March). At a minimum, the reports shall include:

1. Results of the influent, effluent, pond, and land application area monitoring.
2. Calculation of the average daily influent flow (as determined by the total flow during the calendar month divided by the number of days in the month), total monthly influent flow, cumulative annual influent flow to date, and monthly median effluent total coliform.
3. A comparison of monitoring data to the flow limitations, effluent limitations, and discharge specifications and an explanation of any violation of those requirements. Data shall be presented in tabular format.
4. Copies of laboratory analytical report(s).
5. Copies of current calibration logs for all field test instruments.

B. Quarterly Monitoring Reports

The Discharger shall establish a quarterly sampling schedule for groundwater monitoring such that samples are obtained approximately every three months. Quarterly monitoring reports shall be submitted to the Central Valley Water Board by the **1st day of the second month after the quarter** (i.e. the January-March quarterly report is due by May 1st). The Quarterly Report shall include the following:

1. Results of the groundwater monitoring in tabular format, including a graphical summary of the historical data;
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 WDR, 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. Summary data tables of historical and current groundwater elevations and analytical results.
5. 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; and
6. Copies of laboratory analytical report(s) for groundwater monitoring.

C. Annual Report

The Annual Report shall be submitted to the Central Valley Water Board by **1 February each year**. The Annual Report shall include the following:

1. The results from annual monitoring of the effluent, groundwater, sludge and water supply.
2. Calculations to determine the total annual influent flow, average dry weather flow, and total annual I/I flow.
3. A tabular summary of the following for each month of the calendar year: total influent flow, total inflow and infiltration (I/I) flow (total flow minus number of days in that calendar month times average dry weather flow), and total precipitation. The tabulated data shall include totals for each parameter (gallons per month).
4. If the total annual I/I flow is greater than 80 percent of the maximum annual I/I flow, acknowledgment that the requirements of Provision I.2 have been triggered and that the *Inflow and Infiltration Assessment and Correction Workplan* is due by **1 July of the following year.**
5. Tabular and graphical summaries of all data collected during the year.
6. An evaluation of the groundwater quality beneath the wastewater treatment facility and land application areas, and determination of compliance with the groundwater limitations of the WDRs based on statistical analysis for each constituent monitored for each compliance well in accordance with the approved *Groundwater Limitations Compliance Assessment Plan*. Include all calculations and data input/analysis tables derived from use of statistical software, as applicable.
7. A discussion of compliance and the corrective actions taken, as well as any planned or proposed actions needed to bring the discharge into full compliance with the waste discharge requirements.
8. A discussion of any data gaps and potential deficiencies/redundancies in the monitoring system or reporting program.
9. A copy of the certification for each certified wastewater treatment plant operator working at the facility and a statement about whether the Discharger is in compliance with Title 23, CCR, Division 3, Chapter 26.
10. A forecast of influent flows, as described in Standard Provision No. E.4;

11. A discussion of the following:
    a. Waste constituent reduction efforts implemented in accordance with any required workplan;
    b. Other best practical treatment and control measures implemented pursuant to any approved BPTC Workplan (if required by the Executive Officer); and
    c. Based on monitoring data, an evaluation of the BPTC measures that were implemented.

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 Discharger has previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. The transmittal letter shall contain the penalty of perjury statement by the Discharger, or the Discharger's authorized agent, as described in the Standard Provisions General Reporting Requirements Section B.3.

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

Ordered by: - Original signed by -

PAMELA C. CREEDON, Executive Officer

26 July 2013

(Date)

LLA: 062413

INFORMATION SHEET

ORDER R5-2013-0114
LAKE BERRYESSA RESORT IMPROVEMENT DISTRICT
LAKE BERRYESSA WASTEWATER TREATMENT FACILITY
NAPA COUNTY

Background

Lake Berryessa Resort Improvement District (hereafter "Discharger" or "LBRID") submitted a Report of Waste Discharge (RWD) that describes an expansion to the existing wastewater treatment facility (WWTF). The LBRID WWTF is regulated under Waste Discharge Requirements (WDRs) Order R5-2008-0068, which prescribes requirements for the treatment and discharge of domestic wastewater from the Berryessa Estates Subdivision to three aerated treatment ponds, followed by four effluent storage ponds, and land disposal to a six acre spray field. WDRs Order R5-2008-0068 allows a monthly average dry weather flow to the WWTF up to 42,000 gallons per day (gpd). The Discharger proposes to increase the storage and disposal capacity to accommodate the Berryessa Estates at full buildout and comply with Revised Administrative Civil Liability (ACL) Order R5-2011-0538 Revision No. 1.

