

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

ORDER NO. R5-2006-0043

WASTE DISCHARGE REQUIREMENTS  
FOR  
STATE OF CALIFORNIA, DEPARTMENT OF PARKS AND RECREATION  
CALAVERAS BIG TREES STATE PARK  
WASTEWATER TREATMENT FACILITY  
CALAVERAS COUNTY

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

1. On 22 April 2005, the State of California Department of Parks and Recreation (hereafter Discharger) submitted a Report of Waste Discharge (RWD) for updating Waste Discharge Requirements for its existing wastewater treatment facility (WWTF). Additional information was received on 16 September 2005, and 13 January and 16 February 2006. The WWTF treats and disposes of domestic wastewater generated from Calaveras Big Trees State Park.
2. Calaveras Big Trees State Park is located approximately three miles northeast of the town of Arnold, in Calaveras County. The WWTF is in Section 22, T5N, R15E, MDB&M (Assessors Parcel No. 025-005-026-000) as shown on Attachment A, which is attached hereto and made part of this Order by reference.
3. The term "WWTF" includes the effluent collection system, septic tanks, pump station, sprayfield, and leachfield disposal areas.
4. The Discharger is the owner and operator of the WWTF, and therefore is responsible for assuring that the design, operation, and maintenance of the entire collection, treatment, and disposal system satisfies the terms and conditions of this Order.
5. WDRs Order No. 98-045, adopted by the Regional Board on 27 February 1998, prescribes requirements for the Discharger's WWTF and is neither adequate nor consistent with the current plans and policies of the Regional Board.

**Wastewater Treatment and Disposal Systems**

6. There are eight separate wastewater treatment and disposal systems throughout the park, designated as North Grove, Oak Hollow, Mumbert House, Residence #1, Residences #2 through 5, Mobile Home Pad, Group Camp, and Shop Building.

**North Grove**

7. The North Grove WWTF consists of a collection system, 20,000-gallon septic tank, effluent conveyance system, leachfields, and spray irrigation field. The North Grove WWTF serves facilities within the North Grove Campground area, including the five restrooms within the campground; two restrooms within the day use areas; and restrooms at the visitor center, ranger office, park kiosk, Jack Knight Hall, and RV/trailer dump station.

8. The RWD provided information as to how much wastewater would be generated as a maximum gallon per day (gpd) basis. The Discharger assumed that approximately 300 campers and 500-day use visitors would use the North Grove facilities on a daily basis. Assuming that campers and day use visitors would generate approximately 15 and 5 gpd per person, respectively, the maximum amount of wastewater generated from the North Grove facilities would be approximately 7,000 gpd.
9. Domestic wastewater from the North Grove Campground area is conveyed to a 20,000-gallon septic tank via a gravity collection system. The collection system consists of approximately 3,400 lineal feet of six to eight inch diameter piping constructed of vitrified clay. Approximately 1,700 feet of the collection system has been slip-lined with polyethylene pipe.
10. The Discharger's RWD indicates that improvements will be made to portions of the collection system, including slip-lining portions of the sewer mainline from Highway 4 west to the 20,000 gallon septic tank, and removing and replacing portions of sewer mainline with PVC piping.
11. The 20,000 gallon septic tank is a dual chambered tank constructed of concrete. Both chambers capture and store solids while they undergo anaerobic decomposition. The heavier solids settle and form sludge at the bottom. The lighter solids, including fats and greases, rise to the surface and form a scum layer. The scum and sludge undergo decomposition and digestion, which both liquifies some solids (which are then discharged) and also produces carbon dioxide and methane gas, which are volatilized from the tank. Both the liquefaction and gasification processes reduce the solids volume in the tank and therefore reduce the frequency of septic tank cleaning.
12. The septic tank has two basic functions, waste treatment and solids storage, but it is essential to the long-term function of the leachfield disposal system that particulate (i.e., non-liquefied sludge) solids and scum be kept from exiting the tank. For this reason, the exit of the septic tank chamber draws from the tank below the scum and above the sludge, and it is imperative that regular inspections and cleanings assure that neither the sludge layer nor the scum layer increases to the extent that particulates are scoured and discharged from the tanks. The RWD states that the Discharger will install an effluent filter at the outlet port of the septic tank to capture any errant solids that may be present in the septic tank effluent.
13. Septic tank effluent is discharged into a concrete clear well that is equipped with gravity flow slide gates. The slide gates are manually adjusted to allow wastewater to flow to an existing leachfield via gravity, or to a pump station that currently conveys wastewater to an existing sprayfield and will also convey wastewater to the new proposed leachfield.
14. The clear well is not equipped with a flow meter to monitor flows discharged to the existing leachfield, sprayfield, or proposed new leachfield. This Order requires the Discharger to submit a report certifying that it has installed flow meters.
15. The existing leachfield is located within a cut on a steep hillside approximately 450 feet west of the septic tank. The leachfield has approximately 400 lineal feet of six-inch diameter perforated piping at a depth of approximately 16 inches below ground surface (bgs). Disposal trench dimensions range from 36 to 48 inches deep, and 48 inches wide. The Discharger did not provide any design

disposal rates for the existing leachfield, nor any information on percolation rates or depth to seasonal high groundwater.

16. The RWD indicates that until approximately two years ago, the leachfield had functioned properly for twenty plus years at an estimated flow rate of 7,000 gpd. However, the leachfield can no longer support these flows. Based on operational experience for the past two years, the Discharger estimates that the leachfield can dispose of approximately 3,000 gpd. Additionally, the RWD indicates that the Discharger wants to use the existing leachfield on an emergency basis. This Order limits the monthly average discharge to the existing leachfield to 3,000 gpd while the new leachfield is being constructed, and then allows its use on an emergency basis.
17. Because of performance issues with the existing leachfield system, the Discharger proposes to construct and utilize a new leachfield disposal system. Septic tank effluent contained in the clear well will be pumped to the new leachfield via a lift station and two-inch force main conveyance system. The lift station is equipped with with duplexed 7.5 horsepower submersible pumps. The pumps within the lift station are rated at 25 to 65 gallon per minute (gpm). The RWD indicates that the Discharger will throttle the pumps back to pump effluent to the leachfield at a rate of 55 gpm. There are no alarms on the lift station to notify park personal of potential problems, and therefore this Order requires that alarms be installed.
18. The new leachfield will consist of approximately 1,330 linear feet of leachline located in an area encompassing approximately 35,000 square feet, as shown on Attachment B, which is attached hereto and made part of this Order by reference. Disposal of wastewater to the new leachfield will occur via gravity and will be distributed evenly to three separate zones. Wastewater leachlines will be spaced approximately 10 feet apart. The disposal trenches will be approximately 24 inches wide by 45 inches deep with approximately 30 inches of drain rock and trench side wall below the leachline lateral. The Discharger has calculated that the new leachfield can dispose of approximately 19,900 gpd, which is three times more than the projected volume of wastewater from the North Grove facilities. The wastewater application rate is approximately 1.2 gpd per square foot of disposal trench, at design flow.
19. In September 2003, the Discharger dug profile trenches to a depth of five to six feet bgs, and conducted percolation testing within the new leachfield disposal area. Observations made from the profile trenches indicate that the soils within the leachfield disposal area consist primarily of silty sand with abundant gravel (approximately 50 to 66 percent). No groundwater was detected, nor was there any evidence of mottling within the profile trenches. Based on testing, percolation rates throughout the leachfield disposal area averaged approximately six inches per minute.
20. Monitoring of wastewater depth in disposal trenches can aid in estimating the condition of leachfields and in adjusting distribution of wastewater within the leachfield, and is key to determining when replacing a leachfield is necessary. Each individual leachfield lateral is required to have an inspection riser tube at each end to monitor the drainage capabilities of the disposal line.
21. Good practice requires that either an alternate leachfield of the same size be installed and alternately used or that sufficient area be set aside to replace the entire leachfield. The leachfield

has been designed such that there will be a one hundred percent replacement area leachfield, which is located downhill (southeast) of the proposed leachfield.

22. The Discharger has historically used a spray disposal field to dispose of wastewater during the dry weather months (i.e., May through September). The spray disposal field is located on a fairly steep hillside, and is approximately one-half acre in size and has eight irrigation riser pipes. The irrigation heads on the riser pipes are bubbler type heads. Wastewater discharged to the spray disposal field has not been disinfected prior to application.
23. The State Department of Health Services has expressed concerns about stormwater runoff from sprayfields to which undisinfected waste is applied. The Department indicates that viruses and other pathogens may survive in soil for years, and could be flushed into surface waters during rain events.
24. The Discharger has indicated that it is not able to make improvements (i.e., stormwater/tailwater control or disinfection) to the sprayfield at this time due to funding issues and that the sprayfields will be valved off and taken out of service. The Discharger states that if funding does become available, the sprayfield may be modified and be brought back into service. The Discharger must continue to use the spray disposal field until the new leachfield is constructed in 2006. However, this Order only allows the use of the spray disposal field beyond 1 October 2006 if the Discharger submits, and the Executive Officer approves, the report described in Provision H.1.e.

### **Oak Hollow Campground Facilities**

25. Domestic wastewater generated within the Oak Hollow Campground facilities is treated and disposed of via four separate septic tank leachfield systems. The first system serves the camp host RV site and consists of a 1,000 gallon concrete septic tank, and approximately 100 feet of leachfield leachlines. This system is only used seasonally from approximately 1 May through 1 October of each year.
26. The second system within the Oak Hollow Campground serves domestic wastewater generated from Restroom # 9 in the southeastern portion of the campground. Restroom # 9 contains five toilets, seven sinks, and three showers. Wastewater from the facility is discharged into a 2,500 gallon septic tank located under the parking area of campsite #79. Septic tank effluent is discharged into a leachfield that has approximately 300 feet of leachlines.
27. The third system is located at Restroom #10. Restroom # 10 contains five toilets, four sinks, and four showers. Wastewater from the restroom is discharged into a 2,500 gallon septic tank and then to a leachfield that has approximately 300 feet of leachlines.
28. The last wastewater system in the Oak Hollow Campground is located at Restroom #11, which has three toilets and two sinks. Wastewater is discharged into a 1,250 gallon septic tank, and then into a leachfield which has approximately 200 feet of leachlines. A portion of the septic tank effluent conveyance piping is conveyed across a creek via aboveground piping that is attached to a bridge crossing.
29. The RWD did not provide any information as to whether the septic tank leachfield systems within the Oak Hollow Campground, or the other small wastewater systems described below, are fitted with effluent filters, whether the septic tanks are of single compartment or dual construction, the depth of leachlines, or percolation rates.

### **Mumbert House**

30. The Mumbert House, which is near the southwestern border of Calaveras Big Trees State Park, is a seasonal residence for park personnel. The house has 3 bedrooms, one bathroom, and a kitchen. Wastewater generated from the house is discharged into a 500 gallon concrete septic tank. Septic tank effluent is discharged into a leachfield that has two, 100 foot leachlines. Each leachline has an inspection riser pipe to monitor wastewater within the disposal trenches.

