CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2009-0003
WASTE DISCHARGE REQUIREMENTS

FOR

AMADOR WATER AGENCY
PINE GROVE COMMUNITY LEACHFIELD SYSTEM
AMADOR COUNTY

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

1. The Amador Water Agency (AWA, hereafter Discharger) submitted a Report of Waste Discharge (RWD) on March 9, 2007 for updating existing Waste Discharge Requirements (WDRs) for Pine Grove Community Leachfield System (CLS). The purpose of the update is to add a new land application area. Supplemental information was received on 17 July 2008 and 6 November 2008.

2. For the purposes of this order, the term "CLS" should mean the effluent collection system including an individual septic tank located at each residence and the community leachfield that treats and disposes of wastewater generated by the Pine Grove community in Amador County.

3. The leachfields are located in Section 4 and 5, T6N, R12E, MDB&M (Assessors Parcel Number 038-010-135), within the Sierra Foothills, east to southeast of State Route 88, approximately 1-mile south of the town of Pine Grove. The general location of the facility is shown on Attachment A, which is attached hereto and made part of this Order by reference.

4. The Amador Water Agency owns the CLS and is responsible for assuring that the design, construction, operation, and maintenance of the entire community collection and treatment system satisfies the terms of this Order.

5. Waste Discharge Requirements (WDRs) Order No. R5-2004-0036, adopted by the Central Valley Water Board on 19 March 2004, prescribes requirements for the CLS. This order is neither adequate nor consistent with the current plans and policies of the Central Valley Water Board.

Existing Leachfield, Proposed Leachfield, and Discharge

6. The CLS treats and disposes of wastewater from the residential homes and commercial properties in Pine Grove communities. The Phase 1 (existing) CLS has a capacity of 28,700 gpd and occupies 16.7 acres of disposal area. It started operation in April 2001. As of July 2007, 76 of the designed 144 equivalent dwelling units (EDUs) had been connected to the CLS. The ratio of residential to commercial properties is 1:1. The Phase 1 site plan is shown on Attachment B.

7. The Phase 1 leachfield has the following features:

   a. The leachfield has five 4,000-gallon dosing tanks. Each dosing tank has two dosing siphons. The dose per discharge is approximately 1,740 gallons;

   b. The leachfield is divided into ten individual leachfields with a total of 21,300 ft of pressure dosed leachlines. The design leaching rate is 1.35 gpd per lineal foot of lateral leachline;

   c. The disposal trenches are approximately three feet wide by two feet deep. The design percolation rate is approximately 0.45 gpd/ft^3;

   d. Each individual leachfield lateral has an inspection riser tube at each end to monitor the drainage capabilities of the disposal line. Each lateral also has a flow control valve to distribute an equal volume of effluent to each disposal.

8. Without expansion of the leachfield, no further hookups will be possible once the designed maximum number of 144 EDUs is reached. The Phase 2 (proposed) 8.6-acre leachfield, which will be located to the south of the Phase 1 leachfield, has a capacity of 15,000 gpd and will service 75 EDUs. The ratio of residential to commercial properties will be 1:4. The Phase 1 and 2 leachfields are both within the 70-acre disposal field boundary owned by the discharger. The Phase 2 site plan is shown on Attachment C.

9. The Phase 2 leachfield will have multiple construction events and will have the following features:

   a. The leachfield will have two 5,000-gallon dosing tanks and each dosing tank will have two dosing siphons. The dosing rate will be approximately 338 gpm;

   b. The leachfield will be divided into four individual subfields with a total of 10,000 ft of pressure dosed leachlines. The design leaching rate is 1.5 gpd per lineal foot of lateral leachline;

   c. The disposal trenches will be approximately three feet wide by three feet deep;

   d. The leachfield will have 4-inch inspection ports at the ends of trenches and all lateral risers will be installed at a 45-degree angle to accommodate cleaning. Each lateral has a flow control valve to distribute an equal volume of effluent to each disposal.

10. The wastewater travels within a 6-inch main line to the leachfield area. The Discharger is able to control the amount of wastewater sent to the various portions of the leachlines. In this way, the Discharger cooperatively manages the Phase 1 and 2 leachfields.

11. The Discharger has installed approximately 30 feet of stormwater diversion pipe near Phase 1 leachfield subarea No.3, and a similar one near Phase 1 leachfield subarea No.9. By design, these pipes divert stormwater runoff away from the leachfield and toward a nearby drainage course that allows for the management of stormwater flow prior to entering Jackson Creek. Aside from leachfield subareas No.3 and No.9, there were no stormwater diversion measures in the leachfields, except for those ditches previously cut in order to dewater some of the maintenance access roads. This Order requires the Discharger to evaluate the need for additional surface or subsurface diversion features in

the Phase 2 leachfield, because of the prevalence of steep grades (25% -40%) and the general proximity of upper leach lines to the top of the slope.

12. On 8 September 2003, the Discharger collected samples of wastewater discharged from the Phase 1 leachfield dosing tanks. In addition, on 9 September 2003, the Discharger collected wastewater samples from one of the Phase 1 leachfield lateral line observation ports. The sample data from each monitoring event are presented below.

Constituent	Units	September 8 Dosing tank Concentration	September 9 Leachfield Observation Port Concentration
pH	Standard Units.	6.5	7.0
Total Dissolved Solids (TDS)	mg/l	236	352
Electrical Conductivity	umhos/cm	582	640
BOD_5	mg/l	72	67
Total Coliform Organisms	MPN/100 ml	>2400	>2400
Total Fecal Organisms	MPN/100 ml	>2400	1600
Total Kjeldahl Nitrogen	mg/l	41	12
Nitrate as NO_3	mg/l	<0.05	3.6
Ammonia as N	mg/l	36	9.7
Chloride	mg/l	48	48
Sodium	mg/l	38	53

Wastewater Collection System

13. Each residential parcel has, or will have, a 1,500-gallon dual compartment water tight septic tank (or equivalent) equipped with an 1/8 inch mesh effluent filter screen and pump assembly installed in the secondary chamber. Each individual on-site septic tank is part of the CLS, and is equipped with check valves to prevent any collection system backflow into the septic tanks.

14. The septic tank systems for commercial parcels vary. A registered Professional Engineer is responsible for the design of each system and the design is submitted and reviewed by the Discharger for approval. To preclude spills, all commercial system designs provide two days of wastewater storage in case of a power outage. All commercial sites issued a permit to serve food by the Amador County Environmental Department must install grease traps.

15. For Phase 1 CLS, a high head submersible pump within each individual septic tank is utilized to pump the effluent to one of two 4-inch schedule 40 HDPE main trunk lines. These main trunk lines have been installed on both the north and south sides of State Route 88. The 4-inch trunk lines manifold into a 6-inch welded HDPE pipe for delivery to the dosing tanks located near the intersection of State Route 88 and Ridge Road. The hydraulic capacity of the north and south 4-inch trunk lines is 280 and 310 gallons per

minute (gpm), respectively. The hydraulic capacity of the 6-inch HDPE trunk line is 590 gpm.

16. As such with Phase 1, the Phase 2 wastewater effluent from each service connection will be pumped via a submersible pump to pressurized PVC mains and then will flow to the existing pressurized main and the disposal system.

17. The collection system does not contain any manholes and has only enough cleanouts to allow flushing of each line. To allow the collection system to breath, air relief valves are located at the system's high points.

18. The sanitary sewer system collects wastewater, and consists of sewer pipes, and/or other conveyance system elements that direct wastewater to the treatment facility. A "sanitary sewer overflow" is defined as a discharge to ground or surface water from the sanitary sewer system at any point upstream of the dosing tanks. Temporary storage and conveyance facilities (such as wet wells, regulated impoundments, tanks, highlines, etc.) may be part of a sanitary sewer system and discharges to these facilities are not considered sanitary sewer overflows, provided that the waste is fully contained within these temporary storage/conveyance facilities and then properly disposed. Sanitary sewer overflow is also defined in State Water Resources Control Board (State Water Board) Order No. 2006-0003-DWQ, Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, which can be found at: http://www.waterboards.ca.gov/resdec/wqorders/2006/wqo/wqo2006_0003.pdf

19. 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/or contractor caused blockages.

20. 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.

21. The Discharger shall take all necessary steps to adequately maintain, operate, and prevent discharges from its sanitary sewer collection system. This Order requires the Discharger to prepare and implement a Sewer System Management Plan (SSMP) consistent with State Water Board Order No. 2006-0003-DWQ and to comply with that Order and its Revised General WDRs Monitoring and Reporting Program (Water Quality Order No. 2008-0002-EXEC).

