

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2002-0170

WASTE DISCHARGE REQUIREMENTS

FOR
CHARLES M. SOMERS, BONITA M. BAHRE
GREGORY GRAVES, AND THE DAVID J. TOWNSEND
AND SHARON J. USHER REVOCABLE TRUST
CLAY STATION 1200
SACRAMENTO COUNTY

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

1. On 21 March 2001, the University of the Pacific, Sierra Health Foundation, Charles M. Somers, James and Jane Hagedorn, Bonita M. Bahre, Gregory Graves, David J. Townsend, Sharon J. Usher, and Vlakahis Development, LLC submitted a Report of Waste Discharge (RWD) to treat and dispose of domestic wastewater generated in the planned Clay Station 1200 residential subdivision in southeastern Sacramento County. Additional information required to complete the RWD was submitted on 30 July 2001, 18 March 2002, and 5 June 2002.
2. On 14 August 2002, Charles M. Somers, Bonita M. Bahre, Gregory Graves, and the David J. Townsend and Sharon J. Usher Revocable Trust submitted an amended RWD to change the ownership information only. The University of the Pacific, Sierra Health Foundation, James and Jane Hagedorn, and Vlakahis Development, LLC no longer have an ownership interest in Clay Station 1200.
3. Charles M. Somers, Bonita M. Bahre, Gregory Graves, and the David J. Townsend and Sharon J. Usher Revocable Trust, own Clay Station 1200 as tenants in common, and shall hereafter be referred to jointly as "Discharger". The Discharger is responsible for compliance with these Waste Discharge Requirements as they apply to operation, maintenance, and monitoring of wastewater-related facilities on the properties described herein until such time that a public entity is formed for these purposes and the Regional Board is formally notified of the public entity's assumption of responsibility for compliance with this Order.
4. The Clay Station 1200 residential subdivision is near the intersection of Clay Station Road and Tavernor Road near the town of Wilton, in T6N, R7E (Sections 2, 3, 4) and T7N, R7E (Sections 27, 34, and 35), MDB&M, as shown on Attachment A, which is attached hereto and made part of this Order by reference.
5. The subdivision site comprises approximately 1,226 acres on Assessor's Parcel Nos. 128-0050-026, 136-0120-008, and 136-0120-009. Approximately 746 acres will be subdivided into 222 rural residential lots of three to five acres each. The remainder of the land (approximately 480 acres) will be left as open space and/or conservation easements. The subdivision map is shown on Attachment B, which is attached hereto and made part of this Order by reference.

6. The residential lots will be sold singly or in groups as individual purchasers desire. Streets and certain utilities will be constructed as the lots are sold. To provide the traffic circulation required by Sacramento County, the infrastructure construction and lot sales are expected to begin on the northeastern side of the property and progress southwestward as needed. Depending on demand, final buildout of the subdivision may take twenty years.
7. Two larger lots on the northeastern end of the subdivision have been designated for future use as a fire station and a public school. The public school site may instead be used for a community center, additional residential lots, a park, a church, and/or an equestrian center. For these two lots, any additional residences constructed on parcels of at least 3 acres, as well as the fire station wastewater system, will be regulated under this Order.
8. Treatment and disposal of wastewater generated at a school, community center, park, church, equestrian center, or any other public gathering place may require separate WDRs adopted by the Regional Board, depending on the nature and volume of the proposed wastewater discharge. Therefore, the Discharger will submit a complete Report of Waste Discharge for any such facility to allow the Regional Board to determine whether regulation under this Order is appropriate.

Proposed Facility and Discharge

9. Each lot will have a septic tank that has been sized and constructed in accordance with the requirements of the Sacramento County Environmental Management Department. Each septic tank will be served by its own subsurface disposal system consisting either of a leachfield or series of seepage pits, depending on subsurface percolation characteristics. Pending results of percolation testing for each lot, the Discharger estimates that approximately 50 percent of the lots will require seepage pits.
10. Each lot will have a private water supply well, and each homeowner will be required to comply with mandatory setbacks from property boundaries and subsurface disposal systems.
11. Each septic tank will be two-chambered, and will be designed, manufactured, and installed in accordance with Sacramento County's requirements. Both chambers will capture and store solids while they undergo anaerobic decomposition. The heavier solids will settle and form sludge at the bottom of the tank. The lighter solids, including fats and greases, will rise to the surface and form a scum layer. The scum and sludge will undergo decomposition and digestion, which liquefies some solids and produces carbon dioxide and methane gas. Both the liquefaction and gasification processes reduce the solids volume in the tank.
12. The septic tanks will be inspected at least annually by the Discharger. If any septic tank requires cleaning, the Discharger will pump it and dispose of the septage at an appropriately permitted facility.
13. Based on standard engineering references, the character of the septic tank influent and effluent waste is estimated as follows:

<u>Constituent</u>	<u>Estimated Influent Concentration (mg/L)</u>	<u>Estimated Effluent Concentration (mg/L)</u>
BOD	330	160 mg/L
Total Dissolved Solids	550	550 mg/L
Total Nitrogen	62	62 mg/L