### **Residence #1**

31. Residence #1 is near the western boundary of the park. The residence is used on a seasonal basis by park personnel. The house has two bedrooms, one bathroom (one shower and one sink), and a kitchen (one sink). Wastewater generated from the house is discharged into a 1,000 gallon septic tank, with septic tank effluent being discharged to a leachfield containing approximately 200 feet of leachlines.

### **Residence #'s 2, 3, 4, and 5**

32. Residence #'s 2, 3, 4, and 5, which are located west of Highway 4 near the park entrance, are used to house park personnel on a seasonal basis. Each house has two bedrooms, one bathroom, a kitchen, and a laundry room. Wastewater from all four residences is disposed of in a single onsite system, consisting of a common distribution box, a 2,500 gallon septic tank, and approximately 200 feet of leachlines. The leachfield disposal trenches are approximately 18 inches wide by 36 inches deep, with the leachline placed at approximately 18 inches bgs.

### **Mobile Home Pad**

33. The mobile home pad, which is located west of Highway 4 and north of Residence #'s 2, 3, 4, and 5, is served by an onsite system consisting of a 1,000 gallon septic tank and two 100 foot leachlines. The leachline trenches are approximately 12 inches wide by 19 inches deep. The leachline is placed at approximately 15 inches bgs.

### **Group Camp**

34. Wastewater generated at the Group Site Camp comes from Restroom #8, which has four showers, four sinks, and four toilets. The RWD did not provide any information on the size of the septic tank or leachfield.

### **Shop Building Area**

35. The wastewater system serving the Building Shop Area disposes of wastewater generated from a Carpentry Shop and a travel trailer sewer connection. The Carpentry Shop has one toilet and one sink inside the building. The travel trailer has one toilet, one shower, and two sinks. Wastewater generated from the shop and travel trailer are discharged into a wastewater conveyance system that transports wastewater to a 1,000 gallon dual compartment septic tank. From the septic tank, septic

effluent is conveyed via a pipeline to a leachfield for disposal. The leachfield has four lateral leachlines which are each approximately 37 feet long.

**Effluent Characteristics**

36. The RWD provides limited information regarding the quality of the potable water provided to the park; however, the following table provides data for samples collected in 2005:

<u>Constituent</u>	<u>Units</u>	<u>Potable Water</u>
Calcium	mg/L	3.2
Chloride	mg/L	2.8
Hardness	mg/L	12
Magnesium	mg/L	<2
pH	units	7.2
Sodium	mg/L	2.6
Sulfate	mg/L	0.5
Total Dissolved Solids	mg/L	20
Total Nitrate as N	mg/L	<0.22

37. The Discharger’s RWD states that it expects the characteristics of the effluent discharged into the leachfields to be typical of what is found in residential septic tank/leachfield systems. However, the characterization does not address typical waste constituents associated with travel trailer (RV) dischargers. The table below provides the expected septic tank effluent characteristic based on standard engineering references for residential septic tank/leachfield systems:

<u>Constituent</u>	<u>Units</u>	<u>Septic Tank Effluent</u>
pH	Standard Units	6.5-7.2
Total Dissolved Solids (TDS)	mg/l	230 <sup>1</sup>
Total Suspended Solids	mg/l	47-62
BOD <sub>5</sub>	mg/l	130-174
Total Coliform Organisms	MPN/100 ml	>2,400
Total Fecal Organisms	MPN/100 ml	>2,400
<u>Total Nitrogen</u>	mg/l	26-76

<sup>1</sup> Based on potable water TDS of 20 mg/L plus an incremental addition of 200 mg/L through water usage

38. The waste discharged into RV dump stations typically contains phenols, formaldehyde, zinc, and ammonia in addition to the constituents listed above.
39. The sample data indicate that the septic tanks provide primary treatment. Wastes that pass through the septic tanks are discharged to the soil underlying the leach lines; the soil then treats some of the remaining wastes. However, the amount of treatment depends on the waste type and concentrations, soil type and depth, percolation rates, wastewater application rates, and depth to

groundwater. Under the best of circumstances, some waste constituents may migrate through the soil column to the underlying groundwater. The additional wastes found at RV dump stations may not be adequately treated in the soil column.

40. Acid and organic chemical solvent septic system additives typically contain halogenated and aromatic hydrocarbons that are highly mobile in soils and groundwater. The additives can impede effective treatment and pollute groundwater, and their use must be restricted as monitoring and cleanup can be costly.

### **Sanitary Sewer Overflows**

41. A collection system “overflow” is a discharge to ground surface or to surface water from the effluent collection system at any point upstream of the septic tanks. Temporary storage or collection facilities may be utilized during maintenance operations and discharges to these facilities are not considered overflow events, provided that the waste is fully contained and properly disposed.
42. Potential causes of overflows within this system include grease blockages, root blockages, debris blockages, sewer line flood damage, air relief/vacuum valve failures, vandalism, storm or groundwater inflow/infiltration, lack of capacity, and contractor caused blockages.
43. Sanitary sewer overflows often contain high levels of suspended solids, pathogenic organisms, nutrients, oxygen demanding organic compounds, oil and grease, and other wastes. Sanitary sewer overflows can cause temporary exceedences of applicable water quality objectives, pose a threat to public health, adversely affect aquatic life, and impair the public recreational use and aesthetic enjoyment of surface waters in the area.
44. The Discharger is expected to take all necessary steps to adequately maintain and operate, and thereby prevent overflows from, its effluent collection system. A reasonable means to accomplish this is to prepare and implement an operation and maintenance manual that includes overflow prevention and response features.

### **Site Specific Conditions**

45. The average annual rainfall for Calaveras Big Trees State Park is approximately 56 inches per year, with approximately 25 percent falling as snow.
46. All portions of the wastewater disposal areas (i.e, leachfield and sprayfields) are outside of the 100-year flood zone.
47. The land uses around the disposal areas are State Park property and forest preserve areas.
48. The existing leachfield, sprayfield, and proposed leachfield are within the South Fork Calaveras Hydrologic Area No. 533.30, as depicted on interagency hydrologic maps prepared by the Department of Water Resources in August 1986.
49. The Oak Hollow Campground, Mumbert House, and Residence #1 onsite septic tank leachfield systems are within the North Fork Stanislaus Hydrologic Area No. 534.50, as depicted on interagency hydrologic maps prepared by the Department of Water Resources in August 1986.

50. Soils within the proposed leachfield area are underlain by the Merhten Formation. The soils are brown to reddish silty loam soil with some clay and fine sand.
51. No information has been provided as to the depth of first encountered groundwater, or of groundwater quality, beneath the disposal sites.

### **Basin Plan, Beneficial Uses, and Regulatory Considerations**

52. 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 Resources Control Board. Pursuant to Section 13263(a) of the CWC, waste discharge requirements must implement the Basin Plan.
53. Surface water drainage from the existing leachfield, sprayfield, and proposed leachfield area is to San Antonio Creek, a tributary to South Fork of the Calaveras River which flows into New Hogan Reservoir.
54. Surface water drainage from the Oak Hollow Campground, Mumbert House and Residence #1 onsite septic tank leachfield areas is to the North Fork of the Stanislaus River, which flows to New Melones Reservoir.
55. The designated beneficial uses of the South Fork of the Calaveras River upstream of the New Hogan Reservoir are water contact recreation; non-contact water recreation; warm and cold freshwater habitat; migration of aquatic organisms; spawning, reproduction, and/or early development; and wildlife habitat.
56. The designated beneficial uses of the North Fork of the Stanislaus River upstream of the New Melones Reservoir are municipal and domestic supply; agricultural irrigation and stock watering; hydropower generation; water contact recreation; non-contact water recreation; warm and cold freshwater habitat; and wildlife habitat.
57. The designated beneficial uses of the underlying groundwater are municipal and domestic supply, agricultural supply, industrial service supply, and industrial process supply.
58. The Basin Plan establishes numerical and narrative water quality objectives for surface water and groundwater that waste discharge requirements must implement. To implement narrative water quality objectives, relevant water quality criteria and guidelines are to be considered on a case-by-case basis to determine the appropriate numerical limitation.
59. The Chemical Constituent objective in the Basin Plan requires, at a minimum, compliance with California maximum contaminant levels (MCLs) for waters designated as municipal supply. More stringent criteria than MCLs are sometimes necessary to ensure that waters do not contain chemical constituents in concentrations that adversely affect beneficial uses.



60. The Basin Plan contains narrative water quality objectives for chemical constituents, tastes and odors, and toxicity. The toxicity objective requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans, plants or animals associated with beneficial uses. The chemical constituent objective requires that groundwater shall not contain chemical constituents in concentrations that adversely affect beneficial uses. The tastes and odors objective requires that groundwater shall not contain taste or odor producing substances in concentrations that cause nuisance or adversely affect beneficial uses.
61. The Basin Plan allows the use of septic tank/leachfield systems where a conventional municipal sewage systems is not available provided construction guidelines referenced in the Basin Plan are met and provided a properly empowered entity assumes responsibility for the systems. This entity must assure proper operation and maintenance, and assure system replacement as necessary to preclude nuisance, pollution, and health impacts. In addition to the requirements of CWC section 13282, the Basin Plan requires that the public entity be empowered to finance its actions and empowered to issue permits, conduct monitoring and surveillance, and maintain control of pumping and disposal of septage, as well as to abandon properly, if necessary, any wastewater system. This Order requires that the State of California be empowered with these actions in relation to the wastewater systems within the Calaveras Big Trees State Park.

### **Groundwater Degradation**

62. State Water Resources Control Board (State Board) Resolution No. 68-16 (“Policy with Respect to Maintaining High Quality Waters of the State”) (hereafter Resolution No. 68-16) requires a regional board in regulating the discharge of waste to maintain high quality waters of the state (i.e., background water quality) until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the State, will not unreasonably affect beneficial uses, and will not result in water quality less than as described in plans and policies (e.g. violation of any water quality objective). The discharge is required to meet waste discharge requirements that will result in the best practicable treatment or control of the discharge necessary to assure that pollution or nuisance will not occur and highest water quality consistent with maximum benefit to the people will be maintained.
63. Some degradation of groundwater in the leachfield areas is consistent with Resolution No. 68-16 provided that degradation:
  - a. is confined to a reasonable area;
  - b. is minimized by means of full implementation, regular maintenance, and optimal operation of best practicable treatment and control (BPTC) measures;
  - c. is limited to waste constituents typically encountered in domestic wastewater; and
  - d. does not result in water quality less than that prescribed in the applicable basin plan.