Site Specific Conditions

22. The average annual rainfall for Pine Grove (elevation 2500 feet) is approximately 45.4 inches per year. Pan evaporation is approximately 47 inches per year and all portions of the leachfield are outside of the 100-year flood zone.

23. The leachfield is within the Sutter Creek Hydrologic Area No. 532.40, as depicted on interagency hydrologic maps prepared by the Department of Water Resources in August 1986.

24. Surface water drainage from the CLS area is to Jackson Creek, a tributary to Dry Creek; Dry Creek flows into the Mokelumne River downstream of Camanche Reservoir.

25. Typical dry season winds are from the west in the evening at 0-10 mph, and winds are from the south and west at 0-20 mph during rainy season.

26. Surrounding land uses are primarily medium and low density residential, commercial, and some limited agricultural.

27. The CLS is located on metasedimentary rocks of the accreted marine deposits. The soil survey indicates that the on-site soils are comprised of the Mariposa-Josephine-Sites soil association. These soils are affiliated with shallow soils underlain by metasedimentary rocks. Site soils are usually clay and moderately to steep on mountain slopes and ridges. The soil depth to bedrock is generally 28 to 84 inches at the Phase 1 leachfield. The site soils have moderate to very rapid in runoff and are severe in erosion.

28. The RWD contained 25 soil profiles collected from the Phase 2 leachfield area. The general soil conditions were relatively deep decomposed granite and well drained. Generally there are 24-48 inches of clay loam on top of 5 to 8 feet of sandy clay loam, with rock at anywhere from 7.5 to over 12 feet. Most of soils in the Phase 2 leachfield are deeper than soils in the Phase 1 leachfield. The limiting permeability would be 0.04 ft/day.

29. Slopes in the Phase 1 leachfield range from 18 to 50 percent. Slopes on the Phase 2 leachfield are all in excess of 4 percent, and range from 25 to 40 percent. Soil stability could be an issue under saturated soil conditions. The leachfields may also receive additional water from stormwater runoff from the land surrounding the leachfield.

30. Due to the moderate to steep sloping hillsides on which the leachfield disposal areas were constructed, the surface water drainage is in immediate proximity to the bottom of some of the leachfield disposal areas. Since there is the potential for wastewater to flow into the surface water and Jackson Creek, this Order requires the Discharger to monitor surface water in Jackson Creek.

31. Pine Grove drinking water is provided by the Pine Grove Community Service District and is obtained from the Mokelumne River. The ten samples taken in 2007 show the range of the concentration of TDS in Pine Grove's water distribution system was 26 mg/l to 82 mg/l, with an average of 41 mg/l. The Discharger is required to obtain supply water monitoring reports from the Pine Grove Community Service District and submit them in its report to the Central Valley Water Board.

Groundwater Concerns

32. There are seventeen abandoned shallow (10 to 15 feet deep) groundwater monitoring wells (shown on Attachment B), which were determined inadequate for collection of groundwater samples because of their design and depth.

33. The installation of five groundwater monitoring wells for the Phase 1 leachfield (see Attachment B) was completed during August 2005. Each well was constructed of flush-threaded 2-inch diameter schedule 40 PVC. The initial ground water elevation results are presented in the following table, which indicates that the groundwater elevations range from about 2,293 feet to 2,427 feet Mean Sea Level. The highest groundwater elevation was observed in upgradient monitoring well PGMW-1 and the lowest groundwater elevation was observed in downgradient monitoring well PGMW-4, which is about 500 ft north of the Phase 2 leachfield.

Well	Well Depth (ft)	Groundwater Elevation (ft)	Depth to Water (ft)
PGMW-1	165.5	2427.06	137.42
PGMW-2	48.5	2391.07	27.97
PGMW-3	72.0	2303.23	29.46
PGMW-4	82.0	2293.20	21.65
PGMW-5	82.0	2303.59	38.13

34. The RWD states that the groundwater under the Phase 1 leachfield is semi-confined to confined, and flow direction is southwest with an approximate hydraulic gradient of 0.13 ft/ft. No specific information on depth to groundwater exists for the Phase 2 site. Based on the location of the new site, the Discharger estimated that groundwater would range between 50 feet to 140 feet below ground surface.

35. Groundwater quality has been characterized by quarterly sampling of monitoring wells at the Phase 1 leachfield. A summary of average groundwater quality from the third quarter 2005 to the first quarter 2008 is presented in the table below:

Well	Electrical conductivity (umhos/cm)	pH (SU)	Turbidity (NTU)	Nitrate as N (mg/l)	TKN (mg/l)	TDS (mg/l)
PGMW-1	105	6.1	4	0.08	<1.0	109
PGMW-2	92	5.4	1	0.05	<1.0	62
PGMW-3	124	6.3	3	0.05	<1.0	138
PGMW-4	84	6.1	149	0.17	<1.0	95
PGMW-5	155	6.3	851	0.07	1.9	335

36. In general, groundwater quality is good and the analytic concentrations are less than the current WDR groundwater limit and Water Quality Objectives. However, some wells contain water constituents at higher concentrations than the limits. The water quality trend are describe below:

    a. The groundwater monitoring results show that the pH values range from 4.35 to 6.9, which are lower than the water quality limit 6.5 to 8.4. The low pH values may be at natural conditions since the background well PGMW-1 was observed at an average pH value of 6.1.

    b. The groundwater TDS concentration has an average of 109 mg/l in upgradient monitoring well PGMW-1 and an average of 98 mg/l in three downgradient wells PGMW-2 to PGMW-4. The PGMW-5 TDS readings ranged from 160 to 736 mg/l, and averaged 335 mg/l, which is higher than the current WDR TDS limit of 310 mg/l. In addition, this well has historically high turbidity (from 38 to greater than 999 NTU) and iron concentration. The RWD states that PGMW-5 would not seem to be the most qualified source of drawing conclusions regarding CLS performance with respect to TDS. The proposed order requests the Discharger evaluate the groundwater monitoring well network and submit a groundwater monitoring workplan.

    c. None of the monitoring wells contained an average nitrate as nitrogen that exceeds the water quality limit of 10 mg/l.

    d. The monitoring results of total coliform organism from the third quarter of 2005 to the second quarter 2008 are listed below. Five monitoring wells have at times shown higher concentrations of total coliform organism than the water quality limit of 2.2 MPN/100ml for groundwater. The high readings mainly occurred in all wells during the fourth quarter of 2005 and the first quarter of 2006. The reason for this increase may be linked to the high rainfall events of that year or sampling methods. These high readings are not repeated, and sampling will continue to provide site-specific data to determine the threat.

	Total Coliform (MPN/100ml)				
Date	PGMW-1	PGMW-2	PGMW-3	PGMW-4	PGMW-5
3Q05	<2	2	<2	4	2
4Q05	900	7	9	2	22
1Q06	14	32	17	170	6
2Q06	<2	<2	<2	<2	2
3Q06	<2	<2	<2	<2	2
4Q06	6.1	<2	<2	<2	<2
1Q07	2	<2	<2	<2	<2
2Q07	<2	<2	<2	70	<2
3Q07	<2	<2	<2	<2	<2
4Q07	<2	<2	<2	<2	4
1Q08	<2	<2	<2	<2	<2

37. The Discharger reports that based on an assumed nitrogen effluent concentration of 58 mg/l and a leachfield disposal rate of 43,000gpd, which includes Phase 1 and Phase 2 leachfields, the estimated nitrogen loading will be 7,596 lbs/year. However, no estimated nitrate as nitrogen loading data is included in the RWD.

38. Based on an assumed average effluent TDS concentration 330 mg/l, the total TDS loadings of Phase 1 and Phase 2 leachfields are about 1650 lbs/acre/ year and 1756 lbs/acre/ year, respectively. Considering the 45 inches precipitation per year and that 40% of this would normally infiltrate, the TDS as water percolating the CLS would be a maximum of 188 mg/l. This would increase the last two year's average background water TDS from 88 mg/l to two levels, which has been the case in the downgradient monitoring wells PGMW-3 and PGMW-4 with the last two year's average TDS of 122 mg/l. RWD states that it would be expected that some increases in TDS would occur due to the elevated TDS of the percolate over the background TDS levels in some monitoring wells. However, the expected TDS concentration would be below the current WDR TDS limit of 310 mg/l.