14. Each septic tank will discharge effluent via a gravity pipeline to either a leachfield or a series of seepage pits. The selection of the effluent disposal system for each lot will depend on percolation tests performed at that lot in accordance with Sacramento County's standards.
15. Leachfields will consist of a network of gravel-lined trenches with distribution boxes and perforated pipe to distribute the flow evenly throughout the leachfield. Seepage pits, where used, will be no greater than 50 feet deep. There will typically be three to four seepage pits per residence, with the actual number to be determined in accordance with Sacramento County's requirements.
16. In response to Regional Board staff's concerns about the number and density of subsurface disposal systems, the Discharger proposed to install a carbonaceous reactive barrier within each seepage pit to reduce the nitrogen content of the effluent. The reactive barrier material, consisting of sawdust, wood chips or other similar matter mixed with soil, will be placed in the base of each seepage pit to a thickness of at least 16 feet. The Discharger submitted technical reports that indicate that the carbonaceous reactive barrier will reduce the nitrogen content of the septic tank effluent by 60-90 percent by the time the percolate reaches the base of the seepage pit. The technical reports indicate that the reactive barriers will last at least twenty years depending on the type and mass of carbon source used. In order to demonstrate the continued effectiveness of the reactive barriers, the Discharger will install a percolate collection system in the base of each of the first five seepage pits and periodically analyze percolate samples for selected waste constituents.
17. The use of wood products in seepage pits does comply with current Sacramento County standards, and the County considers this an experimental system. Therefore, the County may require that a gravel layer be placed at the base of each seepage pit, and may impose additional restrictions and/or monitoring for seepage pits following adoption of this Order.
18. The Discharger will require that any failing effluent disposal systems be repaired or replaced. For each lot, the Discharger will designate sufficient disposal area, including space for replacement systems, to comply with Sacramento County standards and the Regional Board's Guidelines for Waste Disposal from Land Developments, whichever is more stringent. The final subdivision map will specify the allowable locations of the domestic supply wells and subsurface disposal areas to ensure adequate separation between wells and disposal areas.
19. Replacement systems currently envisioned include new leach fields or seepage pits, supplementing or replacing reactive barrier material for seepage pits, and recirculating sand filters. The type of repair or replacement required will depend on the type of problem (e.g., failing leachfield, failing

seepage pit, or excessive groundwater degradation resulting from inadequate vadose zone treatment).

20. The Discharger will cooperate with Sacramento County to establish a public entity, such as a Septic Tank Maintenance District to oversee and monitor the septic tanks and subsurface disposal systems. The public entity will have the authority to assess fees; perform system maintenance, repairs, or replacements; and seize property as necessary.
21. The Discharger committed to installing a total of 11 groundwater monitoring wells (one well per 20 lots). The Discharger proposes to install two upgradient and three downgradient wells during the first phase of development and the remaining wells as lots are sold. However, due to the anticipated 20 years for full build out, the 1,200 acre size of the subdivision, and the approximate 150 feet of unsaturated zone, the proposed phasing of the monitoring wells will not provide adequate monitoring of the groundwater. Therefore, the Discharger must install the majority of the monitoring wells during the first phase of construction.
22. If there is a statistically significant increase in the concentration of any waste constituent, the Discharger will implement an Evaluation Monitoring Plan to assess the source(s) of the problem, assess potential water supply impacts, and implement source control as appropriate. In addition, the Discharger proposes to conduct an annual internal review of all aspects of the septic systems and monitoring data.
23. The Discharger will also develop and implement a Contingency Action Plan to address groundwater degradation, if it occurs. The first phase will consist of homeowner notification and source control for identified problem systems. The second phase will consist of disposal system retrofits and/or treatment system improvements to be determined on a case-by-case basis. The third phase if necessary, would provide a new well or alternative water supply for any affected residence.
24. The Discharger will also establish a Corrective Action Fund to finance implementation of this plan. Initially, the Discharger will provide a \$250,000 bond and establish the Corrective Action Fund by assessing an impact fee on each homeowner as lots are sold. The bond will be maintained such that there is always at least \$250,000 available between the bond and the Corrective Action Fund until the Corrective Action Fund contains at least \$250,000. As funds are withdrawn, they will be replenished through homeowner assessments.

Sanitary Sewer System

25. Because each lot will have its own septic system, there will be no centralized sanitary sewer system. Wastewater will flow from the residence through a gravity pipe to each septic tank, and from there to a subsurface disposal system. These individual pipelines, in aggregate, comprise the sanitary sewer system for the subdivision.
26. The Discharger is expected to educate homeowners regarding the causes, prevention of, and response to, sanitary sewer overflows. The Discharger is also expected to take all necessary steps to adequately maintain and operate, and thereby prevent discharges from, the sanitary sewer system. A

reasonable means to accomplish this is to distribute an operation and maintenance manual for homeowners that includes a discussion of overflow prevention and response measures.