### **Antidegradation Analysis**

64. The WWTF provides minimal treatment of wastewater and is highly dependent upon proper management and waste constituent attenuation in the disposal areas to prevent pollution of groundwater and to protect beneficial uses. While the Basin Plan conditionally allows septic tanks with leachfield systems for rural development, it includes the expectation of optimal site selection and conservative design which meets minimum guidelines, and attentive and judicious operation and maintenance. This Order requires the discharger to prevent pollution, nuisance, or contamination, and requires the discharger to appropriately operate and maintain the systems consistent with CWC section 13282. In addition, this Order include provisions to implement Resolution 68-16.
65. Waste constituents in effluent that represent the greatest risk of exceeding a water quality objective and may be used as indicator parameters regarding the performance of the WWTF are nitrogen and coliform. Both must be effectively attenuated within the soil to assure water quality objectives are met. The constraining water quality limit for nitrogen prescribed by the Basin Plan, pursuant to the chemical constituent objective, is the MCL for nitrate, which is equivalent to 10 mg/L when expressed as nitrogen. The Basin Plan numeric water quality objective for total coliform is less than 2.2 MPN/100 mL.
66. The expected effluent concentration for TDS is below 450 mg/L, the relevant numerical water quality limit used through Basin Plan procedures to apply the narrative water quality objective for chemical constituents that requires protection of agricultural supply, the beneficial use most sensitive to TDS. The individual salt components can safely be assumed to be proportionately low such that TDS can be an effective indicator parameter in their regulation. Restricting the use of water softeners should make these components unimportant in regulating water quality. The threat of toxic chemicals can reasonably be controlled through periodic education of park personnel and guests.
67. The incremental addition of dissolved salts though water useage (about 200 mg/L; Finding No. 37) is within the normal range for domestic use, and is reasonable considering modern water conservation practices. A TDS effluent limitation of 230 mg/L represents no cost or change in practice for the Discharger, and limits salt degradation to a reasonable amount while providing some protection of the groundwater beneath the leachfields.
68. Groundwater limitations equal to water quality objectives for indicator waste constituents and parameters are appropriate, as is a more restrictive TDS groundwater limitation, and consistent with maximum benefit to the people of the State for this WWTF. Accordingly, the discharge as authorized is consistent with the antidegradation provisions of Resolution 68-16.
69. No groundwater monitoring has been conducted at the designated disposal areas to determine compliance with Resolution No. 68-16. However, the Discharger submitted a *Groundwater Monitoring Well Installation Workplan* as part of the RWD. The Workplan will be reviewed and commented on separately from this Order.
70. In order to determine compliance with Resolution No. 68-16, it is appropriate to establish a schedule for installation and sampling of groundwater monitoring wells and formally determine background groundwater concentrations for selected constituents. If groundwater is degraded or there is evidence that the discharge may cause degradation, then the Discharger will be required to

evaluate and implement additional BPTC measures for each conveyance, treatment, storage, and disposal component of the system. Completion of these tasks will ensure that Best Practicable Treatment and Control (BPTC) and the highest water quality consistent with the maximum benefit to the people of the state will be achieved.

71. Section 13241 of the CWC requires that various factors, including economic considerations, be considered when adopting water quality objectives into a Basin Plan. Water Code Section 13263 requires that factors in Section 13241 be considered in adopting waste discharge requirements. The State Board has held that factors of section 13241 need not be specifically addressed when implementing existing water quality objectives in waste discharge requirements because the factors were already considered in adopting the objectives through amendments to the Basin Plan. Although there is no obvious cost to the TDS limitation, cost savings in the life of the leachfield and less degradation of groundwater should be realized. No additional analysis of Section 13241 factors is required.

#### **Other**

72. The State Water Resources Control Board adopted Order No. 97-03-DWQ (General Permit No. 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 collection system and leachfields are underground and are not exposed to stormwater runoff. Because there is no stormwater discharge, the Discharger is not required to obtain coverage under General Permit No. CAS000001.
73. The action to revise waste discharge requirements for the existing portions of this facility is exempt from the provisions of the California Environmental Quality Act (CEQA; Public Resources Code Section 21000 et. seq.) in accordance with Title 14, California Code of Regulations, Section 15301.
74. On 11 March 2005, the California State Department of Parks and Recreation filed a CEQA Notice of Exemption with the State Clearinghouse for the proposed improvements to the WWTF.
75. The projects, as approved by the California State Department of Parks and Recreation, may degrade water quality, possibly to the degree that water quality objectives will be violated, beneficial uses impacted, and pollution, contamination, or nuisance created. However, Discharge Prohibition A.7, Effluent Limitations C, Leachfield and Septic Tank Specifications E.6, Groundwater Limitations G, and Provisions H.1, H.4, H.6, and H.8, among others, should mitigate or avoid pollution, nuisance, contamination, exceedance of water quality objectives, and impacts on beneficial uses.
76. Section 13267(b) of the CWC provides that: "In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report 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 No. R5-2006-0043” are necessary to assure compliance with these waste discharge requirements. The Discharger owns and operates the facilities that discharge waste subject to this Order.

77. The California Department of Water Resources sets standards for the construction and destruction of groundwater wells, 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 CWC section 13801, apply to all monitoring wells.
78. State regulations that prescribe procedures for detecting and characterizing the impact of waste constituents from waste management units on groundwater are found in Title 27, CCR, section 20005, et seq. (hereafter Title 27). While the WWTF is exempt from Title 27, the data analysis methods of Title 27 may be appropriate for determining whether the discharge complies with the terms for protection of groundwater specified in this Order.
79. The discharge authorized herein and the treatment and storage facilities associated with the discharge, except for discharges to land of residual sludge and solid waste, are exempt from the requirements of Title 27. The exemption, pursuant to Title 27 section 20090(a), is based on the following:
  - a. The waste consists primarily of domestic sewage and treated effluent;
  - b. The waste discharge requirements are consistent with water quality objectives; and
  - c. The treatment and storage facilities described herein are comparable in function to a municipal wastewater treatment plant.
80. Pursuant to CWC section 13263(g), discharge is a privilege, not a right, and adoption of this Order does not create a vested right to continue the discharge.

### **Public Notice**

81. 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.
82. The Discharger and interested agencies and persons were notified of the intent to prescribe waste discharge requirements for this discharge, and provided an opportunity to submit written views and recommendations and to be heard in a public meeting.
83. In a public meeting, all comments pertaining to the discharge were heard and considered.

**IT IS HEREBY ORDERED** that Order No. 98-045 is rescinded and, pursuant to Sections 13263 and 13267 of the California Water Code, the State of California Department of Parks and Recreation, its

agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted hereunder, shall comply with the following:

*[Note: Other prohibitions, conditions, definitions, and some methods of determining compliance are contained in the attached "Standard Provisions and Reporting Requirements for Waste Discharge Requirements" dated 1 March 1991.]*

**A. Discharge Prohibitions**

1. Discharge of wastes to surface waters or surface water drainage courses is prohibited.
2. Bypass or overflow of untreated or partially treated waste is prohibited.
3. Discharge of sewage from the sanitary sewer system at any point upstream of the designated disposal areas, including septic tanks, is prohibited. Discharge of treated wastewater outside of the leachfield disposal areas and spray irrigation areas is prohibited.
4. Surfacing of waste within or downgradient of the leachfields is prohibited.
5. After **1 October 2006**, discharge of effluent to the spray disposal field is prohibited unless the Discharger submits, and the Executive Officer approves, the report described by Provision No. H.1.e.
6. Discharge of waste classified as 'hazardous' under Title 23, CCR, Section 2521, or as 'designated' under of CWC section 13173 is prohibited, including any discharge of sludge.
7. The presence of leachate within one foot of the lowest finished leachfield grade is prohibited.

**B. Discharge Specifications**

1. The monthly average inflow to the existing leachfield shall not exceed 3,000 gpd. After **31 December 2006**, the existing leachfield shall only be used on an emergency basis.
2. The monthly average inflow to the new leachfield shall not exceed 19,000 gpd.
3. Disposal of effluent shall be confined to the designated leachfield areas and sprayfield as defined in the Findings of this Order.
4. The wastewater treatment and disposal areas shall not cause a condition of pollution or nuisance as defined by Section 13050 of the CWC.
5. Public contact with wastewater in the leachfield disposal areas and spray irrigation areas shall be precluded or controlled through such means as fences and signs, or acceptable alternatives.

6. No waste constituent shall be released or discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of the Groundwater Limitations.
7. Objectionable odor originating from the leachfield disposal and spray irrigation areas shall not be perceivable beyond the limits of the disposal areas.
8. As a means of determining compliance with Discharge Specification No. B.7, after 1 October 2006, any wastewater discharged to the sprayfield shall contain a dissolved oxygen content of at least 1.0 mg/l.
9. All treatment, storage, and disposal areas shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.
10. The WWTF shall have sufficient treatment, storage, and disposal capacity to accommodate allowable wastewater flow, inflow and infiltration, and design seasonal precipitation during the winter months. 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.

**C. Effluent Limitations**

1. Effluent discharged to the North Grove leachfields and spray disposal field shall not exceed the following limits:

<u>Constituent</u>	<u>Units</u>	<u>Monthly Average</u>
Total Dissolved Solids	mg/L	230
Formaldehyde	mg/L	0.1 <sup>1</sup>
Ammonia	mg/L	1.5 <sup>1</sup>
Zinc	mg/L	2.1 <sup>1</sup>
Phenol	mg/L	2.1 <sup>1</sup>

<sup>1</sup>Limits based on groundwater water quality objectives

2. Effluent discharged to leachfields or sprayfields shall not have a pH less than 6.5 or greater than 8.4.
3. After **1 October 2006**, effluent discharged to the sprayfields shall not exceed a monthly median of 23 MPN/100 ml and a daily maximum of 240 MPN/100ml for total coliform organisms.

**D. Sprayfield Specifications**

1. Application of effluent shall comply with the following setback requirements:

<u>Setback Definition</u> <sup>1</sup>	<u>Minimum Irrigation Setback (feet)</u>
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<u>Setback Definition</u> <sup>1</sup>	<u>Minimum Irrigation Setback (feet)</u>
Edge of spray disposal area to property boundary	50
Edge of spray disposal area to public road	50
Edge of spray disposal area to irrigation well	100
Edge of spray disposal area to domestic well	100
Edge of spray disposal area to manmade or natural surface water drainage course <sup>2</sup>	50

<sup>1</sup> As defined by the wetted area produced during irrigation.

<sup>2</sup> Excluding ditches used exclusively for tailwater return.

2. Irrigation runoff (i.e., tailwater) shall be completely contained within the designated spray disposal area and shall not enter any surface water drainage course.
3. Irrigation of effluent shall not be performed within 24 hours of a forecasted storm, during a storm, within 24 hours after any measurable precipitation event, or when the ground is saturated.
4. Spray irrigation of effluent is prohibited when wind velocities exceed 30 mph.
5. The spray disposal area 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 must 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 effluent.

**E. Leachfield and Septic Tank Specifications**

The Discharger shall complete the following actions regarding all septic tanks and leachfields:

1. Operate all systems and equipment to maximize treatment of wastewater and optimize the quality of the discharge. In particular, the Discharger shall comply with the following items, and shall describe their implementation in the Operation and Maintenance Plan required by the Provisions. The frequency of each task may be modified upon written request by the Discharger and written approval by the Executive Officer. The written request must clearly show that the reduction in frequency will not have the potential to impact water quality.
2. Inspect each septic tank at least annually.
3. Cut vegetation in the leachfield area as needed to prevent threat of root intrusion into the leachlines and drainage rocks, and remove the vegetative litter.