39. Historic groundwater monitoring data shows no TDS concentration exceeding 310 mg/l except in PGMW-5, which is scheduled to be replaced due to inappropriate well construction. In addition, the Discharger anticipates that there will be no TDS exceedences if the limit continues to be 310 mg/l. A groundwater limitation of TDS 310 mg/l represents no change in practice for the Discharger, and limits salt degradation to a reasonable amount while providing protection of the groundwater beneficial use. As a result, this limitation is acceptable for the proposed WDR.

Basin Plan, Beneficial Uses and Water Quality Objectives

40. The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition, (hereafter Basin Plan) encourages conservation and reuse, 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 California Water Code, waste discharge requirements must implement the Basin Plan.

41. Surface water drainage is to Jackson Creek, which is tributary to the Mokelumne River. The designated beneficial uses of the Mokelumne River downstream of the Camanche Reservoir are agricultural supply; 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.

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

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

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

45. In summary, the narrative toxicity objective requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life associated with designated beneficial uses. Quantifying a narrative water quality objective requires a site-specific evaluation of those constituents that have the potential to impact water quality and beneficial uses.

46. The Basin Plan's numeric water quality objective for bacteria requires that the most probable number (MPN) of coliform organisms over any seven-day period shall be less than 2.2 per 100 ml in MUN groundwater. The applicability of this objective to groundwater designated as MUN has been affirmed by State Water Board Order No. WQO-2003-0014 and by subsequent decisions of the Sacramento County Superior Court and California Court of Appeal, 3rd Appellate District.

47. The Water Quality Control Plan for the Tulare Lake Basin, Second Edition, contains salt management requirements that have been successfully implemented for several decades. The Tulare Basin Plan establishes several salt management requirements, including:

    a. Control the incremental increase in salts from use and treatment to the fullest extent possible. Further, the maximum EC shall not exceed the EC of the source water plus 500 umhos/cm, which is 350 mg/l TDS calculated using a ratio 1:0.7 of EC to TDS. When the source water is from more than one source, the EC shall be a weighted average of all sources.

    b. Discharges to areas that may recharge good quality groundwaters shall not exceed an EC of 1,000 umhos/cm, a chloride content of 175 mg/L, or a boron content of 1.0 mg/L.

    These effluent limits are considered best practicable treatment or control (BPTC).

48. State Board Order WQO-2003-0014 upholds the Central Valley Water Board's use of numeric groundwater limits, and states that numeric groundwater limits must be restricted to those constituents present in the waste, breakdown products of constituents present in the waste, and those that might be leached from the soil beneath the wastewater disposal area. The Groundwater Limitations of this Order comply with State Board Order No. WQO-2003-0014.

Antidegradation Analysis

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

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

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

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

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

50. Some of the typical waste constituents released with discharge from a municipal wastewater utility after effective source control, treatment, and control may still result in the degradation of groundwaters beyond background conditions. However, such degradation, as may be expected to occur in the vicinity of the CLS, would be substantially less than the overall groundwater degradation that would be experienced should the community instead utilize numerous concentrated individual wastewater systems. In addition, the technology, energy, water recycling, and waste management advantages of municipal utility service far exceed any benefits derived from individual wastewater systems. Therefore, the degradation that may occur as a result of the installation and operation of the CLS is consistent with the maximum benefit to the people of the state because it facilitates growth and economic prosperity in the region, and has an overall positive effect on water quality. Beneficial uses of the groundwater are protected. This permit also implements BPTC through the use of a CLS, an alternative preferred over individual wastewater systems. This permit therefore is consistent with Resolution 68-16.

51. Constituents of concern that have the potential to degrade groundwater include salts (primarily TDS, sodium, and chloride), nutrients and coliform organisms, as discussed below:

a. The TDS of the effluent currently averages approximately 357 mg/l in 2007, which is consistent with the Tulare Lake Basin Plan's established effluent limit of 350 mg/l over the source water TDS of 41 mg/l. Circumstances and conditions with respect to treatment and control of salinity in the Sacramento-San Joaquin River Basin are similar to those of the Tulare Lake Basin. Therefore, the discharge will likely not impair the beneficial uses of groundwater due to increased salinity. Based on best professional judgment, an incremental increase of 350 mg/l over the source is BPTC for the effluent.

b. For nutrients such as nitrate, the potential for unreasonable degradation depends not only on the quality of the treated effluent, but the ability of the vadose zone below the leachfields to provide an environment conducive to nitrification and denitrification to convert the effluent nitrogen to nitrate and the nitrate to nitrogen gas before it reaches the water table. The California primary MCL for nitrate is equivalent to 10 mg/l as nitrogen, and groundwater beneath the facility is designated as municipal or domestic supply. It is therefore appropriate to adopt a numerical groundwater limitation of 10 mg/l for nitrate as nitrogen to protect the municipal and domestic use of groundwater.

c. For coliform organisms, the potential for exceedance of the Basin Plan's numeric water quality objective depends on the ability of vadose zone soils below the leachfields and saturated soils within the shallow water-bearing zone to provide adequate filtration. Sampling will continue to provide site-specific data to determine the threat. It is

therefore appropriate to adopt a numerical groundwater limitation of 2.2 MPN/100ml for total coliform organisms to protect the municipal and domestic use of groundwater.

52. There is not sufficient data at this time to determine whether unreasonable groundwater degradation has, or likely will, result from the discharge. It is the responsibility of the Discharger to provide information for the Central Valley Water Board to evaluate whether any degradation caused by the discharge is consistent with Resolution No. 68-16. It is also appropriate to allow some groundwater degradation as long as it is consistent with the Basin Plan and Resolution No. 68-16 because economic prosperity of local communities and associated industry is of benefit to the people of California. This Order establishes terms and conditions of discharge to ensure that the discharge does not unreasonably affect present and anticipated uses of groundwater and includes groundwater limitations that apply water quality objectives established in the Basin Plan to protect beneficial uses.

53. The CLS provides minimal treatment of wastewater and is highly dependent upon proper management and waste constituent attenuation in the leachfield 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 that meet 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. Further, this Order requires the Discharger to submit with its next RWD for expansion, a Feasibility Study that provides for an investigation to improve treatment and disposal, and to develop a protocol to provide service to its sphere of influence.

Treatment and Control Practices

54. The Discharger currently provides treatment and control of the discharge that incorporates:
    a. Water tight testing for all site septic tanks;
    b. Installing effluent filters on septic tank discharge plumbing, which will reduce BOD and TSS of effluent to leachfields;
    c. Pressure dosing and rotating of dosed fields, which will optimize equal distribution throughout leachfield and aerobic conditions in trenches;
    d. Minimizing the load to any one location within the leachfield, thereby maximizing treatment/disposal potential of leachfield field;
    e. A Sanitary Sewer Operation, Maintenance, Overflow Prevention and Response Plan;
    f. An operation and maintenance (O&M) manual; and
    g. Certified operators to ensure proper operation and maintenance.

55. In order to determine ongoing compliance with Resolution No. 68-16, it is appropriate to establish a schedule for sampling of groundwater monitoring wells and to 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 BPTC and the highest water quality consistent with the maximum benefit to the people of the state will be achieved.

56. This Order establishes groundwater limits for the CLS that do not unreasonably threaten the present and anticipated beneficial uses or result in groundwater quality that exceeds water quality objectives set forth in the Basin Plan. Accordingly, the discharge is consistent with Resolution 68-16 and the Basin Plan.

Other Regulatory Considerations

57. On 2 May 2006, the State Water Board adopted Statewide General Waste Discharge Requirements for Sanitary Sewer Systems General Order No. 2006-0003-DWQ (General Order). The General Order requires all public agencies that own or operate sanitary sewer systems greater than one mile in length to comply with the Order. The Discharger's collection system exceeds one mile in length, therefore the General Order is applicable.

58. Section 13267(b) of the California Water Code provides that: "*In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of 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. R5-2009-0003* are necessary to assure compliance with these waste discharge requirements. The Discharger owns and operates the facility that discharges the waste subject to this Order.

59. The action to adopt waste discharge requirements for this existing facility is exempt from the provisions of the California Environmental Quality (CEQA), in accordance with Title 14 CCR, Section 15301.

60. The Amador County Planning Commission adopted a Negative Declaration for the Pine Grove CLS on 25 March 1999. The evaluation is based on the 100-acre disposal area and the wastewater capacity of 28,750 gpd. This document states that there is no substantial evidence that the project may have a significant effect on the environment. The mitigated negative declaration was adopted in accordance with the California Environmental Quality Act (CCR, Title 14, Section 15261 et. seq.).