Site-Specific Conditions

27. The subdivision site is characterized by flat to gently rolling topography with surface elevations ranging from 102 to 162 feet above mean sea level.
28. The subdivision lies within the San Joaquin Delta Hydrologic Unit Area No. 531.11, as depicted on interagency hydrologic maps prepared by the Department of Water Resources in August 1986.
29. Two unnamed seasonal drainages traverse and drain the site, flowing from southeast to northwest. These drainages, which are tributary to the Cosumnes River, have been designated as wetlands and conservation easements.
30. Annual precipitation in the Clay Station vicinity averages approximately 18 inches. Septic systems will not be placed within the 100-year flood zone.
31. The site is underlain by interbedded silty and clayey sands, sand silts, and sandy silty clays. Dense, partially cemented "hardpan" layers were observed at various depths up to 25 feet below the ground surface (bgs). Surficial soils to five feet bgs are typically clays.
32. During a subsurface investigation completed to support the Report of Waste Discharge, the first groundwater was encountered at an approximate elevation of five feet below mean sea level (approximately 165 feet bgs).
33. Results for shallow percolation tests performed at 24-inch and 36-inch depths at twelve locations are summarized below.

Test Location	Percolation Test Result (minutes per inch)	
	24-Inch Deep Test	36-Inch Deep Test
D9	60	>> 60 ¹
D10	60	>> 60
D11	>> 60	>> 60
D12	60	30
D13	>> 60	>> 60
D14	30	12
D15	>> 60	60
D16	5	15
D17	40	>> 60
D18	>> 60	>> 60
D19	60	9
D20	>> 60	30

¹ Results were reported as essentially infinite (much greater than 60 minutes per inch).

The Regional Board's *Guidelines for Waste Disposal from Land Developments* contain certain requirements for leachfields. The *Guidelines* require a minimum percolation rate of 60 minutes per inch and a maximum percolation rate of 5 minutes per inch unless sufficient filtration within the vadose zone is demonstrated. Based on the above test results, the Discharger estimates that approximately 50 percent of the residential lots will not provide the minimum percolation rate required for a leachfield. Such lots will require seepage pits.

34. Six leach pit percolation tests were performed at depths of 32 to 34 feet bgs in accordance with Sacramento County requirements. These results are summarized below.

<u>Test Location</u>	<u>Percolation Test Result (gallons per day)</u>
LP1	35,000
LP2	4,000
LP3	35,000
LP4	3,000
LP5	33,000
LP6	20,000

The Regional Board's *Guidelines for Waste Disposal from Land Developments* also contain requirements for seepage pits. The *Guidelines* require a minimum percolation rate of 30 minutes per inch and a maximum percolation rate of 5 minutes per inch unless sufficient filtration within the vadose zone is demonstrated. If converted to a minutes-per-inch rate using the geometry of the test bore and the test data reported by the Discharger, any seepage pit percolation test result that exceeds 1,275 gallons per day would appear to exceed the maximum allowable percolation rate. However, the Discharger has provided information that shows that the test method required by Sacramento County is not comparable to the test method referenced in the *Guidelines*. Therefore, a simple conversion is misleading. The RWD provided a site-specific assessment of effluent disinfection based on soil stratigraphy, which indicates that each seepage pit will be underlain by at least 50 feet of soil that is predominantly silty sands and silty clays. Therefore, it appears that sufficient filtration within the vadose zone will be provided as long as such subsurface conditions are representative of the entire subdivision.

Groundwater Considerations

35. One groundwater monitoring well (MW-1) exists at the site, as shown on Attachment B. The total depth of the well is approximately 175 feet bgs, and it is screened from 150 to 175 feet bgs.
36. Based on groundwater elevation maps prepared by the Sacramento County Public Works Agency, shallow groundwater beneath the site generally flows south to southwest towards a cone of depression centered on the town of Herald.
37. Based on two groundwater monitoring events (one in September 2000 and one in May 2002), the pre-discharge shallow groundwater quality at the site is summarized below:

Constituent/Parameter	Monitoring Well MW-1 Result	
	September 2000	May 2002
Total Dissolved Solids (mg/L)	410	240
Specific Conductance (µmhos/cm)	530	--
Nitrate as NO ₃ (mg/L)	3.3	1.1
Hardness as CaCO ₃ (mg/L)	120	--
Ammonia as nitrogen (mg/L)	--	0.12
Chloride	--	4.5
Total Kjeldahl nitrogen (mg/L)	--	0.34
Boron	--	<0.050
Iron	--	0.610
Manganese	--	0.066
Sodium	--	26
Total Coliform Organisms (MPN/100 mL)	--	<2
Fecal Coliform Organisms (MPN/100 mL)	--	<2
E. Coli (MPN/100 mL)	--	<2

38. Based on one sample from a nearby agricultural supply well, deeper groundwater quality is summarized below. The depth and screened interval of this well are not known.

Constituent/Parameter	Agricultural Well Result	
	September 2000	
Total Dissolved Solids (mg/L)	150	
Specific Conductance (µmhos/cm)	120	
Nitrate as NO ₃ (mg/L)	19	
Hardness as CaCO ₃ (mg/L)	38	

Historical data for other deeper wells in the vicinity of the subdivision indicate that the TDS concentration may be as high as 325 mg/L.