4. Annually evaluate whether wastewater is evenly distributed to all the disposal trenches and make modifications to the distribution system as necessary to optimize distribution and preclude the depth of wastewater in any disposal trench within 12 inches of the ground surface.
5. Annually inspect, and if necessary, clean the leachfields' distribution piping.
6. Properly maintain the septic tanks, including pumping a tank when any one of the following conditions exist, or can be reasonably projected to occur before the next inspection of a tank:
  - a. The combined thickness of sludge and scum exceeds one-third of the tank depth of the second compartment,
  - b. The scum layer is within three inches of the outlet device; or,
  - c. The sludge layer is within eight inches of the outlet device.
7. Promptly repair or replace septic tanks that are cracked or otherwise damaged.
8. Clean septic tank filters on a regular basis.
9. Maintain a 100-foot buffer zone between the nearest point of the leachfields to any year-round surface water course, spring, domestic well, and/or irrigation well. A 50-foot buffer zone shall be maintained between the nearest point of the leachfields and any seasonal drainage course.
10. Maintain a 50-foot buffer zone between the leachfields and the nearest property boundary.

#### **F. General Solids Disposal Specifications**

Sludge means the solid, semisolid, and liquid residues removed during the wastewater treatment processes.

1. Sludge shall be removed from septic tanks as needed to ensure optimal operation and optimal life of the leachfield disposal areas, but no less frequently than as specified in Leachfield and Septic Tank Specifications E.6.
2. Sludge that accumulates in the concrete clear well and distribution boxes shall be removed as needed to ensure the protection and optimal life of the WWTF.
3. Sludge removal shall be by a licensed liquid waste hauler and documented by copies of manifests.
4. Disposal of residual sludge and solid waste must be to a facility operated in accordance with valid waste discharge requirements issued by a regional water quality control board.



**G. Groundwater Limitations**

1. Release of waste constituents from the leachfields or sprayfield shall not cause groundwater, as determined by an approved monitoring well network, to:
  - a. Contain any of the following constituents in concentrations greater than as listed:

<u>Constituent</u>	<u>Units</u>	<u>Limitation</u>
Total Coliform Organisms	MPN/100 mL	Less than 2.2
Total Dissolved Solids <sup>a</sup>	mg/L	230
Total Nitrogen	mg/L	10
Formaldehyde	mg/L	Non Detect
Ammonia	mg/L	Non Detect
Zinc	mg/L	Non Detect
<u>Phenol</u>	mg/L	Non Detect

<sup>a</sup> A cumulative impact limit that accounts for several dissolved constituents

- b. Exhibit a pH of less than 6.5 or greater than 8.4 pH units.
  - c. Impart taste, odor, toxicity, or color that creates nuisance or impairs any beneficial use.

**H. Provisions**

1. All of the following reports shall be submitted pursuant to Section 13267 of the California Water Code and shall be prepared by a registered professional as described by Provision H.3.
  - a. By **25 May 2006**, the Discharger shall submit and implement a spray irrigation management plan for the sprayfield. At a minimum, the plan shall explain how the sprayfield will be managed to prevent runoff into surface water drainages and/or into the buffer areas. To do so, the plan shall (1) describe how vegetation will be managed within the sprayfield such that spray irrigation sprinklers and piping can be inspected and maintained to prevent tailwater runoff; (2) show the locations and boundaries of the sprayfield, locations of all sprinkler lines and sprinkler heads, setbacks from property boundaries, surface water bodies and drainages; and (3) explain the methods for turning on and off the spray irrigation system.
  - b. By **1 July 2006**, the Discharger shall submit a report certifying that it has installed a device to accurately monitor wastewater flows being discharged to the existing North Grove leachfield. The report shall provide a description of the type of flow metering device that was installed and show that it has been calibrated.
  - c. By **15 August 2006**, the Discharger shall submit and implement an *Operation and Maintenance (O&M) Plan* for the WWTF within Calaveras Big Trees State Park. The O&M Plan shall instruct field personnel on how to manage the day-to-day discharge operations to comply with the terms and conditions of this Order and how to make field adjustments, as necessary, to optimize the effectiveness and life of the leachfields and

preclude nuisance conditions (e.g., surfacing wastewater). It shall also include a troubleshooting flowchart with recommend remedial actions and a description of notification requirements. The O&M Plan shall address management of the WWTF in sufficient detail to optimize compliance with this Order, and most particularly Leachfield and Septic Tank Discharge Specifications E.4 and E.6, including the following:

- i. An inspection procedure for checking the integrity of septic tanks.
- ii. A description of the type, location, and procedure for calibration of the flow meter(s) installed to comply with the Monitoring and Reporting Program.
- iii. The procedures to be implemented to assure that wastewater is evenly distributed within the disposal trenches and wastewater will not be disposed of when the depth of wastewater in any trench is within 12 inches of the ground surface.

The Discharger shall ensure that an up-to-date O&M Plan is readily available to operating personnel at all times, and that personnel are familiar with it

- d. By **15 August 2006**, the Discharger shall submit an *Effluent Collection System Operation, Maintenance, Overflow Prevention, and Response Plan* (ECS Plan) that describes the actions designed to prevent or minimize the potential for collection system overflows. The Discharger shall maintain the ECS Plan in an up-to-date condition and shall amend the ECS Plan whenever there is a change (e.g., in the design, construction, operation, or maintenance of the effluent collection system) that materially affects the potential for overflows, or whenever there is an overflow. The Discharger shall ensure that the up-to-date ECS Plan is readily available to operating personnel at all times and that the personnel are familiar with it.
  - i. At a minimum, the operation and maintenance portion of the ECS Plan shall contain or describe the following:
    1. Detailed maps of the effluent collection system, identifying locations of cleanouts and air relief valves;
    2. A detailed listing of elements to be inspected, a description of inspection procedures and inspection frequency, and sample inspection forms;
    3. A schedule for routine inspection of all pipelines, valves, and other key system components. The inspection/testing program shall be designed to reveal problems that might lead to accidental spills and ensure that preventive maintenance is completed;
    4. Provisions for repair or replacement of defective equipment.
  - ii. At a minimum, the overflow prevention and response portion of the ECS Plan shall contain or describe the following:
    1. Identification of areas of the collection system that historically have overflowed and an evaluation of the cause of the overflow;

2. Maintenance activities that can be implemented to address the cause of the overflow and means to prevent future overflows;
  3. Procedures for responding to overflows designed to minimize the volume of overflow that enters surface waters, and minimize the adverse effects of overflows on water quality and beneficial uses; and
  4. Steps to be taken when an overflow or spill occurs, and procedures that will be implemented to ensure that all overflows and spills are properly identified, responded to and reported to appropriate agencies, and if necessary, the public.
- e. **After 1 October 2005, and at least 90 days prior** to any further use of the sprayfield, the Discharger shall submit a report describing and certifying that (a) a wastewater disinfection system has been constructed, is capable of meeting effluent limits prescribed by this Order, and is fully operational, and (b) all of the setback requirements prescribed in Sprayfield Area Specifications have been met. In addition, the Discharger shall propose a reasonable flow limit based on hydraulic, infiltration, and evapotranspiration rates. Finally, the Discharger shall submit a groundwater well installation workplan for characterization of groundwater quality at the sprayfield. The workplan shall describe the installation of sufficient monitoring wells to allow evaluation of the groundwater quality upgradient and down gradient of the sprayfield. Every monitoring well shall be constructed to yield representative samples from the uppermost layer of the uppermost aquifer and to comply with applicable well standards. The workplan shall be consistent with, and include the items listed in, the first section of Attachment C, *“Items to be Included in a Monitoring Well Installation Workplan and a Monitoring Well Installation Report of Results.”* As described in the Prohibitions, written approval by the Executive Officer is required prior to re-initiating discharge to the sprayfield.
- f. **By 31 December 2006**, the Discharger shall submit a report certifying that it has installed a flow meter capable of monitoring flows discharged to the sprayfield and new proposed leachfield. The report shall provide a description of the type of flow meter that was installed and show that it has been calibrated.
- g. **By 31 December 2006**, the Discharger shall submit a groundwater well installation report showing that it has installed monitoring wells at the new leachfield per an approved Groundwater Monitoring Well Installation Workplan. The well installation report shall be consistent with, and include the items listed in, the second section of Attachment C. The report shall describe the installation and development of the monitoring wells around the the new leachfield and explain any deviation from the approved workplan.
- h. **By 31 December 2006**, the Discharger shall submit a report certifying that the new wastewater conveyance and leachfield system have been constructed in accordance with this Order, and that an alarm system has been added to the lift station.
- i. **By 31 December 2006**, the Discharger shall submit a report certifying that an effluent filter has been installed on the outlet port of the septic tank, and that the repairs to the collection system, as described in Finding No. 10, have been completed. The report

shall (1) describe the type of effluent filter, and (2) provide a map showing those areas of the collection system that were either slipped lined or for which piping was replaced.

- j. By **1 July 2009**, the Discharger shall submit a *Background Groundwater Quality Study Report*. For each groundwater monitoring parameter/constituent identified in the MRP, the report shall present a summary of monitoring data, calculation of the concentration in background monitoring wells, and comparison of background groundwater quality to that in wells used to monitor the facility. Determination of background quality shall be made using the methods described in Title 27, Section 20415(e)(10), and shall be based on data from at least eight consecutive quarterly (or more frequent) groundwater monitoring events. For each monitoring parameter/constituent, the report shall compare measured concentrations for compliance monitoring wells with: 1) the calculated background concentration, and 2) the interim numeric limitations set forth in Groundwater Limitation G.1.a. Where background concentrations are statistically greater than the interim limitations specified in Groundwater Limitation G.1.a, the report shall recommend final groundwater limitations for waste constituents listed therein. Subsequent use of a concentration as a final groundwater limitation will be subject to the discretion of the Executive Officer.
2. Upon completion of tasks set forth in Provision H.1, the Regional Board may consider the evidence provided and make a determination regarding whether the Discharger has justified continued discharge from the WWTF as consistent with water quality policies and plans and the CWC or whether substantial evidence indicates continued discharge should not be permitted due to violated water quality objectives, impaired beneficial uses, pollution, nuisance or contamination, or unreasonable degradation.
3. 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, 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 contain the professional's signature and/or stamp of the seal.
4. The Discharger shall comply with the Monitoring and Reporting Program No. R5-2006-0043, which is part of this Order, and any revisions thereto as ordered by the Executive Officer.
5. 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)."
6. The Discharger shall use the best practicable treatment and control techniques, including proper operation and maintenance, to assure compliance with terms of this Order.

7. In event of overflow from the effluent collection system, the Discharger shall take all necessary remedial action to control and limit the volume of sewage discharged, and terminate the overflow as rapidly as possible. Necessary remedial actions may include, but are not limited to, the following:
  - a. Interception and rerouting of sewage flows around the collection line failure;
  - b. Vacuum truck recovery to the extent practical of sanitary sewer overflows and wash down water;
  - c. Use of portable aerators in surface waters where complete recovery of the spilled sewage is not feasible and severe oxygen depletion is expected;
  - d. Cleanup of sewage-related debris at the overflow site; and
  - e. Disinfection and posting of the area.
8. The Discharger shall report to the Regional 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."
9. The Discharger shall not allow waste-free wastewater to be discharged into the wastewater collection, treatment, and disposal system. Waste-free wastewater means rainfall (roof gutters, yard drainage), groundwater, cooling waters, and condensates that are essentially free of wastes.
10. The Discharger shall submit to the Regional Board on or before each compliance report due date, the specified document or, if appropriate, a written report detailing compliance or noncompliance with the specific schedule date and task. If noncompliance is being reported, then the Discharge 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 Regional Board in writing when it returns to compliance with the time schedule.
11. In the event of any change in control or ownership of the facility or wastewater disposal areas, 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 this office. 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 Regional 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 California Water Code. Transfer shall be approved or disapproved by the Executive Officer.