61. On 3 March 2005, Amador County Board of Supervisors adopted a Negative Declaration for the Pine Grove Bluffs Tentative Subdivision Map No. 123 by Del Rapini Construction, which rezones the 30.7-acre land into 28 residential home parcels. The wastewater generated from this new development will discharge to the Phase 2 leachfield. In the initial study, the answer for "Exceed wastewater treatment requirements of the applicable Regional Water Quality Board?" is "less than significant with mitigation incorporated". It also states "The project will rely on an existing water system, requiring minor infrastructure improvements to provide service to the resultant parcels. New offsite construction and /or expansion of the wastewater system is also possible. This work will be completed almost entirely within the area reviewed by a prior environment document prepared by the Amador Water Agency prior to construction of the existing wastewater facilities".

62. The California Department of Water Resources sets standards for the construction and destruction of groundwater wells (hereafter DWR Well Standards), as described in California Well Standards Bulletin 74-90 (June 1991) and Water Well Standards: State of California Bulletin 94-81 (December 1981). These standards, and any more stringent standards adopted by the state or county pursuant to CWC Section 13801, apply to all monitoring wells used to monitor the impacts of wastewater storage or disposal governed by this Order. Those wells that do not have a construction log, boring log, or County permit may not be used for monitoring associated with this Order.

63. 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 20380. While the CLS 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.

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

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

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

    a. The waste consists of domestic sewage, including residential and light commercial, 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 facility.

67. 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

68. All the above and the supplemental information and details in the attached Information Sheet, which is incorporated by reference herein, as well as the Central Valley Water Board's administrative record, were considered in establishing the following conditions of discharge.

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

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

IT IS HEREBY ORDERED that Order No.R5-2004-0036 is rescinded, and that pursuant to sections 13263 and 13267 of the California Water Code, the Amador Water Agency, 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. Discharge of wastewater at a location or in a manner different from that described in the Findings is prohibited.
3. Discharge of waste classified as "hazardous" under Title 23 CCR Chapter 15, Section 2521, or "designated," as defined in Section 13173 of CWC is prohibited, , including any discharge of sludge.
4. Bypass or overflow of untreated or partially treated waste is prohibited.
5. Surfacing of waste within or downgradient of the leachfields is prohibited.
6. The presence of leachate within one foot of ground surface elevation of the lowest finished disposal field is prohibited.
7. The use of the Phase 2 leachfield is prohibited until the discharger has submitted, and the Executive Officer has approved, the *Phase 2 Completion Report* pursuant to Provision F.1.c.

B. Discharge Specifications

1. The monthly average inflow to the leachfield system shall not exceed 28,700 gpd. Upon approval of the Phase 2 Completion Report by the Executive Officer, the monthly average flow rate may be increased to a maximum of 43,700 gpd.

2. The wastewater treatment and leachfield areas shall not cause pollution or a nuisance as defined by Section 13050 of the CWC.

3. Public contact with wastewater in the leachfield area shall be precluded or controlled through such means as fences and signs, or acceptable alternatives.

4. 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.

5. Objectionable odor originating from the leachfield area shall not be perceivable beyond the limits of the leachfield area.

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

7. Disposal of wastewater shall be confined to each leachfield area defined in this Order.

8. Prior to connection to the CLS, the Discharger inspects all individual onsite wastewater systems (i.e. septic tanks, electrical, alarms, pumps, etc).

9. The Discharger shall 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. The Discharger shall:

    a. Inspect each septic tank at least annually, including measurement of the top of solids, and the top and bottom of the scum layer. Pumping of solids is required whenever the solids clear space or scum clear space is inadequate (less than three inches and less than eight inches, respectively).

    b. Whenever septic tanks fail the annual inspection, pump orders are issued to the septic tank owners. The Discharger then performs a follow-up inspection to ensure tanks work properly. Homeowners and business owners must have the septic tank pump out in a timely manner by a licensed septic hauler.

c. 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.

d. 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.

e. Annually inspect, and if necessary, clean the leachfield distribution pipes.

f. 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:

1. The combined thickness of sludge and scum exceeds one-third of the tank depth of the second compartment,
2. The scum layer is within three inches of the outlet device; or,
3. The sludge layer is within eight inches of the outlet device.

g. Require damaged septic tanks be promptly repaired or replaced.

h. Require that septic tank filters be cleaned on a regular basis.

i. Inform homeowners, through a public education program, about the chemicals and actions, which have the potential to impair the proper and sustained functioning of the CLS. Chemicals of concern include self-regenerating water softeners, acid and organic chemical solvent septic system additives, and kitchen greases and oils, and other toxics including chemical pesticides and herbicides. Actions of concern include the excessive use of garbage disposals, connecting rainfall drainage controls to the collection system, and draining swimming pools into the collection system.

j. Require food services to adopt best management practices including the installation and maintenance of interceptor/collector devices to control and capture fats, oil and grease.

10. Bent observation tubes prevent the Discharger from being able to measure effluent levels in the disposal trenches. Therefore, no bent observation tube is allowed in all leachfields under this order.

11. The CLS 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.

12. A 100-foot buffer zone shall be maintained between the nearest point of the leachfields and (a) the edge of Jackson Creek (measured from the 10 year high water mark), and (b) any spring, domestic well, or irrigation well. A 50-foot buffer

zone shall be maintained between the nearest point of the leachfields and any seasonal drainage course.

13. A 50-foot buffer zone shall be required between the leachfields and the nearest property boundary.

14. A revision to the Pine Grove Wastewater Treatment System Operation and Maintenance Manual is necessary to cover the operation and maintenance for both the Phase 1 and Phase 2 CLS and to assure compliance with this Order. In addition, this manual shall include the effluent overflow prevention and response plan. At least **60 days** prior to wastewater discharged to the Phase 2 CLS, this update shall be finished. The Discharger shall ensure that an up-to-date Operation and Maintenance Manual is readily available to operating personnel at all times.

C. Effluent Limitations

1. Effluent discharged from the dosing tanks shall not have a quarterly average TDS exceeding 350 mg/l plus the TDS of water distribution system.

D. 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 and dosing tanks as needed to ensure optimal operation and optimal life of the CLS, but no less frequent than as specified in Discharge Specifications B.9.

2. Sludge removal shall be by a licensed liquid waste hauler and documented by copies of manifests. The Discharger may also remove sludge using its vacuum trailer if the waste is hauled to a licensed disposal facility by an operator with a current Department of Transportation hazardous material certification.

3. 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.

E. Groundwater Limitations

1. Release of waste constituents from the CLS shall not cause groundwater, as determined by an approved well monitoring network, to:

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

Constituent	Units	Limitation
Total Dissolved Solids[1]	mg/l	310
Nitrate (as N)	mg/l	10

Constituent	Units	Limitation
Total Dissolved Solids[1]	mg/l	310
Total Coliform Organisms	MPN/100 ml	Less than 2.2

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

b. Exhibit a pH of less than 6.5 or greater than 8.4 pH units, or shall not lie outside the established background for pH including a measurement error of 0.1 units.

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

F. 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 F.3.

   a. **By 1 August 2009**, the Discharger shall submit a *Groundwater Monitoring Well Workplan* that includes an evaluation of the groundwater monitoring well network and is prepared in accordance with, and includes the items listed in Section 1 of Attachment D: *"Requirements for Monitoring Well Installation Workplans and Monitoring Well Installation Report".* The work plan shall describe the installation and / or destruction of monitoring wells where appropriate. The wells shall be designed to ensure that background water quality is adequately characterized and any potential water quality impacts from the discharges to the Phase 1 and Phase 2 leachfields are detected. The system shall be designed to yield samples representative of the uppermost portion of the first aquifer underlying the site.

   b. **Within 120 days** of submitting the *Groundwater Monitoring Well Workplan*, the Discharger shall submit a *Monitoring Well Installation and/or Destruction Report* prepared in accordance with, and including the items listed in Section 2 of Attachment D. The report shall describe the installation or destruction of any wells, describe well development, include the first analytical results from the sample collected during the first sampling event after well development, explain any deviation from the approved workplan, and include the well logs and survey information for each new well installed.

   c. **At least 90 days** before the Discharger wishes to begin discharging to the Phase 2 leachfield or a portion thereof, the Discharger shall submit a *Phase 2 Completion Report.* The report shall include at a minimum the amount (lineal footage) of new leachlines that were installed, construction and installation details of the disposal trenches and leachlines (i.e., depth and width of trenches, trench sidewall depth below laterals, and square feet per lineal foot of wastewater application area), wastewater design disposal calculations (in gallons per day) and plot the locations of the surface sampling points S1, S2 and S3. Multiple completion reports may be necessary to account for the entire