39. The baseline groundwater monitoring data indicate that groundwater quality beneath the site is excellent.

Basin Plan, Beneficial Uses, and Regulatory Considerations

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

41. Surface water drainage is to the Cosumnes River, a tributary of the San Joaquin River. The beneficial uses of the San Joaquin River are municipal and domestic supply; agricultural irrigation and stock watering supply; process and service industrial supply; contact recreation, other noncontact recreation; warm and cold freshwater habitat; warm and cold migration; warm water spawning; wildlife habitat; and navigation.
42. The beneficial uses of the underlying groundwater are municipal and domestic supply, agricultural supply, industrial service supply, and industrial process supply.
43. The Basin Plan establishes numerical and narrative water quality objectives for surface and groundwater that waste discharge requirements must implement. To implement narrative water quality objectives, translators of available water quality criteria must be applied on a case-by-case basis to determine the appropriate numerical limitation.
44. The Basin Plan identifies maximum contaminant levels (MCLs) as numerical water quality objectives for waters designated as municipal supply. More stringent criteria than MCLs are sometimes necessary to ensure that waters do not contain chemical constituents in concentrations that adversely affect beneficial uses.
45. The Basin Plan contains narrative water quality objectives for chemical constituents, tastes and odors, and toxicity. The toxicity objective requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans, plants, or animals. The chemical constituent objective requires that groundwater shall not contain chemical constituents in concentrations that adversely affect beneficial uses. The tastes and odors objective requires that groundwater shall not contain tastes or odors producing substances in concentrations that cause nuisance or adversely affect beneficial uses.

Antidegradation Analysis

46. State Board Resolution No. 68-16 (“Policy with Respect to Maintaining High Quality Waters of the State”) (hereafter Resolution 68-16) requires a regional board in regulating the discharge of waste to maintain high quality waters of the state (i.e., background water quality) until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the State, will not unreasonably affect beneficial uses, and will not result in water quality less than as described in plans and policies. The discharge is required to meet waste discharge requirements that will result in the best practicable treatment or control of the discharge necessary to assure that pollution or nuisance will not occur and highest water quality consistent with maximum benefit to the people will be maintained.
47. The Discharger will provide treatment and control of the discharge that incorporates:
 - a) Use of a low salinity, low hardness water supply;
 - b) Septic tank structures that provide complete containment during primary treatment;
 - c) For leachfields, up to 150 feet of separation from the water table;

- d) For seepage pits, at least 75 feet of separation from the water table and a carbonaceous reactive barrier to reduce the nitrogen content of the effluent;
 - e) A public entity with full authority to inspect and repair systems as needed;
 - f) An operation and maintenance (O&M) manual; and
 - g) Certified operators to assure proper operation, maintenance, and monitoring.
48. The Regional Board finds that some degradation of groundwater beneath the subdivision is consistent with Resolution 68-16 provided that:
- a) The degradation is consistent with the maximum benefit of the people of the State;
 - b) The degradation is confined within a specified boundary;
 - c) The Discharger minimizes the degradation by fully implementing, regularly maintaining, and optimally operating best practicable treatment and control (BPTC) measures;
 - d) The degradation is limited to waste constituents typically encountered in municipal wastewater as specified in the groundwater limitations in this Order; and
 - e) The degradation does not result in water quality less than that prescribed in the Basin Plan.
49. Although the subdivision will incorporate several BPTC measures, and information presented in the RWD indicates that the system will not cause groundwater degradation, it is possible that the Discharger's effort may not fully constitute BPTC as intended in Resolution 68-16. The proposed system's effectiveness will depend on waste constituent attenuation in the vadose zone to prevent groundwater pollution and protect beneficial uses. Although the Basin Plan conditionally allows septic tanks with leachfield systems for rural developments, it includes the expectation of optimal site selection and conservative designs that meet minimum guidelines, and attentive and judicious operation and maintenance. Therefore, it is appropriate to require that the Discharger:
- a) Form a public entity shortly after adoption of this Order to assume the responsibilities set forth herein;
 - b) Empower the public entity to create and enforce rules designed to ensure that individual homeowners operate their septic systems in accordance with accepted management practices;
 - c) Empower the public entity to levy service fees to ensure financial stability to perform all required monitoring, reporting, maintenance, and replacement;
 - d) Require the public entity to periodically review the status of all systems, assess whether they are functioning properly, and (where necessary) complete retrofits or repairs in cases where the homeowner cannot or will not do so;
 - e) Formally determine background groundwater concentrations for selected constituents; and
 - f) Periodically assess whether groundwater degradation is occurring and what measures, if any, are needed to reduce or prevent further degradation.