The Discharger has had a long history of spills, the result of infiltration/inflow (I/I) issues at the wastewater collection system and lack of storage and disposal capacity. These violations of the WDRs resulted in multiple Administrative Civil Liability Complaints issued by the Executive Officer and Board adopted Administrative Civil Liability Orders and a Cease and Desist Order.

Planned Changes in the Facility and Discharge

Effluent storage and disposal capacity will increase from approximately 7.4 million gallons (MG) to 27.1 MG. Existing Ponds 6 and 7 will be removed and replaced with two new, larger ponds (designated as Ponds 7 and 8). A completely new Pond 6 will be constructed. Appurtenances will be provided to allow flexibility in transfering wastewater between storage ponds.

The land application area will increase from two spray fields at six acres to approximately 16.1 acres for a total of four spray fields.

Site-Specific Conditions

The topography in the vicinity of the WWTF is hilly, with a fairly steep slope to the south-southeast towards Putah Creek. The WWTF site is located on the floor of a small valley adjacent to Stone Corral Creek. Land surface elevations range from 640 feet mean sea level to the north of the ponds and near the land application areas to approximately 530 feet near Stone Corral Creek. The spray fields comprise of grasslands interspersed with oak trees.

Groundwater Considerations

There are seven groundwater monitoring wells. MW-1 through MW-5 were installed in 2006. MW-2 is upgradient of the site and considered a background groundwater monitoring well.

The remaining wells are downgradient of the ponds and/or spray fields. Wells MW-6 and MW-7 were installed in 2012. MW-6 serves as an additional downgradient well and was installed as an alternative to MW-5, which has historically contained higher levels of constituents than any other well. Well MW-7 is upgradient of the proposed additional spray fields and represents baseline/background groundwater quality, therefore serves as a background well.

Background groundwater quality is spatially variable between MW-2 and MW-7. Background groundwater quality appears to be good quality water, with the exception of sodium and boron (concentrations exceeds protective water quality limits).

Downgradient groundwater quality exhibits very high spatial variability. Downgradient groundwater quality in wells MW-1, MW-3, and MW-4 indicate little apparent degradation, with the exception of sodium and boron. Downgradient groundwater quality in wells MW-5 and MW-6 exceed protective groundwater quality limits with respect to salinity (in particular TDS, chloride, and sodium), boron, manganese, and total coliform organisms. The high concentrations present in these wells are likely naturally occurring, with the exception of total coliform. Therefore, wells MW-5 and MW-6 will not be used to determine the threat to groundwater quality or compliance with the groundwater limitations of this Order.

Based on effluent quality, groundwater monitoring data, and geologic conditions within the area, it appears that the discharge has not caused groundwater degradation with respect to boron, manganese, and trihalomethanes. However, it appears that the discharge has caused degradation of groundwater with respect to nitrate, but has not caused exceedance of the secondary Maximum Contaminant Level (MCL) of 10 mg/L. Total coliform organisms have been detected in only one of the downgradient wells based on the result from one sampling event in June 2012. This detection may be the result of sample contamination and may resolve without intervention.

Basin Plan, Beneficial Uses, and Regulatory Considerations

Local drainage is to Lake Berryessa. The beneficial uses of Lake Berryessa, as stated in the Basin Plan, are municipal and domestic supply; agricultural supply; water contact recreation; non-contact water recreation; warm freshwater habitat; cold freshwater habitat; spawning, reproduction, and/or early development; and wildlife habitat.

The Basin Plan designates the beneficial uses of underlying groundwater as municipal and domestic supply, agricultural supply, and industrial supply.