15,000 gpd proposed expansion. In addition, at least two groundwater sampling results from all new wells installed in the Phase 2 leachfield should be included.

d. **Within 60 days** of submitting the *Phase 2 Completion Report*, the Discharger shall submit a *Surface Water Diversion Report* that, (1) evaluates whether surface water and/or subsurface water diversion features are needed around the leachfields to prevent, surface erosion at the Phase 2 leachfield, and/or overloading and failures of the leachfield disposal system, and (2) provides a description of the measures that will be implemented to divert surface water drainage away from the Phase 2 leachfield. The report shall describe the methodology and assumptions used in evaluating whether diversion features are needed.

e. If the *Surface Water Diversion Report* recommends that surface water and/or subsurface water diversion features are needed to prevent potential leachfield failures, or if the Executive Officer determines that such features are necessary, then **within 120 days** of the report recommendation or the request from the Executive Officer, the Discharger shall submit a *Surface Water Diversion Installation Report* showing that these features have been installed. The report shall describe the type of diversion features were installed and provide a map showing the location of the diversion features.

f. **Within the next RWD** for any future expansion of the leachfield system, the Discharger shall include a *Feasibility Study*. The feasibility study shall identify unsewered areas within the existing wastewater collection system service area, and unsewered areas within the projected sphere of influence of a regional collection system. In addition and where feasible, the Discharger shall provide a strategy for future connections of unsewered properties to the leachfield system. The feasibility study should also include the Dischargers' rational for in feasibility and providing for these properties subsequent to the next permitting cycle. In addition, the Discharger shall include within the Feasibility Study an evaluation of improvements to the wastewater treatment and disposal system for the community of Pine Grove, including technology improvements, regionalization opportunities with nearby sanitary districts and the implementation of conservation and reuse strategies.

2. If groundwater monitoring results show that the discharge of waste is causing groundwater to contain waste constituents in concentrations statistically greater than background water quality, then within **120 days** of the Executive Officer's request, the Discharger shall submit a *BPTC Evaluation Workplan* that sets forth the scope and schedule for a systematic and comprehensive technical evaluation of treatment and control measures that address full mitigation of the source of the exceedance(s). The schedule should be as short as practical, and should not exceed one year.

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 investigations and studies, that describe the conduct of investigations and studies, or that contain technical conclusions and recommendations concerning engineering and geology shall be prepared by or under the direction of appropriately qualified professional(s), even if not explicitly stated. Each technical report submitted by the Discharger shall bear the professional's signature and stamp.

4. The Discharger shall comply with the Monitoring and Reporting Program No. R5-2009-0003, 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 cost-effective control technique(s), including proper operation and maintenance, to comply with discharge limits specified in this order.

7. The Discharger shall utilize certified wastewater treatment facility operators in accordance with Title 23 CCR, Division 3, Chapter 26.

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

9. The Discharger shall comply with the requirements of the Statewide General Waste Discharge Requirements (General WDRs) for Sanitary Sewer Systems (Water Quality Order No. 2006-0003), the Revised General WDRs Monitoring and Reporting Program (Water Quality Order No. 2008-0002-EXEC), and any subsequent revisions thereto. Upon the reduction, loss, or failure of the sanitary sewer system resulting in a sanitary sewer overflow, the Discharger shall notify the Central Valley Water Board in accordance with Water Quality Order No. 2008-0002-EXEC and take any necessary remedial action to (a) control or limit the volume of sewage discharged, (b) terminate the sewage discharge as rapidly as possible, and (c) recover as much as possible of the sewage discharged (including wash down water) for proper disposal. The Discharger shall implement all applicable remedial actions including, but not limited to, the following:

   a. Interception and rerouting of sewage flows around the sewage line failure.

   b. Vacuum truck recovery of sanitary sewer overflows and wash down water.

   c. Use of portable aerators where complete recovery of the sanitary sewer overflows are not practicable and where severe oxygen depletion is expected in surface waters.

d. Cleanup of sewage-related debris at the overflow site.

e. Disinfection and posting of the area.

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

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

12. The Discharger shall submit to the Central Valley Water 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 Central Valley Water Board in writing when it returns to compliance with the time schedule.

13. 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 Central Valley Water Board, and a statement. The statement shall comply with the signatory paragraph of Standard Provision B.3 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer shall be approved or disapproved by the Executive Officer.

14. 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 Central Valley Water Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or recession of this Order.

15. 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 when this condition cannot be mitigated by distribution system adjustments and the

surfacing of effluent will be otherwise unavoidable, shall initiate construction of the replacement leachfield.

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

17. The Central Valley Water 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 February 2009.

_____
PAMELA C. CREEDON, Executive Officer

LFU: 2/17/09

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2009-0003
FOR
AMADOR WATER AGENCY
PINE GROVE COMMUNITY LEACHFIELD SYSTEM
AMADOR COUNTY

This Monitoring and Reporting Program (MRP) describes requirements for monitoring septic tank, treated effluent, leachfields, groundwater and surface water. 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 the septic tanks and report this information in the annual reports. Septic tanks shall be inspected annually for the presence of sludge in the second compartment of each septic tank. If sludge is encountered, then the septic tank shall be inspected as described in the table below. In addition, the first compartment of each tank shall be monitored as described below once every three years, even if no sludge is encountered in the second compartment.

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

1. The Discharger shall visually inspect the tanks for signs of damages, leakage, or deterioration

The Discharger shall retain records of each inspection, by street address, noting the date and measured readings and calculations. The Discharger will also record when cleaning is required, the date of notice to the homeowner, 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.

EFFLUENT MONITORING PRIOR TO LEACHFIELD

The Discharger shall conduct effluent monitoring of the wastewater entering each leachfield; samples shall be collected from leachfield dosing tanks. Effluent monitoring shall include, at a minimum, the following:

Constituents	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Total Flow to the CLS	gpd	Meter	Weekly	Monthly
Flow to each leachfield	gpd	Calculated[1]	Weekly	Monthly
Total Dissolved Solids	mg/l	Grab/Composite[2]	Quarterly	Quarterly
Nitrates as Nitrogen	mg/l	Grab/Composite[2]	Quarterly	Quarterly
Total Kjeldahl Nitrogen	mg/l	Grab/Composite[2]	Quarterly	Quarterly
pH	Std. Unit	Grab/Composite[2]	Quarterly	Quarterly
Standard Minerals [3]	mg/l	Grab/Composite[2]	Annually	Annually

1. Per dose counter.
2. Grab/Composite indicates samples may be collected by composite sampler or grab method.
3. Standard Minerals shall include, at a minimum, the following elements/compounds: boron, calcium, chloride, magnesium, potassium, sodium, sulfate, iron, manganese, total alkalinity (including alkalinity series), and hardness.

LEACHFIELD AREA MONITORING

The Discharger shall conduct a visual inspection of the leachfields on a **weekly** basis, and the results shall be included in 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 leachfields shall include the following:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Application Rate[1]	gal/acre•day	Calculated	Monthly	Monthly
Leachline Riser Inspection[2]	Inches	Measurement	October, December, February, April, July	Monthly
Acreage Applied [3]	Acres	Calculated	Monthly	Monthly

1. The application rate for each leachfield.
2. 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, AWA shall record when lateral distribution lines are switched.
3. Land application areas shall be identified and a map identifying all land application areas included.

GROUNDWATER MONITORING

Prior to construction and/or sampling of any groundwater monitoring wells, the Discharger shall submit plans and specifications to the Board for review and approval. All wells identified in the groundwater monitoring well network in the Findings of this Order, as well as any wells installed after adoption of this Order, shall be sampled and analyzed according to the schedule below.