12. The Discharger must comply with all conditions of this Order, including timely submittal of technical and monitoring reports as directed by the Executive Officer. Violations may result in enforcement action, including Regional Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or recession of this Order.
13. When it appears that any leachfield within the system is showing signs of failure (sustained wastewater in disposal trenches at or near the maximum design depth), then the Discharger shall increase the frequency of observation well monitoring and shall initiate construction of the replacement community leachfield when this condition cannot be mitigated by distribution system adjustments and the surfacing of effluent will be otherwise unavoidable.
14. A copy of this Order shall be kept at the WWTF for reference by operating personnel. Key operating personnel shall be familiar with its contents.
15. The Regional Board will review this Order periodically and will revise requirements when necessary.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 5 May 2006.

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PAMELA C. CREEDON, Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2006-0043

FOR

STATE OF CALIFORNIA, DEPARTMENT OF PARKS AND RECREATION  
CALAVERAS BIG TREES STATE PARK  
WASTEWATER TREATMENT FACILITY  
CALAVERAS COUNTY

This Monitoring and Reporting Program (MRP) describes requirements for monitoring treated effluent, septic tanks, leachfields, sprayfields, and groundwater. 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. Regional Board staff shall approve specific sample station locations prior to implementation of sampling activities.

All samples should be representative of the volume and nature of the discharge or matrix of material sampled. 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 test 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 field calibrated prior to each monitoring event;
3. Instruments are serviced and/or calibrated per the manufacturer's recommended frequency; and
4. Field calibration reports are submitted as described in the "Reporting" section of this MRP.

**SEPTIC TANK MONITORING**

The Discharger shall monitor all septic tanks at all eight wastewater treatment and disposal systems within the park (i.e., North Grove, Mumbert House, Residences, Oak Hollow Campground, etc.) and report this information in the annual reports. Septic tanks shall be inspected annually as described below.

<u>Parameter</u>	<u>Units</u>	<u>Type of Measurement</u>	<u>Minimum Inspection</u>	<u>Reporting Frequency</u>
Sludge depth and scum thickness in the first compartment of each septic tank <sup>1</sup>	Feet	Staff Gauge	Annually	Annually
Distance between bottom of scum layer and bottom of outlet device <sup>1</sup>	Inches	Staff Gauge	Annually	Annually
Distance between top of sludge layer and bottom of outlet device <sup>1</sup>	Inches	Staff Gauge	Annually	Annually

<sup>1</sup> The Discharger shall visually inspect the tanks for signs of damage, leakage, or deterioration

The Discharger shall retain records of each inspection, by facility, noting the date, measured readings and calculations. The Discharger will also record when cleaning is required, the condition of the tank, and the date that cleaning or repair occurred and by whom. Copies of the Liquid Waste Hauler manifests shall be retained for review as with any other record concerning documentation of compliance with the Order. The cumulative volume removed from each facility shall be reported annually.

### EFFLUENT MONITORING

The Discharger shall conduct effluent monitoring of the wastewater exiting the North Grove septic tank. Samples shall be collected from the clear well prior to discharge to any disposal area. Effluent monitoring shall include, at a minimum, the following:

<u>Constituents</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Total Flow to disposal areas	gpd	Meter	Daily	Monthly
Flow to existing leachfield	gpd	Estimated <sup>2</sup>	Daily	Monthly
Flow to new leachfield	gpd	Meter <sup>1</sup>	Daily	Monthly
Flow to sprayfield	gpd	Meter <sup>1</sup>	Daily	Monthly
Total Coliform Organisms <sup>3</sup>	MPN/100mL	Grab	Weekly	Monthly
BOD <sub>5</sub>	mg/L	Grab	Monthly <sup>4</sup>	Monthly
Total Dissolved Solids	mg/L	Grab	Monthly <sup>4</sup>	Monthly
Nitrate as Nitrogen	mg/L	Grab	Monthly <sup>4</sup>	Monthly
Total Kjeldahl Nitrogen	mg/L	Grab	Monthly <sup>4</sup>	Monthly
Zinc	mg/L	Grab	Monthly <sup>4</sup>	Monthly
Ammonia	ug/L	Grab	Monthly <sup>4</sup>	Monthly
Phenols	ug/L	Grab	Monthly <sup>4</sup>	Monthly
Formaldehyde	ug/L	Grab	Monthly <sup>4</sup>	Monthly
Standard Minerals <sup>5</sup>	mg/L	Grab	Annually	Annually

<sup>1</sup> From flow meter readings

<sup>2</sup> From flow meter or other flow measuring device

<sup>3</sup> Monitoring for Total Coliform Organisms shall occur only when discharge to the sprayfield occurs.

<sup>4</sup> Samples shall be collected monthly for the months of May through October; however, for the months of November through April, samples shall be only collected in January and March.

<sup>5</sup> Standard Minerals shall include, at a minimum, the following elements and compounds: boron, calcium, iron, magnesium, manganese, sodium, potassium, chloride, sulfate, total alkalinity (including alkalinity series), and hardness.

### LEACHFIELD AREA MONITORING

The Discharger shall conduct a visual inspection of each leachfield within the park on a weekly basis between the months of May through October of each year. For the months of November through April, the leachfields shall be inspected on a semi-monthly basis (i.e., twice per month). Results shall be recorded and submitted with the monthly monitoring report. Photocopies of entries into an operator's log are acceptable. Evidence of surfacing wastewater, erosion, field saturation, runoff, or the presence of nuisance conditions shall be noted in the report. If surfacing water is found, then a sample shall be



collected and tested for total coliform organisms and total dissolved solids. In addition to the visual inspections, monitoring of the North Grove existing and new leachfields shall include the following:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Wastewater Application Rate <sup>1</sup>	gal/acre•day	Calculated	Monthly	Monthly
Leachline Riser Inspection <sup>2,3</sup>	Inches	Measurement	May through October, January, March	Monthly

<sup>1</sup> The application rate for each leachfield

<sup>2</sup> The Discharger shall measure and record the distance from the surface of the liquid in the observation port to the surface of the ground in the active lateral(s). In addition, the Discharger shall record when lateral distribution lines are switched.

<sup>3</sup> Monitoring of leachline riser pipes is only required for the new leachfield.

### SPRAYFIELD AREA MONITORING

Monitoring of the sprayfield areas shall be conducted **daily** when the area is used, and the results shall be included in the monthly monitoring report. Evidence of erosion, saturation, irrigation runoff, or the presence of nuisance conditions shall be noted in the report. Effluent monitoring results shall be used in calculations to ascertain loading rates at the sprayfield. Monitoring shall include the following:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Flow	Gallons	Continuous	Daily	Monthly
Rainfall	Inches	Observation	Daily	Monthly
Acreage Applied <sup>1</sup>	Acres	Calculated	Daily	Monthly
Wastewater Application Rate <sup>2</sup>	gal/acre/day	Calculated	Daily	Monthly

<sup>1</sup> Land application areas shall be identified.

<sup>2</sup> For each land application area.

At least **once per week** when the spray disposal areas are being used, the entire sprayfield area shall be inspected on the morning following an irrigation event to identify any equipment malfunction or other circumstances that might allow irrigation runoff to leave the irrigation area and/or create ponding conditions that violate the Waste Discharge Requirements. A daily log of these inspections shall be kept at the facility and made available for review upon request. If the spray disposal areas are not used, then the monthly monitoring reports shall so state.

### GROUNDWATER MONITORING

Beginning with the **Fourth Quarter of 2006**, the Discharger shall conduct the following groundwater monitoring program. Prior to construction of any groundwater monitoring wells, the Discharger shall submit plans and specifications to the Board for review and approval. Once installed, all new wells shall be added to the MRP, and shall be sampled and analyzed according to the schedule below.

Because of the high elevation of this facility, groundwater samples need only be collected during the second, third, and fourth quarters each year. Prior to sampling, groundwater elevations shall be measured and the wells shall be purged of at least three well volumes or until temperature, pH, and electrical conductivity have stabilized. Depth to groundwater shall be measured to the nearest 0.01 foot. Water table elevations shall be calculated and used to determine groundwater gradient and direction of flow. Samples shall be collected using approved EPA methods. Groundwater monitoring shall include, at a minimum, the following:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling and Reporting Frequency<sup>4,5</sup></u>
Groundwater Elevation <sup>1</sup>	0.01 Feet	Measurement	Quarterly
Depth to Groundwater	0.01 Feet	Calculated	Quarterly
Gradient	Feet/Foot	Calculated	Quarterly
Gradient Direction	Degrees	Calculated	Quarterly
Coliform <sup>2</sup>	MPN/100mL	Grab	Quarterly
PH	Standard Units	Grab	Quarterly
Total Dissolved Solids	mg/L	Grab	Quarterly
Nitrates as Nitrogen	mg/L	Grab	Quarterly
Total Kjeldahl Nitrogen	mg/L	Grab	Quarterly
Formaldehyde	mg/L	Grab	Quarterly
Ammonia	mg/L	Grab	Quarterly
Zinc	mg/L	Grab	Quarterly
Phenol	mg/L	Grab	Quarterly
Standard Minerals <sup>3</sup>	mg/L	Grab	Annually

<sup>1</sup> Groundwater elevation shall be based on depth-to-water using a surveyed measuring point elevation on the well and a surveyed reference elevation.

<sup>2</sup> Using a minimum of 15 tubes or three dilutions

<sup>3</sup> Standard Minerals shall include, at a minimum, the following elements and compounds: boron, calcium, iron, magnesium, manganese, sodium, potassium, chloride, sulfate, total alkalinity (including alkalinity series), and hardness.

<sup>4</sup> Beginning with Fourth Quarter 2006

<sup>5</sup> Samples need only to be collected during the second, third, and fourth quarters of each year.

## REPORTING

In reporting monitoring data, the Discharger shall arrange the data in tabular form so that the date, sample type (e.g., effluent, leachfield, 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 in the next scheduled monitoring report.

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 Geologist and signed and stamped by the registered professional.

### A. Monthly Monitoring Reports

Monthly reports shall be submitted to the Regional Board on the **1<sup>st</sup> 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 effluent, leachfield areas, and sprayfield monitoring;
2. After 31 December 2006, whether an emergency occurred that required that wastewater be disposed of at the original North Grove leachfield, and if so, a description of the emergency and how it will be prevented in the future;
3. Whether the sprayfield was used;
4. A comparison of monitoring data to the discharge specifications and an explanation of any violation of those requirements. Data shall be presented in tabular format;
5. If requested by staff, copies of laboratory analytical report(s); and
6. A calibration log verifying calibration of all hand held monitoring instruments and devices used to comply with the prescribed monitoring program.