Antidegradation Analysis

State Water Resources Control Board Resolution 68-16 prohibits degradation of groundwater unless it has been shown that:

- The degradation is consistent with the maximum benefit to the people of the state.
- The degradation will not unreasonably affect present and anticipated future beneficial uses.
- The degradation does not result in water quality less than that prescribed in state and regional policies, including violation of one or more water quality objectives, and
- The discharger employs best practicable treatment or control (BPTC) to minimize degradation.

The Discharger has been monitoring groundwater quality at the site since 2006. Based on the data available, it is not possible to determine pre-1968 groundwater quality and it may not be possible to establish background groundwater concentrations due to the geologic complexity of the site. Therefore determination of compliance with Resolution 68-16 for this facility must be based on ambient pre-discharge/background groundwater quality for the monitoring wells that are outside the influence of the current discharge.

Degradation of groundwater by some of the typical waste constituents associated with discharges from a municipal wastewater utility, after effective source control, treatment, and control measures are implemented, is consistent with the maximum benefit to the people of the state. The technology, energy, water recycling, and waste management advantages of municipal utility service far exceed any benefits derived from reliance on numerous, concentrated individual wastewater systems, and the impact on water quality will be substantially less.

The Discharger currently provides treatment and control of the discharge that incorporates:

- Secondary treatment of the wastewater;
- Disinfection to 23 MPN/100 mL;
- Tailwater return system to capture all tailwater runoff; and
- The use of certified operators to assure proper operation and maintenance.

The Board considers these measures to constitute “best practicable treatment or control” of the waste constituents associated with this discharge, and finds that the limited groundwater degradation allowed by this Order is consistent with the Antidegradation Policy.

Discharge Prohibitions, Specifications, and Provisions

Effectively immediately, influent flows to the WWTF shall not exceed a monthly average flow of 42,000 gallons per day.

Effective on the date of the Executive Officer’s approval of the *Wastewater Facilities Improvements Completion Report* submitted pursuant to item 11 of ACL Order R5-2011-0538

Revision 1 or subsequent revision thereto, influent flows to the WWTF shall not exceed the following limits:

Flow Measurement	Flow Limit
Total Annual Flow [1]	28.17 million gallons
Average Dry Weather Flow [2]	0.042 million gallons per day
Maximum Annual I/I Flow [3]	17.33 million gallons

[1] As determined by the total flow for the calendar year.
[2] As determined by the total flow for the months of June through August, inclusive, divided by 92 days.
[3] As determined by the total flow during the calendar month, minus 365 times the average dry weather flow for the year.

The Order establishes a BOD effluent limit prior to discharge to the effluent storage ponds, a total coliform effluent limit prior to discharge to the land application areas, and sets groundwater limits that will ensure compliance with the Basin Plan. This Order also sets specifications for waste disposal and land application.