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

Constituent	Units	Type of Sample	Sampling and Reporting Frequency
Groundwater Elevation[1]	0.01 Feet	Measurement	Quarterly
Depth to Groundwater	0.01 Feet	Calculated	Quarterly
Gradient	Feet/Feet	Calculated	Quarterly
Gradient Direction	Degrees	Calculated	Quarterly
Total Coliform Organisms[2]	MPN/100ml	Grab	Quarterly
Total Dissolved Solids	mg/l	Grab	Quarterly
Nitrates as Nitrogen	mg/l	Grab	Quarterly
Total Kjeldahl Nitrogen	mg/l	Grab	Quarterly
pH	Std. Unit	Grab	Quarterly
Standard Minerals[3]	mg/l	Grab	Annually

1. Groundwater elevation shall be based on depth-to-water using a surveyed measuring point elevation on the well and a surveyed reference elevation.
2. Using a minimum of 15 tubes or 3 dilutions.
3. Standard Minerals shall include, at a minimum, the following elements and compounds: Boron, Calcium, Chloride, Iron, Manganese, Magnesium, Potassium, Sodium, Sulfate, Total Alkalinity (including alkalinity series), and Hardness.

SURFACE WATER MONITORING

The Discharger shall observe Jackson Creek monthly for the presence of water in the creek. When water is present, the following surface water monitoring shall apply. The Discharger shall establish three sampling stations. The intent of the monitoring stations are to monitoring

surface water quality upstream of the entire leachfield system, at an area of possible influence from the leachfield disposal and then downstream of the entire leachfield system. So, one station (S-1) shall be about 100 feet upstream of the leachfield disposal area of Phase 1, one station (S-2) shall be in proximity of the leachfield disposal area between Phase 1 and Phase 2, and one station (S-3) shall be 100 feet downstream of Phase 2.

Constituents	Units	Type of Sample	Sampling and Reporting Frequency
Total Dissolved Solids	mg/l	Grab	Quarterly
Nitrate as Nitrogen	mg/l	Grab	Quarterly
Chloride	mg/l	Grab	Quarterly
Total Coliform Organisms	MPN/100ml	Grab	Quarterly

If samples cannot be collected because water is not present in Jackson Creek, then the Discharger shall so note on the monthly monitoring report.

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 by the registered professional.

A. Monthly Monitoring Reports

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

1. Results of effluent and leachfield monitoring;
2. 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;
3. If requested by staff, copies of laboratory analytical report(s); and
4. A calibration log verifying calibration of all hand held monitoring instruments and devices used to comply with the prescribed monitoring program.

B. Quarterly Report

The Discharger shall establish a quarterly sampling schedule for effluent and groundwater monitoring such that samples are obtained approximately every three months. Quarterly monitoring reports shall be submitted to the Board by the **1st day of the second month after the quarter** (i.e. the January-March quarterly reports is due by May 1st) and may be combined with the monthly report. The monitoring report shall present a summary of monitoring data from each monitoring well using the methods described in Title 27, Section 20415(e)(10). The Quarterly Report shall include the following:

1. Results of effluent, groundwater and surface water monitoring;

2. Complete copy of the results of the monitoring data of the community water supply obtained from the Pine Grove Community Service District or the California Department of Public Health, including its EC/TDS data;

3. 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;

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

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

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

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

8. 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

9. 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 will 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 and quarterly monitoring report for the last month and quarter of the year;

2. The results from annual monitoring of the effluent, groundwater.

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

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

5. An evaluation of the groundwater quality beneath the land application areas;

6. An evaluation of the performance of the CLS, including discussion of capacity, effluent distribution, leachfield erosion, and a forecast of the flows anticipated in the next year.

7. A description of any activity to control vegetation in the leachfield area;

8. Annual summary of the septic tank inspections for the year, including the number of tanks on which notifications for cleaning were issued, and verification that those tanks were pumped and that waste was removed by a licensed hauler;

9. A statement of when the O&M Manual was last reviewed for adequacy, and a description of any changes made during the year;

10. Equipment maintenance and calibration records, as described in Standard Provision No. C.4;

11. A copy of the certification for each certified wastewater treatment plant operator working at the facility and a statement about whether the Discharger is in compliance with Title 23, CCR, Division 3, Chapter 26.

12. A discussion of the following:

    a. Salinity reduction efforts implemented in accordance with any required workplan;

    b. Other best practical treatment and control measures implemented pursuant to any approved BPTC workplan (if required by the Executive Officer); and

c. Based on monitoring data, an evaluation of the BPTC measures that were implemented.

A letter transmitting the self-monitoring reports shall accompany each report. 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 the penalty of perjury statement by the discharger, or the Discharger's authorized agent, as described in the Standard Provisions General Reporting Requirements Section B.3.

The Discharger shall implement the above monitoring program on the first day of the month following adoption of this Order.

Ordered by: _____
PAMELA C. CREEDON, Executive Officer

5 February 2009
(Date)

INFORMATION SHEET

ORDER NO. R5-2009-0003
AMADOR WATER AGENCY
PINE GROVE COMMUNITY LEACHFIELD SYSTEM
AMADOR COUNTY

Background

The Amador Water Agency (Discharger) is planning the Pine Grove Community Leachfield System (CLS) Phase 2 (expansion) that will result in capacity increase. Phase 2 will serve 75 equivalent dwelling units (EDUs) of future residential and commercial developments.

The CLS includes the effluent collection system, and the community leachfield that treats and disposes of wastewater generated by the Pine Grove community in Amador County. The Discharger owns and operates the CLS, and is responsible for the proper design, operation, and maintenance of the CLS.

The construction of the Phase 1 (existing) CLS, was funded using the State Revolving Fund Loan Program and began operation in April 2001. Prior to construction of the CLS, the community of Pine Grove was served by individual waste treatment and disposal systems, many of which were identified as being deficient and placed in areas with poor soils and high groundwater. In April 1997, the Amador County Environmental Health Department's Health Officer issued a declaration stating that failing and inadequate individual waste treatment and disposal systems created a continuing health hazard and posed a potential threat to surface and groundwater quality. Therefore, Pine Grove Community and Amador County were in support of constructing a wastewater collection system and disposal system.

Effluent Collection System

On March 9, 2007, the Discharger submitted a Report of Waste Discharge (RWD) for updating Waste Discharge Requirements (WDRs) to regulate the Phase 1 and Phase 2 CLSs.

The capacity of Phase 1 is 28,700 gpd. Its service area comprises 144 equivalent dwelling units (EDUs) with a 1:1 ratio of residential to commercial properties. As of July 2007, 76 EDUs had been connected to the CLS. Each existing or future residential property connected to Phase 1 has or will have a 1,500-gallon septic tank, which provides primary treatment for the raw sewage discharged from each dwelling.

The Phase 2 leachfield will have a capacity of 15,000 gpd, and will be built in multiple construction efforts on 8.6-acre disposal area south to the Phase 1 leachfield. The 75 EDUs will include 28 units within the proposed Pine Grove Bluffs subdivision and another 47 units elsewhere in Pine Grove, none of which have been constructed yet. The ratio of residential to commercial properties will be 1:4. Each residential property will have a 1,500-gallon septic tank, which will be hooked up to the Phase 2 CLS.

Septic tanks provide primary treatment of the domestic wastewater. Septic tank chambers capture and store solids while they undergo anaerobic decomposition. The exit of the second 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. In order to ensure the proper operation of the septic tanks, the Discharger performs annual inspections of septic tanks.

For the Phase 1 and Phase 2 CLS, the effluent from each dwelling septic tank is pumped via a submersible pump to sewer trunk lines installed on either side of Highway 88. The trunk lines manifold into a welded HDPE pipe for delivery to the dosing tanks located near the intersection of State Route 88 and Ridge Road.

Leachfield Disposal

Phase 1 CLS has five 4,000-gallon dosing tanks, and each dosing tank has two dosing siphons. The dose per discharge is approximately 1,740 gallons. This leachfield has 21,300 feet of pressure dose leachlines and is divided into ten individual leachfields. Discharge to each disposal line is controlled by 1-1/2 inch ball valves, which allow equal distribution to all lines despite varying elevation heads. The wastewater application rate is 1.35 gpd per lineal foot of lateral leachline. The disposal trenches are approximately three feet wide by two feet deep.

The Phase 2 will have two 5,000-gallon dosing tanks and each dosing tank will include two dosing siphons. The dosing rate required to each proposed CLS is approximately 225 gpm, and siphons will deliver about 338 gpm. This leachfield will have 10,000 ft of pressure dosed leachlines, which will be divided into four individual leachfields with an application rate of 1.5 gpd per lineal foot of lateral leachline. Each leachfield will have at least one main valve and each individual line will have a throttling valve. New flow splitters are necessary on the Phase 2 area to split upstream of the Phase 1 flow, and flow between new siphons. The disposal trenches are approximately three feet wide by three feet deep.