50. Total dissolved solids (TDS) concentrations in the effluent are expected to be higher than the governing numerical water quality objective of 450 mg/L, a water quality criterion derived from narrative objectives in the Basin Plan that require protection of agricultural supply, the beneficial use most sensitive to TDS. Other salt components typically present in domestic effluent can reasonably be assumed to be proportional to TDS. Therefore, TDS can be an effective indicator parameter in regulation of salts. The threat of degradation from release of toxic chemicals to the septic systems can reasonably be controlled through periodic education of homeowners.
51. The addition of dissolved salts through water usage (100 to 250 mg/L) is normal for domestic use. A TDS groundwater limitation of 450 mg/L represents no additional cost to the Discharger, and limits salt degradation to a reasonable amount beneath the subdivision pending completion of a background groundwater quality study.
52. Waste constituents in domestic effluent that represent the greatest risk of exceeding water quality objectives are nitrogen and coliform. Both must be effectively attenuated within the soil to ensure that water quality objectives are met. The governing water quality objective for nitrogen prescribed by the Basin Plan is the primary Maximum Contaminant Limit (MCL) of 10 mg/L. However, given the apparent high quality of groundwater beneath the subdivision site and the level of treatment proposed, a groundwater limitation of 5 mg/L for total nitrogen is reasonable pending completion of a background groundwater quality study.
53. The Basin Plan numeric water quality objective for total coliform is less than 2.2 MPN/100 mL (i.e., not detectable). Given the nature and thickness of the soil below the base of the proposed subsurface disposal systems, this objective should be achievable without disinfection.
54. Section 13241 of the Water Code requires the Regional Board to consider various factors, including economic considerations, when adopting water quality objectives into its Basin Plan. Water Code Section 13263 requires the Regional Board to address the factors in Section 13241 in adopting waste discharge requirements. The State Board, however, has held that a Regional Board need not specifically address the Section 13241 factors when implementing existing water quality objectives in waste discharge requirements because the factors were already considered in adopting water quality objectives. These waste discharge requirements implement adopted water quality objectives. Therefore, no additional analysis of Section 13241 factors is required.
55. Groundwater limitations equal to or less than water quality objectives for indicator waste constituents are appropriate and consistent with maximum benefit to the people of the State. Accordingly, the discharge as authorized is consistent with the antidegradation provisions of Resolution 68-16.

Other Regulatory Considerations

56. The State Board adopted Order No. 97-03-DWQ (General Permit No. CAS000001) specifying waste discharge requirements for discharges of storm water associated with industrial activities, and requiring submittal of a Notice of Intent by all affected industrial dischargers. Because there is no

centralized treatment plant and no industrial activity, the Discharger is not required to obtain coverage under General Permit No. CAS000001.

57. On 29 January 1997, in accordance with the California Environmental Quality Act (CCR, Title 14, Section 15261 et. seq.), the Sacramento County Board of Supervisors certified the Final Supplement to the Final Environmental Impact Report (FSFEIR) for the Clay Station 1200 General Plan Amendment, Rezone, and Tentative Subdivision Map. On 8 February 2000, an Initial Study prepared by the Sacramento County Department of Environmental Review and Assessment determined that the FSFEIR was still adequate and appropriate for the proposed project.
58. The Final EIR and the Final Supplement to the Final EIR specify the following mitigation measures related to the wastewater treatment and disposal systems and water quality protection:
- a) Complete test borings along the Folsom South Canal to determine the depth to the water table.
 - b) Form a Septic Tank Maintenance District for the purpose of “. . . timely maintenance of all septic systems and ongoing groundwater testing.”
 - c) Obtain approval of the sewage disposal system design by the Sacramento County Environmental Management Department.
 - d) The Septic Tank Maintenance District must negotiate a disposal agreement with the Sacramento Regional County Sanitation District.
 - e) For any lot, if shallow percolation tests show that a leachfield is acceptable, then a leachfield shall be installed.
 - f) For any lot requiring seepage pits, an area shall be dedicated for the future installation of a sand filter.
 - g) Install and maintain a minimum of five groundwater monitoring wells and test quarterly for nitrate.
59. The above mitigation measures, coupled with the requirements of this Order, should adequately protect water quality. However, compliance with this Order does not necessarily constitute implementation of the mitigation measures. Sacramento County, as the lead agency for CEQA, will ensure compliance with the mitigation measures. In some cases, this Order imposes stricter limitations and additional requirements to satisfy the current plans and policies of the Regional Board.
60. Section 13267(b) of the CWC provides that:

In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region that could affect the quality of waters within its region shall furnish, under penalty of perjury,

technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.

The technical reports required by this Order and the attached “Monitoring and Reporting Program No. R5-2002-0170” are necessary to assure compliance with these waste discharge requirements. The Discharger operates facilities that discharge waste subject to this Order.

61. 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 74-81* (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.
62. State regulations that prescribe procedures for detecting and characterizing the impact of waste constituents from waste management units on groundwater are found in Title 27. While the subdivision is exempt from Title 27, the data analysis methods of Title 27 are appropriate for determining whether the discharge complies with the terms for protection of groundwater specified in this Order.
63. 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, California Code of Regulations (CCR), Section 20380 et seq. (hereafter Title 27). The exemption, pursuant to Title 27 CCR Section 20090(a), is based on the following:
 - a) The waste consists primarily of domestic sewage and treated effluent;
 - b) The waste discharge requirements are consistent with water quality objectives; and
 - c) The treatment and storage facilities described herein are associated with a public entity.
64. Pursuant to California Water Code Section 13263(g), discharge is a privilege, not a right, and adoption of this Order does not create a vested right to continue the discharge.

Public Notice

65. All the above and the supplemental information and details in the attached Information Sheet, which is incorporated by reference herein, were considered in establishing the following conditions of discharge.
66. The Discharger and interested agencies and persons were notified of the intent to prescribe waste discharge requirements for this discharge, and were given the opportunity to submit their written views and recommendations and to be heard in a public meeting.
67. All comments pertaining to the discharge were heard and considered in a public meeting.