Monitoring Requirements

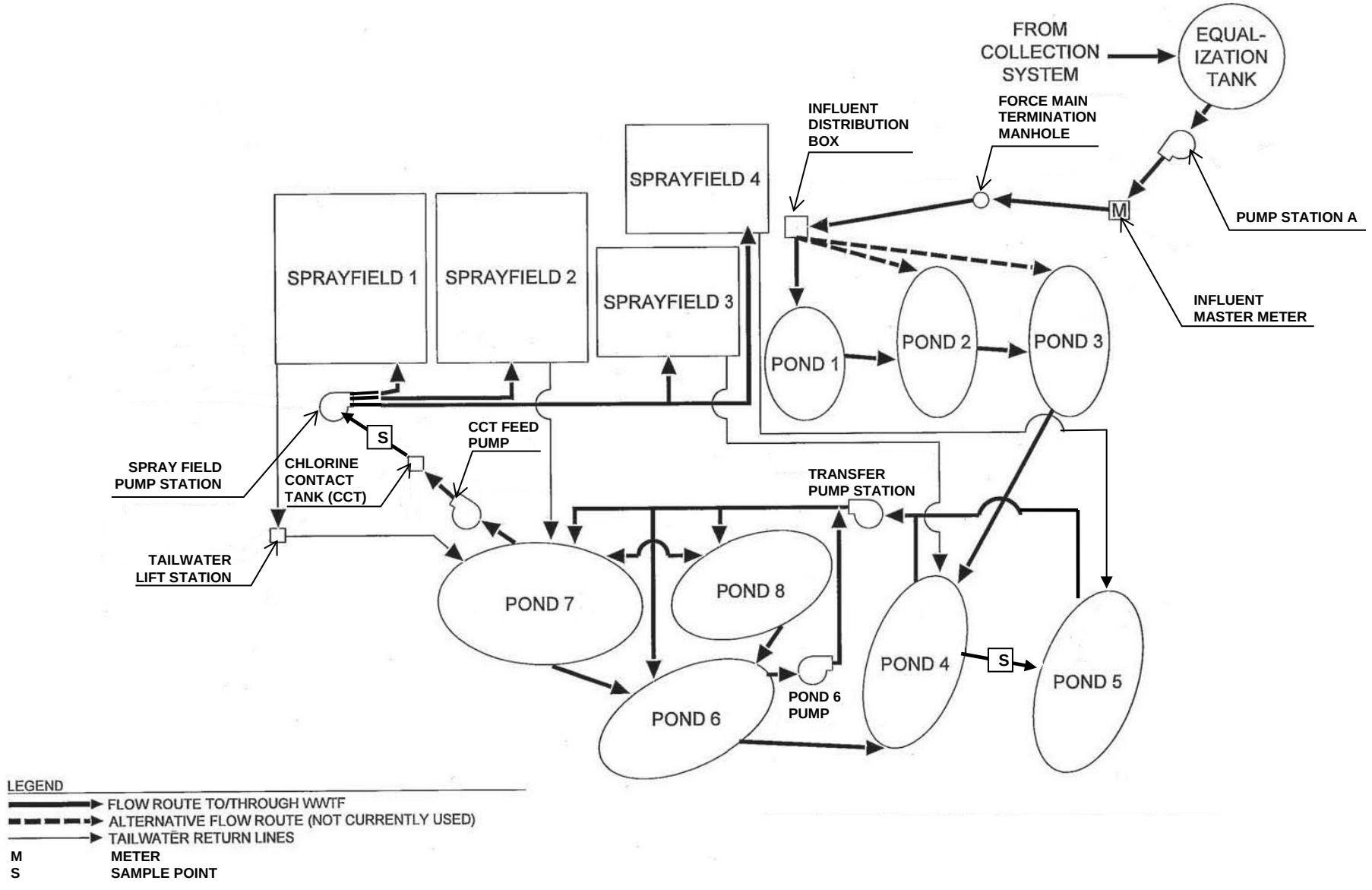
The Monitoring and Reporting Program is designed to verify compliance with effluent limitations and operational requirements of the WDRs. The Order requires monitoring the influent, effluent, ponds, land application areas, groundwater, sludge, and water supply. If results of the monitoring reveal a threat to water quality or indicate a change in waste character such that the threat to water quality is significantly increased, the Central Valley Water Board may reopen this Order to reconsider groundwater limitations and other requirements to comply with Resolution 68-16.