## **B. Quarterly Report**

Beginning with the Fourth Quarter 2006, the Discharger shall establish a quarterly sampling schedule for groundwater monitoring such that samples are obtained approximately every three months for the second, third, and fourth quarters of the year. Quarterly monitoring reports shall be submitted to the Board by the 1<sup>st</sup> day of the second month after the quarter (i.e. the April-June quarterly report is due by August 1<sup>st</sup>) each year. The Quarterly Report shall include the following:

1. Results of groundwater monitoring. The results of regular monthly monitoring reports for June, September and December may be incorporated into their corresponding quarterly monitoring report;
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 and discussion of seasonal trends, if any;
4. A narrative discussion of the analytical results for all groundwater locations monitored, including spatial and temporal trends, with reference to summary data tables, graphs, and appended analytical reports (as applicable);
5. A comparison of the monitoring data to the groundwater limitations and an explanation of any

violation of those requirements;

6. Summary data tables of historical and current water table elevations and analytical results;
7. A scaled map showing relevant structures and features of the facility, the locations of monitoring wells and any other sampling stations, and groundwater elevation contours referenced to mean sea level datum; and
8. Copies of laboratory analytical report(s) for groundwater monitoring.

### **C. Annual Report**

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

1. The contents of the regular monthly monitoring report for the last month of the year;
2. If requested by staff, tabular and graphical summaries of all data collected during the year;
3. Results of the effluent annual monitoring;
4. A description of activities to control vegetation in the leachfield area;
5. Annual summary of the septic tank inspections for the year, including the number of tanks for which cleaning and pumping occurred, and from compilation of Liquid Waste Hauler Manifests, the volumes of waste removed;
6. A statement of when the O&M Manual was last reviewed for adequacy, and a description of any changes made during the year;
7. A description of the annual evaluation of effluent distribution and adjustments made, if any;
8. A summary of maintenance and repair activities which were performed on the wastewater collection system;
9. A statement regarding whether the flow meter(s) were calibrated during the year;
10. Attached documents as verification of each operator's certification; and
11. A discussion of any 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.

A letter transmitting the self-monitoring reports shall accompany each report. Such a 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 a statement by the discharger, or the discharger's authorized agent, under penalty of perjury, that to the best of the signer's knowledge the report is true, accurate and complete.

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

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PAMELA C. CREEDON, Executive Officer

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5 May 2006  
(Date)

## INFORMATION SHEET

ORDER NO. R5-2006-0043  
STATE OF CALIFORNIA, DEPARTMENT OF PARKS AND RECREATION  
CALAVERAS BIG TREES STATE PARK  
WASTEWATER TREATMENT FACILITY  
CALAVERAS COUNTY

### **Facilities and Discharge**

The State of California Department of Parks and Recreation owns, operates, maintains, and monitors eight separate wastewater treatment and disposal systems within Calaveras Big Trees State Park. The wastewater systems include collection, treatment, storage, and disposal facilities.

The largest of the eight wastewater treatment and disposal systems is the North Grove WWTF which serves facilities within the North Grove Campground area, including the five restrooms within the campground; two restrooms within the day use areas; and restrooms at the visitor center, ranger office, park kiosk, Jack Knight Hall, and RV/trailer dump station. The Discharger assumed that approximately 300 campers and 500-day use visitor would use the North Grove facilities on a daily basis, and that approximately 7,000 gallons per day (gpd; maximum basis) of wastewater will be generated.

The North Grove WWTF consists of a collection system, 20,000 gallon septic tank, effluent conveyance system, leachfields (existing and new), and sprayfield. The existing leachfield is within a cut on a steep hillside approximately 450 feet west of the septic tank and has approximately 400 lineal feet of six inch diameter perforated piping. Because of performance issues with the existing leachfield system, the Discharger proposes to construct and utilize a new leachfield. The new leachfield disposal area will consist of approximately 1,330 lineal feet of leachline located in an area encompassing approximately 35,000 square feet. The Discharger has calculated that the amount of leachlines to be installed can dispose of approximately 19,900 gpd, which is three times more than the projected flows from the North Grove facilities.

Historically, the Discharger has utilized a spray disposal field in the summer months to dispose of undisinfected wastewater. The sprayfield is on a fairly steep hillside, is approximately one half acre in size, and has eight irrigation riser pipes. The irrigation heads on the riser pipes are bubbler type heads. The Discharger's RWD indicates that the Discharger was not going to disinfect wastewater prior to discharge to the spray disposal fields, but was planning on installing a tailwater collection ditch or detention berm along the downhill side of the spray irrigation field to capture any tailwater runoff and stormwater runoff from the spray disposal fields. Because of staff's concerns about the practicality of containing all storm water runoff (including snowmelt) from the sprayfield, the Discharger indicated that improvements (i.e., tailwater/stormwater control or disinfection) will not be made at this time due to funding issues and therefore the sprayfield will be valved off and taken out of service. The Discharger states that if funding does become available, the sprayfield may be modified and brought back into service. The Discharger needs to continue to use the sprayfield until the new leachfield is constructed in 2006. However, this Order only allows the use of the sprayfield beyond 1 October 2006 if the Discharger submits, and the Executive Officer approves, a report certifying that a wastewater disinfection system has been constructed, is capable of meeting effluent limits prescribed by this Order, and is fully operational.

The other seven wastewater treatment and disposal systems throughout the park are septic tank/leachfield systems. The systems serve seasonal residences for park personal, maintenance shops, and small campgrounds. The Discharger's report of waste discharge did not provide any information on the design capacity of each of these small systems.

### **Basin Plan, Beneficial Uses, and Regulatory Considerations**

Surface water drainage from the North Grove WWTF and five small onsite septic tank leachfield systems is to San Antonio Creek, a tributary to the South Fork of the Calaveras River, which flows into New Hogan Reservoir. Surface water drainage from the other three small septic tank leachfield systems is to the North Fork of the Stanislaus River, which flows to New Melones Reservoir. The *Water Quality Control Plan for the California Regional Water Quality Control Board Central Valley Region, Fourth Edition* (Basin Plan), designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin. Beneficial uses often determine the water quality objectives that apply to a water body. For example, waters designated as municipal and domestic supply must meet the maximum contaminant levels (MCLs) for drinking waters. The Basin Plan sets forth the applicable beneficial uses (industrial, agricultural, and domestic supply in this instance) of groundwater, procedure for application of water quality objectives, and the process for and factors to consider in allocating waste assimilation capacity.

### **Antidegradation**

The antidegradation directives of Section 13000 of the California Water Code require that waters of the State that are better in quality than established water quality objectives be maintained "consistent with the maximum benefit to the people of the State." Waters can be of high quality for some constituents or beneficial uses and not others. Policies and procedures for complying with this directive are set forth in the Basin Plan (including by reference State Board Resolution No. 68-16, "Statement of Policy With Respect to Maintaining High Quality Waters in California," or "Antidegradation" Policy).

Resolution 68-16 is applied on a case-by-case, constituent-by-constituent basis in determining whether a certain degree of degradation can be justified. It is incumbent upon the Discharger to provide technical information for the Board to evaluate that fully characterizes:

- All waste constituents to be discharged;
- The background quality of the uppermost layer of the uppermost aquifer;
- The background quality of other waters that may be affected;
- The underlying hydrogeologic conditions;
- Waste treatment and control measures;
- How treatment and control measures are justified as best practicable treatment and control;
- The extent the discharge will impact the quality of each aquifer; and

- The expected degradation to water quality objectives.

In allowing a discharge, the Board must comply with CWC section 13263 in setting appropriate conditions. The Board is required, relative to the groundwater that may be affected by the discharge, to implement the Basin Plan and consider the beneficial uses to be protected along with the water quality objectives essential for that purpose. The Board need not authorize the full utilization of the waste assimilation capacity of the groundwater (CWC 13263(b)) and must consider other waste discharges and factors that affect that capacity.

Certain waste constituents in municipal wastewater are not fully amenable to waste treatment and control and it is reasonable to expect some impact on groundwater. Some degradation for certain constituents is consistent with maximum benefit to the people of California because the technology, energy, water recycling, and waste management advantages of municipal utility service to the state far outweigh the environmental impact damage of a community that would otherwise be reliant on numerous concentrated individual wastewater systems. Economic prosperity of local communities is of maximum benefit to the people of California, and therefore sufficient reason to accommodate increases in wastewater discharge provided terms of reasonable degradation are defined and met. The proposed Order authorizes some degradation consistent with the maximum benefit to the people of the state, but does not authorize pollution.

Groundwater monitoring has never been conducted at the site and therefore, staff are unable to establish the most appropriate groundwater limits. In addition, certain aspects of waste treatment and control practices may not be justified as representative of best practicable treatment and control (BPTC). Reasonable time is necessary to gather specific information about the WWTF and the site to make informed, appropriate, long-term decisions. This proposed Order, therefore, establishes interim receiving water limitations to assure protection of the beneficial uses of groundwater of the State, pending the completion of certain tasks, and provides time schedules to complete specified tasks. The Discharger is expected to identify, implement, and adhere to, BPTC as individual practices are reviewed and upgraded in this process. During this period, degradation may occur from certain constituents, but can never exceed water quality objectives (or background water quality should it exceed objectives) or cause nuisance.

Water quality objectives define the least stringent limits that could apply as water quality limitations for groundwater at this location, except where background quality unaffected by the discharge already exceeds the objective. The values below reflect water quality objectives that must be met to maintain specific beneficial uses of groundwater. Unless natural background for a constituent proves higher, the groundwater quality limit established in proposed Order is the most stringent of the values listed for the listed constituents.



<u>Constituent</u>	<u>Units</u>	<u>Value</u>	<u>Beneficial Use</u>	<u>Criteria or Justification</u>
Ammonia	mg/L	1.5	MUN <sup>1</sup>	Taste and Odor <sup>2</sup>
Nitrate as N	mg/L	10	MUN <sup>1</sup>	Primary MCL <sup>6</sup>
Nitrite as N	mg/L	1	MUN <sup>1</sup>	Primary MCL <sup>6</sup>
Total Dissolved Solids	mg/L	450 <sup>7</sup>	AGR <sup>3</sup>	Protection of salt sensitive crops <sup>4</sup>
		500	MUN <sup>1</sup>	Recommended Secondary MCL <sup>5</sup>
		1,000	MUN <sup>1</sup>	Recommended Upper MCL <sup>5</sup>
Total Coliform Organisms	MPN/100 ml	Less than 2.2	MUN <sup>1</sup>	Basin Plan
pH	pH Units	6.5 to 8.4	MUN <sup>1</sup>	Secondary MCL <sup>4</sup>
Formaldehyde	mg/L	0.1	MUN <sup>1</sup>	Human Health <sup>8</sup>
Zinc	mg/L	2.0	AGR <sup>3</sup>	Recommended Secondary MCL <sup>5</sup>
Phenol	mg/L	2.1	MUN <sup>1</sup>	Human Health <sup>9</sup>

- 1 Municipal and domestic supply
- 2 J.E. Amooore and E. Hautala, *Odor as an Aid to Chemical Safety: Odor Thresholds Compared with Threshold Limit Values and Volatilities for 214 Industrial Chemicals in Air and Water Dilution*, Journal of Applied Toxicology, Vol. 3, No. 6 (1983).
- 3 Agricultural supply
- 4 Ayers, R. S. and D. W. Westcot, Water Quality for Agriculture, Food and Agriculture Organization of the United Nations – Irrigation and Drainage Paper No. 29, Rev. 1, Rome (1985)
- 5 Title 22, California Code of Regulations (CCR), section 64449, Table 64449-B
- 6 Title 22, CCR, section 64431, Table 64431-A
- 7 Title 22, CCR, section 64439
- 8 DHS notification level based on toxicity
- 9 U.S. EPA IRIS reference dose

Domestic wastewater contains numerous dissolved inorganic waste constituents (i.e., salts, minerals) that together comprise total dissolved solids (TDS). Each component constituent is not individually critical to any beneficial use. Critical constituents are individually listed. The cumulative impact from these other constituents, along with the cumulative affect of the constituents that are individually listed can be effectively controlled using TDS as a generic indicator parameter.