IT IS HEREBY ORDERED that Charles M. Somers, Bonita M. Bahre, Gregory Graves, and the David J. Townsend and Sharon J. Usher Revocable Trust, and their 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 waste is prohibited unless and until a public entity has been formed pursuant to Section 53090 *et seq.* of the State of California Government Code, and the Regional Board has adopted an Order transferring responsibility for compliance with this Order to that public entity.
2. Discharge of wastes to surface waters or surface water drainage courses is prohibited.
3. Bypass or overflow of untreated or partially treated waste is prohibited.
4. Discharge of sewage to land from any point upstream of a septic tank (i.e., a sanitary sewer overflow) is prohibited.
5. Discharge of septic tank effluent to any place other than a permitted leachfield or seepage pit is prohibited.
6. Discharge of septic tank effluent to seepage pits whose total depth exceeds 50 feet is prohibited.
7. Discharge of waste classified as 'hazardous' under Section 2521, Chapter 15 of Title 23 or 'designated', as defined in Section 13173 of California Water Code is prohibited.

B. Discharge Specifications

1. The flow to any septic tank shall not exceed its design capacity.
2. The flow to any leachfield or seepage pit shall not exceed the actual disposal capacity, and there shall be no surfacing of wastewater in the disposal area.
3. Wastewater treatment and disposal shall not cause pollution or a nuisance as defined by Section 13050 of the California Water Code (CWC).
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. Any failing effluent disposal systems must be repaired or replaced within a reasonable amount of time. For each lot, the Discharger shall designate sufficient disposal area, including space for replacement systems, to comply with Sacramento County standards and the Regional Board's *Guidelines for Waste Disposal from Land Developments*, whichever is more stringent.
6. Each seepage pit shall contain at least 16 feet of a carbonaceous reactive barrier.
7. 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, and shall provide detailed procedures in the Operation and Maintenance Plan required by the Provisions:
 - a. Inspect each septic tank at least annually.
 - b. Minimize vegetation in any leachfield/seepage pit area as needed to prevent threat of root intrusion into the leach lines and drain rock, and remove vegetative debris.
 - c. 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 exceeding the depth of the gravel layer.
 - d. 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:
 - ◆ The combined thickness of sludge and scum exceeds one-third of the tank depth of the first compartment;
 - ◆ The scum layer is within three inches of the outlet device; or
 - ◆ The sludge layer is within eight inches of the outlet device.
 - e. Require septic tanks that are cracked or otherwise damaged be promptly repaired or replaced.
 - f. Clean septic tank filters on a regular basis.
 - g. Inform homeowners, through a public education program, about the chemicals and actions that have the potential to impair the proper and sustained functioning of septic systems.
 - ◆ Chemicals of concern include:
 - ◆ Self-regenerating water softeners,
 - ◆ Acid and organic solvent septic system additives, and
 - ◆ Kitchen greases and oils.

- ◆ Actions of concern include:
 - ◆ Excessive use of garbage disposal systems;
 - ◆ Connecting roof downspouts and storm water conveyances to the collection system; and
 - ◆ Draining swimming pools or spas into the collection system.
8. In addition to any other requirements imposed by the Sacramento Department of Environmental Management, the Discharger shall provide, maintain, and enforce the following setbacks:

<u>Setback Definition</u>	<u>Minimum Setback Required (feet)</u>
<u>For Septic Tanks:</u>	
Septic tank to surface water drainage course (intermittent stream)	25
Septic tank to nearest lot boundary	25
Septic tank to nearest domestic well	50
<u>For Leachfields:</u>	
Edge of leachfield to surface water drainage course (intermittent stream)	50
Edge of leachfield to nearest lot boundary	50
Edge of leachfield to nearest domestic well	100
<u>For Seepage Pits:</u>	
Seepage pit to surface water drainage course (intermittent stream)	50
Seepage pit to nearest lot boundary	75
Seepage pit to nearest domestic well	150

C. Solids Disposal Specifications

Sludge means the solid, semisolid, and liquid residues removed from septic tanks.

1. Sludge shall be removed from septic tanks as needed to ensure optimal treatment.
2. Sludge removal and transport shall be performed by a licensed liquid waste hauler and documented by copies of manifests.
3. Disposal of sludge must be at a facility operated in accordance with valid waste discharge requirements issued by a regional water quality control board.

D. Groundwater Limitations

1. Release of waste constituents from the leachfields or seepage pits 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:

<u>Constituent</u>	<u>Units</u>	<u>Limitation</u>
Total Coliform Organisms	MPN/100 mL	Less than 2.2
Total Dissolved Solids ¹	mg/L	450
Total Nitrogen	mg/L	5
<u>Nitrate (as N)</u>	<u>mg/L</u>	<u>5</u>

¹ A cumulative impact limit that accounts for numerous dissolved constituents.

- b. Contain any constituent not identified in Groundwater Limitation D.1.a in concentrations greater than background quality (whether chemical, physical, biological, bacteriological, radiological, or some other property or characteristic).
 - c. Exhibit a pH of less than 6.5 or greater than 8.5 pH units.
 - d. Impart taste, odor, toxicity, or color that creates nuisance or impairs any beneficial use.