Reopener

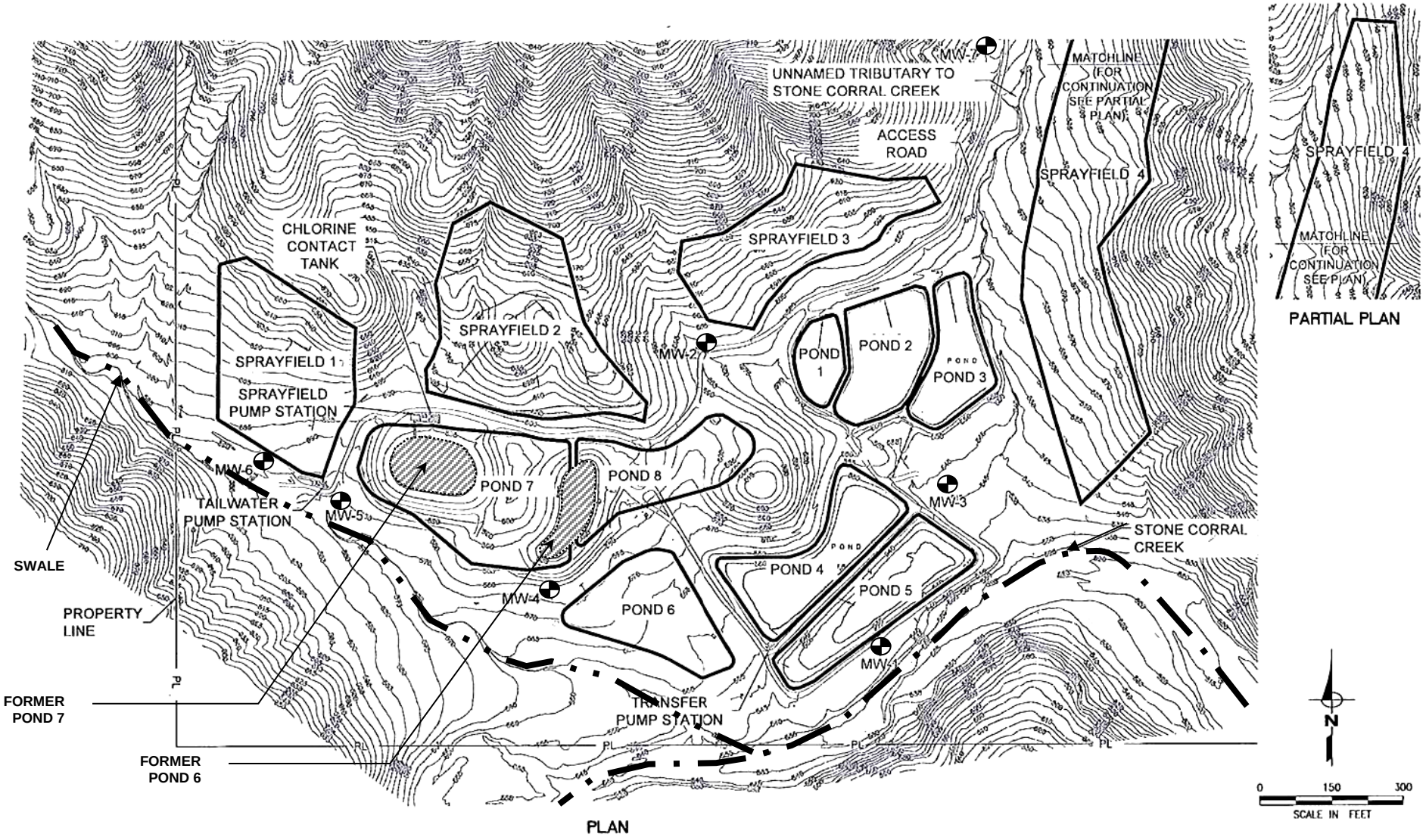
The conditions of discharge in the Order were developed based on currently available technical information and applicable water quality laws, regulations, policies, and plans, and are intended to assure conformance with them. If the information obtained from the monitoring activities indicate a significantly increased threat to water quality, it may be appropriate to reopen the Order to address compliance with the Basin Plan.