Not all TDS constituents pass through the treatment process and soil profile in the same manner or rate. Chloride tends to pass through both rapidly to groundwater. As chloride concentrations in most groundwaters in the region are much lower than in treated municipal wastewater, chloride is a useful indicator parameter for evaluating the extent to which effluent reaches groundwater. Boron is another TDS constituent that may occur in wastewater in concentrations greater than groundwater depending on the source water and the extent residents use cleaning products containing boron. Other indicator constituents for monitoring for groundwater degradation due to recharged effluent include total coliform bacteria, ammonia and total nitrogen.

### **Treatment Technology and Control**

Given the character of domestic wastewater and limitation on resources for a small discharge, the Regional Board can focus on the water quality objective for three main indicator parameters to regulate an acceptable degree of impact on water quality: TDS, total coliform, and nitrogen. Because RV waste is also accepted at this facility, the Regional Board must also focus on the main parameters in that waste stream (ammonia, zinc, phenols, and formaldehyde).

Total coliform organisms, the indicator parameter for pathogenic organisms, should not be found in groundwater under a well-sited and designed subsurface disposal system. The applicable water quality objective and threshold of impact on beneficial use is less than 2.2. MPN/100 ml. To continue to discharge, the WWTF must consistently reduce coliform organisms to this level, which should be achievable at the design percolation rates despite the substandard separation from groundwater. If not met, the Discharger must investigate additional treatment, including but not limited to disinfection, to assure the water quality objective is met.

Domestic wastewater typically contains nitrogen, in several forms, in concentrations greater than water quality objectives. Nitrogen may be removed to some degree during the soil infiltration/treatment process, but the reduction may not be sufficient in this concentrated leachfield application to assure compliance with the governing water quality objective, the MCL for nitrate of 10 mg/L. If the MCL is exceeded, the Discharger must investigate additional treatment to assure the water quality objective is met. This may include, but not be limited to, nitrification and denitrification.

Waste constituents that are forms of salinity pass through the treatment process and soil profile and effective control of long-term affects relies upon effective source control. Long-term discharge of domestic wastewater with higher concentrations of TDS than groundwater will degrade that groundwater until the groundwater concentrations reflect the balance of wastewater input and groundwater recharge, particularly for the more conservative components of TDS (e.g., sodium and chloride). The quality of source water for the Big Trees State Park WWTFs is exceptional, with a TDS of 27 mg/L. Salt addition through use should be within the expected range, and therefore the TDS effluent limit has been set at 230 mg/L. For comparison, the national average increment for TDS ranges from 100 to 300 mg/L, according to *Wastewater Engineering* by Metcalf & Eddy; the incremental maximum in the Basin Plan for the Tulare Lake Basin is 500 umhos/cm (about 300 mg/L); and the incremental average standard allowed in the Santa Ana Basin in 230 mg/L. Exceeding the governing water quality objective, 450 mg/L based on sensitive crop protection from irrigation use of water, is not at risk. However, degradation to 450 mg/L cannot be considered reasonable, as practices that might increase effluent concentrations such as the use of self-regenerating water softeners cannot be considered necessary with this quality of water supply and the brines would endanger the effectiveness of the leachfields. The proposed Order contains an effluent limit and groundwater limit of 230 mg/L. The limit is more restrictive than the water quality objective, but has no economic impact on the Discharger as it should be no more stringent than existing water quality.

Other constituents in treated domestic waste that may pass through the treatment process and the soil profile include recalcitrant organic compounds (e.g., ethylene glycol, or antifreeze), and septic tank additives that park employees might use to decrease the need for tank cleanings. This Order requires regular user education to control these types of constituents, and expressly prohibits the discharge of hazardous waste or designated waste to the septic tanks. Therefore, such constituents are not expected to be present in the effluent discharged to the leachfields.

This Order contains an effluent pH limitation, but as normal domestic waste falls within the prescribed range for groundwater quality, this effluent limitation should have no impact except to encourage user education about dumping acidic and basic chemicals into the sewerage system.

The leachfield design assumes sustained infiltration through the entire bottom and sidewall area of the disposal trenches, which is not uncommon but certainly not a conservative design. It is imperative that extraneous water sources be precluded from entering the effluent collection system and leachfield area. Pool drainage, inflow and infiltration, and rainfall run-on to the leachfield area should all be controlled to the extent feasible. The proposed Order focuses on user rules and education.

### **Title 27**

Title 27, CCR, section 20005 et seq. ("Title 27"), contains regulations to address certain discharges to land. Title 27 establishes a waste classification system, specifies siting and construction standards for containment of classified waste, requires extensive monitoring of groundwater and the unsaturated zone for any indication of failure of containment, and specifies closure and post-closure maintenance requirements. Generally, no degradation of groundwater quality by any waste constituent is acceptable pursuant to these regulations.

Discharges of domestic sewage and treated effluent can be treated and controlled to a degree that will not result in unreasonable degradation of groundwater. For this reason, treatment and storage facilities associated with municipal wastewater treatment plants have been conditionally exempted from Title 27, except for the discharge to land of residual sludge and solid waste generated as part of the treatment process [section 20090(a) of Title 27]. The condition requires that the discharge be regulated by waste discharge requirements (WDRs), or that WDRs have been waived, and that the discharge not result in violation of any water quality objective in groundwater.

### **Proposed Order Terms and Conditions**

#### **Discharge Prohibitions and Specifications**

The proposed Order establishes an average monthly dry weather flow limit of 3,000 gpd and 19,000 gpd for the existing leachfield and new leachfield, respectively, for the North Grove WWTF. After December 2006, discharge of effluent to the existing leachfield is allowed only on an emergency basis. The Discharger needs to continue to use the spray field until the new leachfield is constructed in 2006. However, this Order only allows the use of the spray field beyond 1 October 2006 if the Discharger submits, and the Executive Officer approves, a report certifying that a wastewater disinfection system has been constructed, is capable of meeting effluent limits prescribed by this Order, and is fully operational.

#### **Monitoring Requirements**

Section 13267 of the CWC authorizes the Board to require monitoring and technical reports as necessary to investigate the impact of a waste discharge on waters of the state. In recent years there has

been increased emphasis on obtaining all necessary information, assuring the information is timely as well as representative and accurate, and thereby improving accountability of any discharger for meeting the conditions of discharge. Section 13268 of the CWC authorizes assessment of administrative civil liability where appropriate.

The proposed Order includes monitoring requirements for septic tanks, septic tank effluent, leachfields, sprayfield, and groundwater.

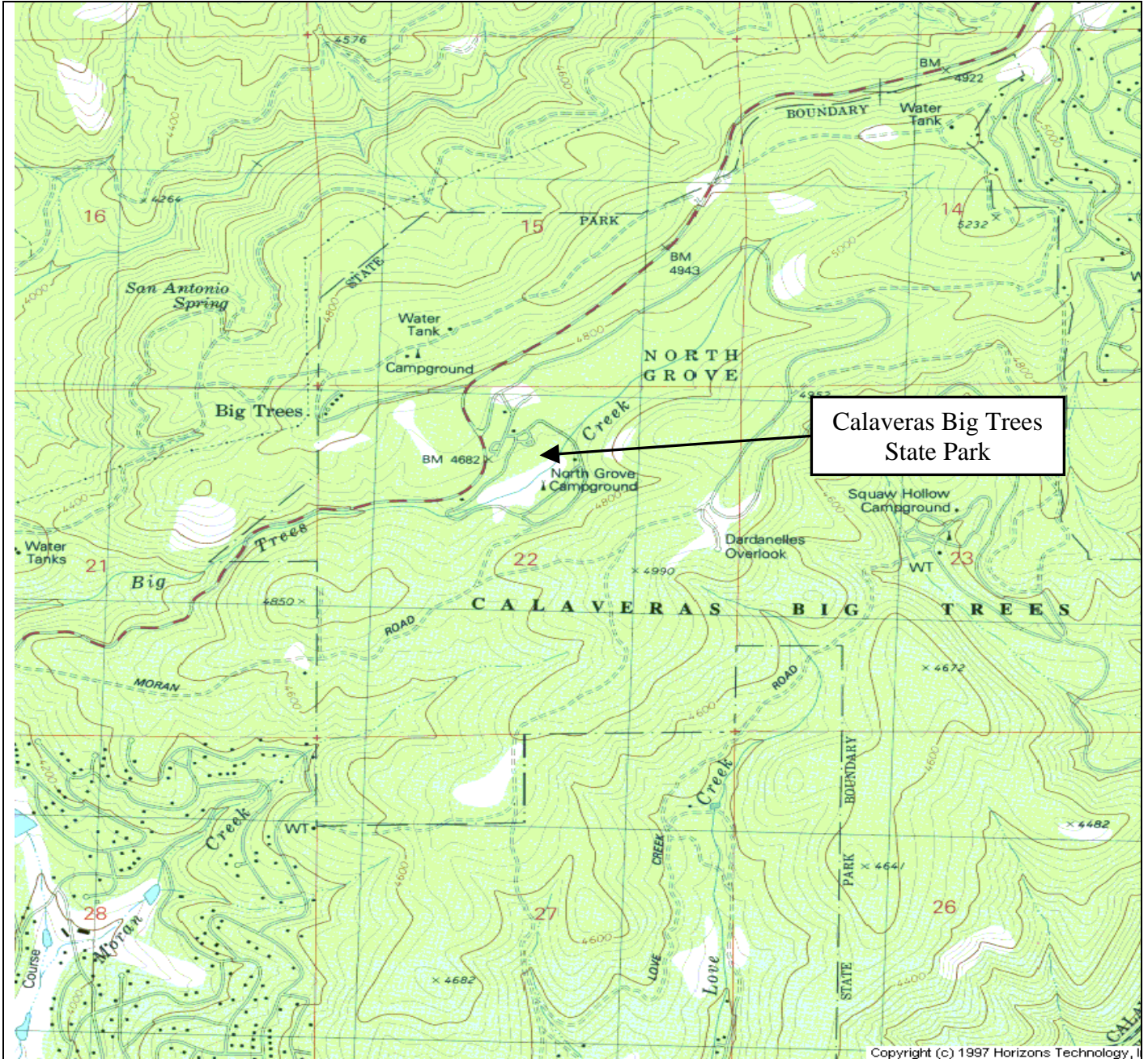
The Title 27 zero leakage protection strategy relies heavily on extensive groundwater monitoring to increase a discharger's awareness of, and accountability for, compliance with the prescriptive and performance standards. With a high volume, concentrated, uncontained discharge to land, monitoring takes on even greater importance. The proposed Order includes monitoring of applied waste quality, application rates, and groundwater.