Basin Plan, Beneficial Uses, and Regulatory Considerations

Surface water drainage from the Pine Grove leachfield is to Jackson Creek, a tributary to Dry Creek; Dry Creek flows into the Mokelumne River, downstream of Camanche Reservoir. The beneficial uses downstream of the Camanche Reservoir are agricultural supply; 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. The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, 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, at a minimum, meet the California maximum contaminant levels (MCLs) for drinking water. The Basin Plan sets forth the applicable beneficial uses (industrial supply, agricultural supply, and municipal 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 State Water Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality Waters in California," or "Antidegradation Policy" 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.

The RWD contained an antidegradation analysis for the expansion. It is appropriate to allow some groundwater degradation as long as it is consistent with the Basin Plan and Resolution No. 68-16 because economic prosperity of local communities and associated industry is of benefit to the people of California. This Order establishes terms and conditions of discharge to ensure that the discharge does not unreasonably affect present and anticipated uses of groundwater and includes groundwater limitations that apply water quality objectives established in the Basin Plan to protect beneficial uses.

Treatment Technology and Control

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

a. Water tight testing for all site septic tanks;
b. Installing effluent filters on septic tank discharge plumbing, which will reduce BOD and TSS of effluent to leachfields;
c. Pressure dosing and rotating of dosed fields, which will optimize equal distribution throughout leachfield and aerobic conditions in trenches;
d. Minimizing the load to any one location within the leachfield, thereby maximizing treatment/disposal potential of leachfield field;
e. A Sanitary Sewer Operation, Maintenance, Overflow Prevention and Response Plan;
f. An operation and maintenance (O&M) manual; and
g. Certified operators to ensure proper operation and maintenance.

In addition, the slopes of the leachfield range from 18 to 50%, some of which are greater than the maximum 30% slopes allowed by the Basin Plan. For the Phase 1 leachfield, the disposal trench inverts are two feet or less above bedrock, less than the five-foot separation allowed by the Basin Plan. Accordingly, the leachfields may pose slope stability problems when saturated and there is an increased probability that the effluent will fail to meet minimum performance standards (e.g., prevention of pollution) for subsurface disposal systems. These waste

discharge requirements require that the Discharger implement corrective measures to meet water quality objectives and to appropriately maintain and operate the systems.

The existing leachfield design assumes sustained infiltration through the entire bottom and sidewall area of the disposal trenches, which is not a conservative design. It is imperative that extraneous water sources be precluded from entering the effluent collection system and leachfield area.

Discharge Prohibitions and Specifications

The Order allows the flow rate to increase from 28,700 gpd to 43,700 pgd, based on submittal of construction completion reports and approval by the Executive Officer.

Domestic wastewater contains numerous dissolved inorganic waste constituents (i.e., salts, minerals) that together comprise total dissolved solids (TDS). The relevant numerical water quality limit for TDS is 450 mg/l, which is used through Basin Plan procedures to apply the narrative Chemical Constituents water quality objective for the protection of agricultural supply, the beneficial use most sensitive to TDS. The proposed Order contains groundwater limit of 310 mg/l, which was requested by the Discharger and is appropriate for this facility. Most individual salt components can safely be assumed to be proportionately low such that TDS can be an effective indicator in their regulation.

This Order sets a numerical groundwater limitation of 2.2 MPN/100ml for total coliform organisms, and a limitation of nitrate as nitrogen of 10 mg/l to protect the municipal and domestic use of groundwater. These limits are water quality objective for groundwater in the basin plan.

This Order sets an effluent limitation for TDS of 350 mg/l over the source water, which is consistent with the Tulare Lake Basin Plan. Circumstances and conditions with respect to treatment and control of salinity in the Sacramento-San Joaquin River Basin are similar to those of the Tulare Lake Basin. Therefore, the discharge will likely not impair the beneficial uses of groundwater due to increased salinity.

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 the assessment of civil administrative liability where appropriate.

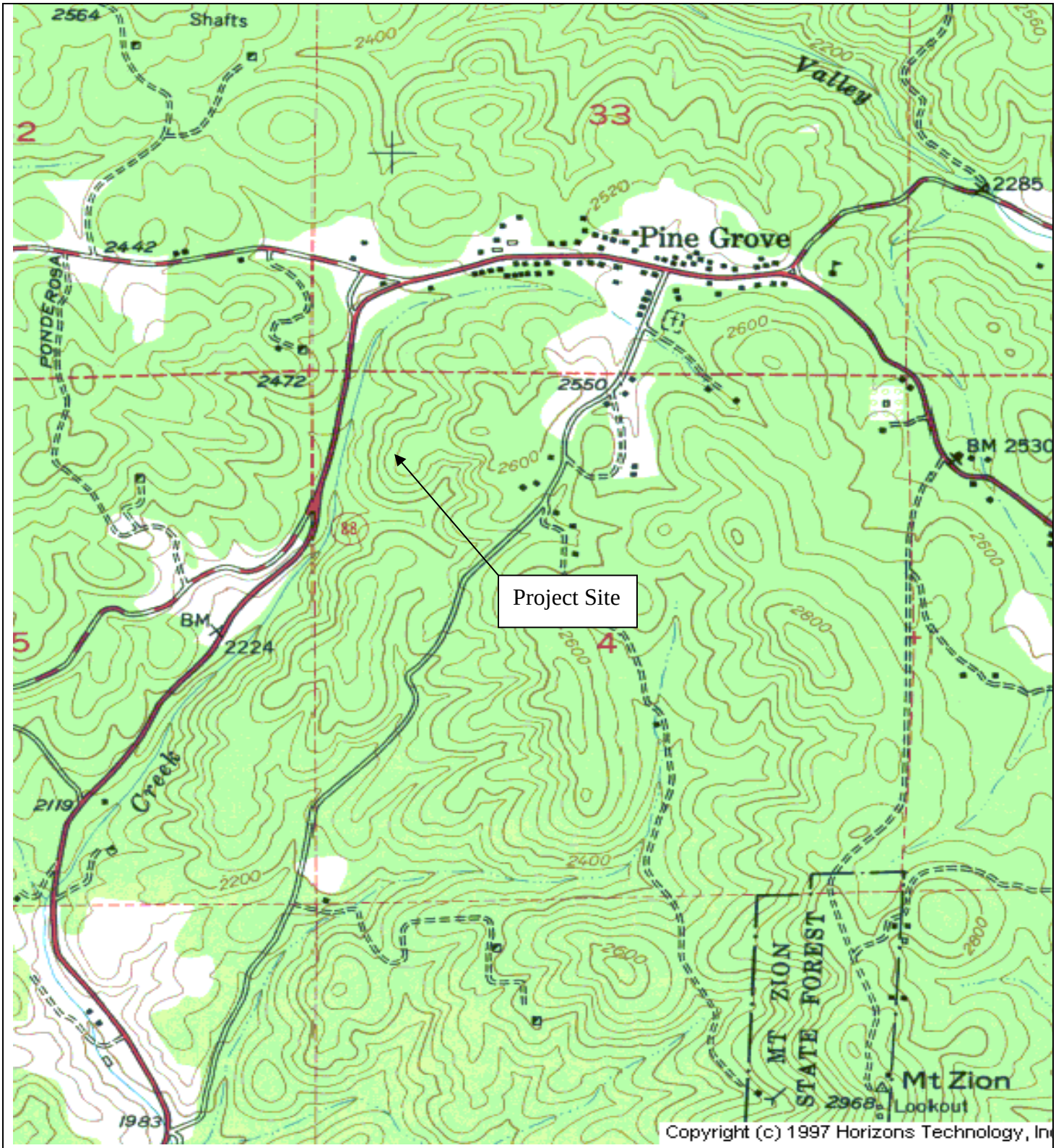
The proposed Order requires the Discharger to conduct septic tank, effluent, leachfield, groundwater monitoring. In order to adequately characterize the effluent, the Discharger is

required to monitor for TDS, pH, and other constituents. Monitoring of additional minerals is required on an annual basis.

The Discharger must monitor groundwater for constituents present in the discharge and those constituents that the discharge may cause to be mobilized from soils and which are 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.