LLA: 062413

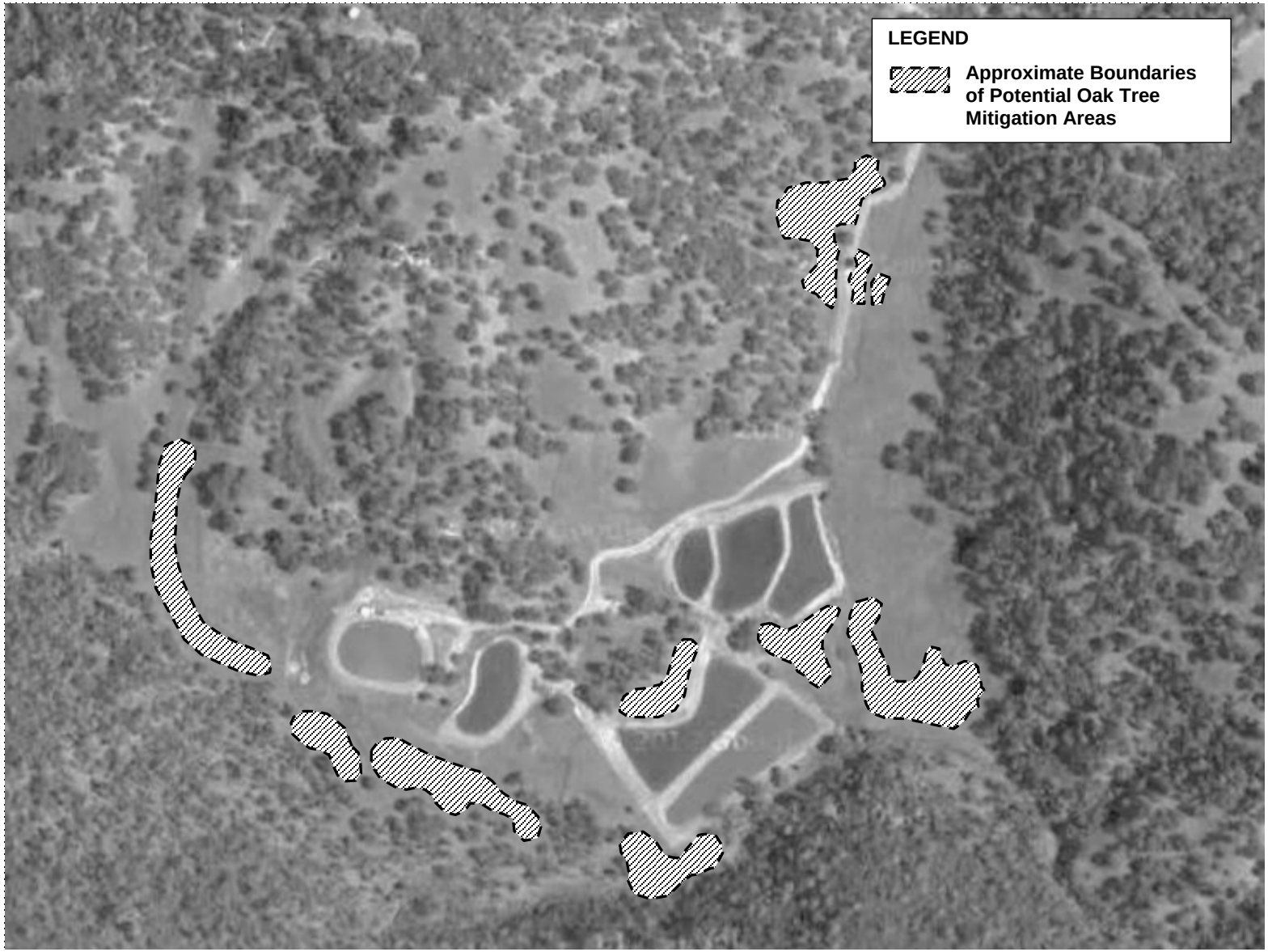
Drawing Reference: U.S.G.S Topographic Map Walter Springs 7.5 Minute Quadrangle	**VICINITY MAP** LAKE BERRYESSA RESORT IMPROVEMENT DISTRICT WASTEWATER TREATMENT FACILITY NAPA COUNTY	N W E S approx. scale As Noted.



Approximate Scale No Scale N W E S	Drawing Reference: West Yost Associates Report of Waste Discharge 30 January 2013	**PROCESS FLOW DIAGRAM** LAKE BERRYESSA RESORT IMPROVEMENT DISTRICT WASTEWATER TREATMENT FACILITY NAPA COUNTY



Approximate Scale As Noted N W E S	Drawing Reference: West Yost Associates Report of Waste Discharge 30 January 2013	**FACILITY SITE PLAN** LAKE BERRYESSA RESORT IMPROVEMENT DISTRICT WASTEWATER TREATMENT FACILITY NAPA COUNTY



Approximate Scale Not to Scale N W E S	Drawing Reference: Prunuske Chatham, Inc. 3 January 2013	**OAK TREE MITIGATION LOCATION AREAS** LAKE BERRYESSA RESORT IMPROVEMENT DISTRICT WASTEWATER TREATMENT FACILITY NAPA COUNTY