E. Provisions

1. All of the following reports shall be submitted pursuant to Section 13267 of the California Water Code and shall be prepared as described in Provision E.2.
 - a. **Within 30 days** of recording, the Discharger shall submit the Final Subdivision Map. The map shall show the allowable locations of the domestic supply wells and the subsurface disposal areas and shall clearly indicate that all setback requirements have been met.
 - b. At least **60 days prior** to construction of the first septic system, the Discharger shall submit and implement an Operation and Maintenance (O&M) Plan for the facilities. The O&M Plan shall instruct field personnel on how to manage the day-to-day operations to comply with the terms and conditions of this Order and how to make field adjustments, as necessary, to optimize the effectiveness and life of the systems and prevent nuisance conditions (e.g., surfacing wastewater). It shall also include a troubleshooting flowchart with recommend remedial actions and a description of notification requirements. The O&M Plan shall include the information listed below, and in Discharge Specification No. 7.

- i. A description of all operation and maintenance procedures.
- ii. A schedule of inspections and routine maintenance tasks.
- iii. A tracking system and/or database for each lot that will provide a complete history of system installation, inspections, testing, repairs, replacements, and problems.
- iv. A current subdivision map showing the location of each septic tank, leachfield, seepage pit, and water supply well.
- v. An inspection procedure for testing the integrity of septic tanks and appurtenances, including inspection forms.
- vi. Inspection procedures and inspection forms for leachfields and seepage pits.
- vii. Trouble-shooting and problem resolution procedures.
- viii. A Sanitary Sewer System Operation, Maintenance, Overflow Prevention, and Response Plan for homeowners that describes specific procedures to prevent, respond to, and report sanitary sewer overflows.
- ix. An Evaluation Monitoring Plan to be implemented in the event that groundwater constituent(s) exceed concentration limits. The Evaluation Monitoring Plan shall contain steps to assess the source(s) of the problem, assess potential water supply impacts, and contain recommended BPTC measures.
- x. A Contingency Action Plan, as described in Finding No. 20, to address groundwater degradation.

The Discharger shall maintain the O&M Plan in up-to-date condition and shall amend the O&M Plan whenever there is a change (e.g. in the design, construction, operation, or maintenance of the sanitary sewer system or septic systems) that materially affects system operation, maintenance, repair, monitoring, reporting, or corrective action.

- c. At least **30 days prior** to construction of the first septic system, the public entity formed pursuant to Discharge Prohibition A.1 shall submit a Report of Waste Discharge (Form 200) to formally request transfer of this Order to that public entity. The Report of Waste Discharge shall include copies of documents certifying formation of the public entity and posting of the bond for the Corrective Action Fund (as described in Finding No. 23), and shall provide financial information that demonstrates that the public entity will have sufficient funding to carry out all monitoring, reporting, operation, and maintenance, and corrective action that may be required. The documents submitted shall clearly show that the public entity has the authority to assess fees; perform system maintenance, repairs, or replacements; and seize property as necessary.

- d. By **30 December 2002**, the Discharger shall submit a Groundwater Monitoring Well and Seepage Pit Monitoring System Installation Workplan prepared in accordance with, and including the items listed in, the first section of Attachment C: "*Monitoring Well Workplan and Monitoring Well Installation Report Guidance.*" The workplan shall describe a groundwater monitoring network specifically designed to ensure that background water quality is adequately characterized and any potential water quality impacts from the discharge are detected. The workplan must specify the locations of all proposed monitoring wells and may contain a phased installation plan. At a minimum, the first phase shall include at least eight new monitoring wells. The monitoring wells shall be designed to yield samples representative of the uppermost portion of the first aquifer underlying the site. In addition, the workplan shall present the specific rationale and design details of a system to provide for sampling of percolate at the base of five seepage pits. One seepage pit monitoring point shall be installed at each of the first five lots for which seepage pits are constructed.

- e. By **30 June 2003**, the Discharger shall submit a Monitoring System Installation Report prepared in accordance with, and including the items listed in, the second section of Attachment C: "*Monitoring Well Workplan and Monitoring Well Installation Report Guidance.*" The report shall describe the installation and development of the new monitoring wells and explain any deviation from the approved workplan. The first Monitoring Well Installation Report shall also document construction of the seepage pit monitoring systems as described in the approved workplan.

- f. By **30 September 2004**, the Discharger shall submit a *Background Groundwater Quality Study Report*. For each groundwater monitoring parameter/constituent identified in the MRP, the report shall present a summary of monitoring data and calculation of the concentration in background monitoring wells. Determination of background quality shall be made using the methods described in Title 27, Section 20415(e)(10), and shall be based on data from at least four consecutive quarterly (or more frequent) groundwater monitoring events. For each monitoring parameter/constituent, the report shall compare the calculated background concentration with the interim numeric limitations set forth in Groundwater Limitation D.1.a. Where background concentrations are statistically greater than the interim limitations specified in Groundwater Limitation D.1.a, the report shall recommend final groundwater limitations which comply with Resolution 68-16 for the waste constituents listed therein. Subsequent use of a concentration as a final groundwater limitation will be subject to the discretion of the Executive Officer. In addition, the Report shall contain a proposed "concentration limit" for each constituent listed in the MRP. These concentration limits shall be used to determine whether the groundwater concentrations are increasing and whether the Discharger needs to perform verification monitoring, evaluation monitoring, and/or corrective actions.