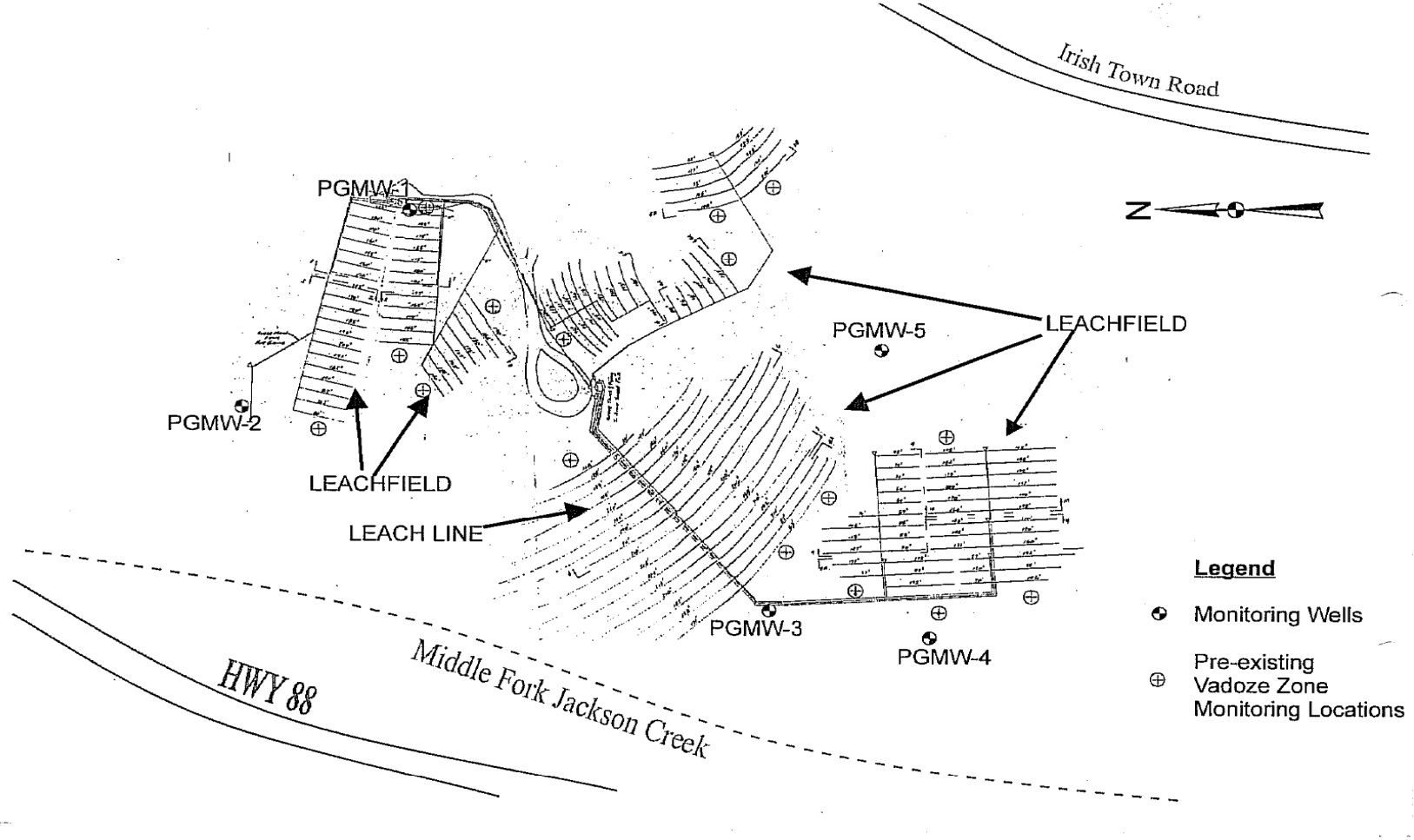
For each constituent listed in the Groundwater Limitations section, the Discharger must, as part of each monitoring event, compare concentrations of constituents found in each monitoring well (or similar type of groundwater monitoring device) to the background concentration or to prescribed numerical limitations to determine compliance.

The Discharger must also monitor Jackson Creek quarterly for TDS, nitrate as N, chloride and total coliform organisms. The purpose of the surface water monitoring is to ensure the leachfield does not degrade surface water and evidence that the Discharger is in compliance with its Order.



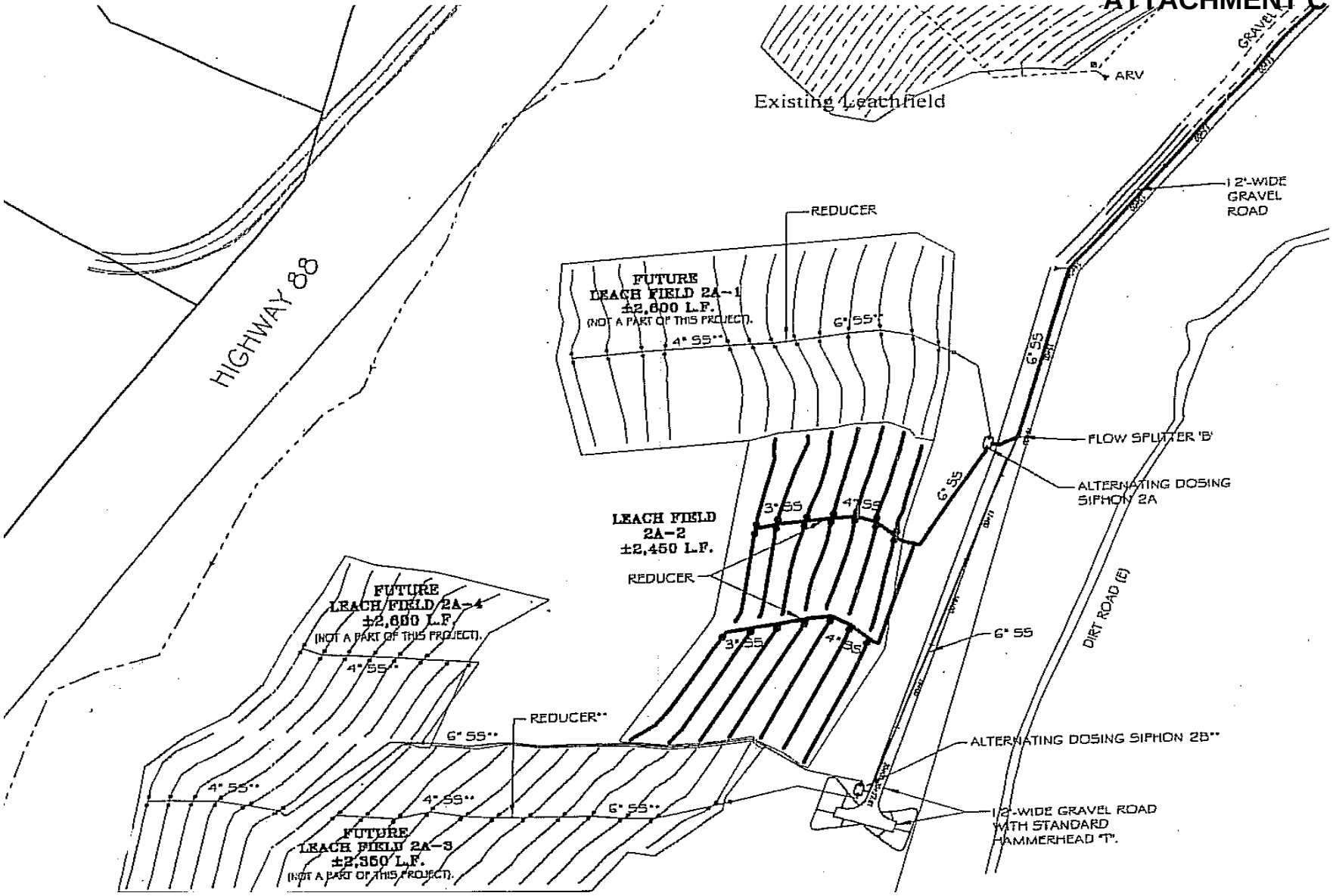
Drawing Reference: U.S.G.S TOPOGRAPHIC MAP 7.5 MINUTE QUADRANGLE	**VICINITY MAP** Amador Water Agency Pine Grove Community Leachfield System	N W E S Approx. scale 1 in.= 24,000 ft.

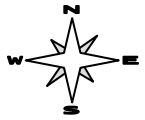
MENT B



Not to scale	Drawing Reference: Amador Water Agency	**SITE LOCATION MAP_PHASE I LEACHFIELD** Amador Water Agency Pine Grove Community Leachfield System

ATTACHMENT C



Not to scale 	Drawing Reference: Amador Water Agency	**SITE LOCATION MAP_PHASE 2 LEACHFIELD** Amador Water Agency_ Pine Grove Community Leachfield System

ATTACHMENT C

ORDER NO. R5-2009-0003
ATTACHMENT D
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)
   - 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