Title 27 regulations pertaining to groundwater monitoring and the detection and characterization of waste constituents in groundwater have been in effect and successfully implemented for many years. No regulation currently specifies similar criteria more suitable for a situation where extensive infiltration into groundwater occurs. However, where, as here, such infiltration occurs, it is appropriate that the Title 27 groundwater monitoring procedures be extended and applied on a case-by-case basis under Water Code section 13267.

The Discharger must monitor groundwater for constituents present in the discharge and capable of reaching groundwater and violating groundwater limitations if its treatment and control, and any dependency of the process on sustained environmental attenuation, proves inadequate.

### **Reopener**

The conditions of discharge in the proposed 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. However, information is presently insufficient to develop final effluent and groundwater limitations, so the proposed Order contains interim limitations. Additional information must be developed and documented by the Discharger as required by schedules set forth in the proposed Order. As this additional information is obtained, decisions will be made concerning the best means of assuring the highest water quality possible and that could involve substantial cost. It may be appropriate to reopen the Order if applicable laws and regulations change, but the mere possibility that such laws and regulations may change is not sufficient basis for reopening the Order. The CWC requires that waste discharge requirements implement all applicable requirements.

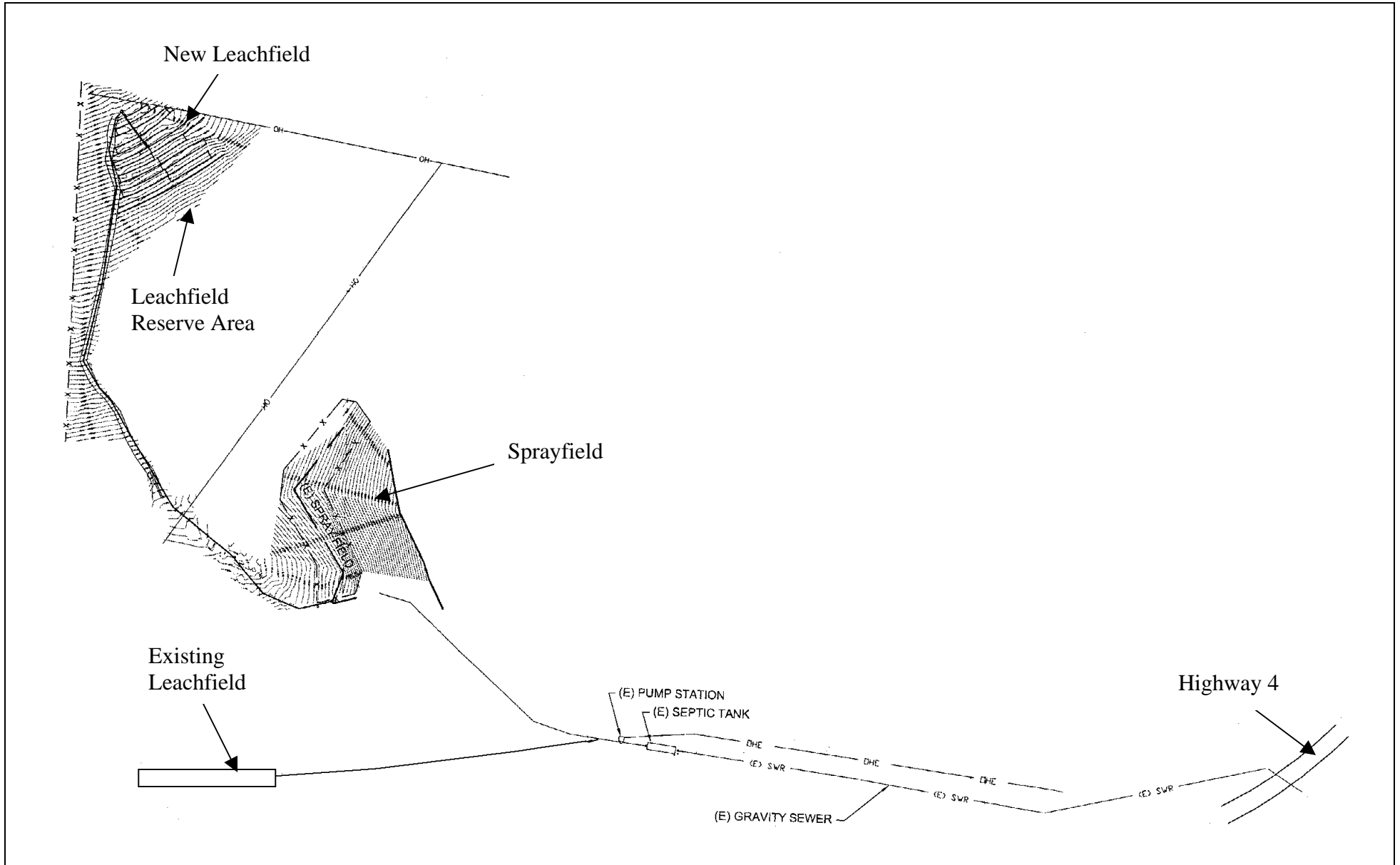


Drawing Reference:  
  
 U.S.G.S TOPOGRAPHIC MAP  
 7.5 MINUTE QUADRANGLE

**SITE LOCATION MAP**  
  
 STATE OF CALIFORNIA  
 DEPARTMENT OF PARKS AND RECREATION  
 CALAVERAS BIG TREES STATE PARK WWTF

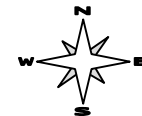
approx. scale  
 1 in. = 24,000 ft.

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**DRAWING REFERENCE:**  
Calaveras Big Trees Site Plan- C.1  
Approximate Scale  
Not to Scale

State of California, Department of Parks and Recreation, Calaveras Big Trees State Park, Wastewater Treatment and Disposal System





# California Regional Water Quality Control Board

## Central Valley Region



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### ATTACHMENT C

**ORDER NO. R5-2006-0043**

### REQUIREMENTS FOR MONITORING WELL INSTALLATION WORKPLANS AND MONITORING WELL INSTALLATION REPORTS

Prior to installation of groundwater monitoring wells, the Discharger shall submit a workplan containing, at a minimum, the information listed in Section 1, below. Wells may be installed after staff approve the workplan. Upon installation of the monitoring wells, the Discharger shall submit a well installation report which includes the information contained in Section 2, below. All workplans and reports must be prepared under the direction of, and signed by, a registered geologist or civil engineer licensed by the State of California.

#### SECTION 1 - Monitoring Well Installation Workplan and Groundwater Sampling and Analysis Plan

The monitoring well installation workplan shall contain the following minimum information:

A. General Information:

- Purpose of the well installation project
- Brief description of local geologic and hydrogeologic conditions
- Proposed monitoring well locations and rationale for well locations
- Topographic map showing facility location, roads, and surface water bodies
- Large scaled site map showing all existing on-site wells, proposed wells, surface drainage courses, surface water bodies, buildings, waste handling facilities, utilities, and major physical and man-made features

B. Drilling Details:

- On-site supervision of drilling and well installation activities
- Description of drilling equipment and techniques
- Equipment decontamination procedures
- Soil sampling intervals (if appropriate) and logging methods

C. Monitoring Well Design (in narrative and/or graphic form):

- Diagram of proposed well construction details
  - Borehole diameter
  - Casing and screen material, diameter, and centralizer spacing (if needed)
  - Type of well caps (bottom cap either screw on or secured with stainless steel screws)

***California Environmental Protection Agency***

- Anticipated depth of well, length of well casing, and length and position of perforated interval
- Thickness, position and composition of surface seal, sanitary seal, and sand pack
- Anticipated screen slot size and filter pack

D. Well Development (not to be performed until at least 48 hours after sanitary seal placement):

- Method of development to be used (i.e., surge, bail, pump, etc.)
- Parameters to be monitored during development and record keeping technique
- Method of determining when development is complete
- Disposal of development water

E. Well Survey (precision of vertical survey data shall be at least 0.01 foot):

- Identify the Licensed Land Surveyor or Civil Engineer that will perform the survey
- Datum for survey measurements
- List well features to be surveyed (i.e. top of casing, horizontal and vertical coordinates, etc.)

F. Schedule for Completion of Work

G. **Appendix: Groundwater Sampling and Analysis Plan (SAP)**

The Groundwater SAP shall be included as an appendix to the workplan, and shall be utilized as a guidance document that is referred to by individuals responsible for conducting groundwater monitoring and sampling activities.

Provide a detailed written description of standard operating procedures for the following:

- Equipment to be used during sampling
- Equipment decontamination procedures
- Water level measurement procedures
- Well purging (include a discussion of procedures to follow if three casing volumes cannot be purged)
- Monitoring and record keeping during water level measurement and well purging (include copies of record keeping logs to be used)
- Purge water disposal
- Analytical methods and required reporting limits
- Sample containers and preservatives
- Sampling
  - General sampling techniques
  - Record keeping during sampling (include copies of record keeping logs to be used)
  - QA/QC samples
- Chain of Custody
- Sample handling and transport

## **SECTION 2 - Monitoring Well Installation Report**

The monitoring well installation report must provide the information listed below. In addition, the report must also clearly identify, describe, and justify any deviations from the approved workplan.



A. General Information:

Purpose of the well installation project

Brief description of local geologic and hydrogeologic conditions encountered during installation of the wells

Number of monitoring wells installed and copies of County Well Construction Permits

Topographic map showing facility location, roads, surface water bodies

Scaled site map showing all previously existing wells, newly installed wells, surface water bodies, buildings, waste handling facilities, utilities, and other major physical and man-made features.

B. Drilling Details (in narrative and/or graphic form):

On-site supervision of drilling and well installation activities

Drilling contractor and driller's name

Description of drilling equipment and techniques

Equipment decontamination procedures

Soil sampling intervals and logging methods

Well boring log

- Well boring number and date drilled
- Borehole diameter and total depth
- Total depth of open hole (same as total depth drilled if no caving or back-grouting occurs)
- Depth to first encountered groundwater and stabilized groundwater depth
- Detailed description of soils encountered, using the Unified Soil Classification System

C. Well Construction Details (in narrative and/or graphic form):

Well construction diagram, including:

- Monitoring well number and date constructed
- Casing and screen material, diameter, and centralizer spacing (if needed)
- Length of well casing, and length and position of perforated interval
- Thickness, position and composition of surface seal, sanitary seal, and sand pack
- Type of well caps (bottom cap either screw on or secured with stainless steel screws)

E. Well Development:

Date(s) and method of development

How well development completion was determined

Volume of water purged from well and method of development water disposal

Field notes from well development should be included in report

F. Well Survey (survey the top rim of the well casing with the cap removed):

Identify the coordinate system and datum for survey measurements

Describe the measuring points (i.e. ground surface, top of casing, etc.)

Present the well survey report data in a table

Include the Registered Engineer or Licensed Surveyor's report and field notes in appendix