8. The Discharger shall report to the Regional Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days of reporting the data to the Commission pursuant to section 313 of the "Emergency Planning and Community Right to Know Act of 1986."
9. The Discharger shall not allow pollutant-free wastewater to be discharged into any septic 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.
13. The Discharger shall submit to the Regional Board on or before each compliance report due date, the specified document or, if appropriate, a written report detailing compliance or noncompliance with the specific schedule date and task. If noncompliance is being reported, then the Discharge shall state the reasons for such noncompliance and provide an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Regional Board in writing when it returns to compliance with the time schedule.
14. In the event of any change in control or ownership of land or waste discharge facilities described herein, the Discharger shall 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.
15. The Discharger must comply with all conditions of this Order, including timely submittal of technical and monitoring reports as directed by the Executive Officer. Violations may result in enforcement action, including Regional Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or recession of this Order.
16. A copy of this Order shall be kept at the office of the public entity, and at the office(s) or official vehicle(s) of key operating personnel. Key operating personnel shall be familiar with its contents.
17. The Regional Board will review this Order periodically and will revise requirements when necessary.

I, THOMAS R. PINKOS, Acting 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 6 September 2002.

Original signed by

THOMAS R. PINKOS, Acting Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2002-0170

FOR

CHARLES M. SOMERS, BONITA M. BAHRE
GREGORY GRAVES, AND THE DAVID J. TOWNSEND
AND SHARON J. USHER REVOCABLE TRUST
CLAY STATION 1200
SACRAMENTO COUNTY

This Monitoring and Reporting Program (MRP) describes requirements for monitoring septic systems and groundwater. This MRP is issued pursuant to Water Code Section 13267.

The Discharger shall not implement any changes to this MRP unless and until a revised MRP is issued by the Executive Officer. Regional Board staff shall approve specific sample station locations prior to implementation of sampling activities.

All samples should be representative of the volume and nature of the discharge or matrix of material sampled. The time, date, and location of each grab sample shall be recorded on the sample chain of custody form.

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

1. The operator is trained in proper use and maintenance of the instruments;
2. The instruments are calibrated prior to each monitoring event;
3. Instruments are serviced and/or calibrated by the manufacturer at the recommended frequency; and
4. Field calibration reports are submitted as described in the "Reporting" section of this MRP.

SEPTIC TANK MONITORING

The Discharger shall monitor each septic system and report the following information in the second Semi-Annual Report.

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

The Discharger shall retain records of each inspection, by street address, noting the date, measured readings, calculations, and calculated projection of whether the limits of the Discharge Specifications will be exceeded before the next reading. The Discharger shall also record when cleaning is required, the condition of the tank, and the date that cleaning or repair occurred and by whom. Copies of the Liquid Waste Hauler manifests shall be retained for review.

LEACHFIELD MONITORING

The Discharger shall conduct an annual visual inspection of all leachfields during the peak rainy season (1 January through 30 April). Results shall be recorded and submitted with the first Semi-Annual Monitoring Report each year. 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:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
<u>Effluent depth</u> ¹	Inches	Measurement	Annual	Annual

¹ Measure the depth of any ponded wastewater in each inspection riser. The Discharger shall provide the depth of each disposal trench and the corresponding depth of backfill remaining between the ponded wastewater and the surface.

SEEPAGE PIT MONITORING

Prior to construction of any seepage pit monitoring systems, the Discharger shall submit plans and specifications to the Regional Board for review and approval. Samples shall be collected and analyzed using approved EPA methods. Results shall be recorded and submitted with the Semi-Annual Monitoring Reports. Evidence of surfacing wastewater 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, samples shall be obtained from each of the five seepage pit percolate monitoring systems. Seepage pit percolate monitoring shall include, at a minimum, the following:

<u>Constituent/Parameter</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
pH	--	Grab	Semi-annual	Semi-annual
Total Dissolved Solids	mg/L	Grab	Semi-annual	Semi-annual
Nitrate+ Nitrite as Nitrogen	mg/L	Grab	Semi-annual	Semi-annual
Total Nitrogen	mg/L	Grab	Semi-annual	Semi-annual

GROUNDWATER MONITORING

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

Prior to sampling, groundwater elevations shall be measured and the wells shall be purged at least three well volumes until 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 and analyzed using approved EPA methods. Groundwater monitoring shall include, at a minimum, the following:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling and Reporting Frequency</u>
Groundwater Elevation ¹	0.01 Feet	Calculated	Quarterly
Gradient	Feet/Feet	Calculated	Quarterly
Gradient Direction	Degrees	Calculated	Quarterly
pH	S.U.	Grab	Quarterly
Total Dissolved Solids	mg/l	Grab	Quarterly
Nitrate+Nitrite as Nitrogen	mg/l	Grab	Quarterly
Ammonia	mg/l	Grab	Quarterly
Total Coliform Organisms ²	MPN/100 ml	Grab	Quarterly

¹ Groundwater elevation shall be based on depth to water using a surveyed measuring point on the well.

² Using a minimum of 15 tubes or three dilutions

REPORTING

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

The Discharger shall establish a quarterly sampling schedule for groundwater monitoring such that samples are obtained approximately every three months. Beginning with the second quarter 2003, the Discharger shall establish a quarterly sampling schedule for groundwater monitoring. 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) each year. The Quarterly Report shall include the following:

1. Results of the groundwater monitoring;
2. A narrative description of all preparatory, monitoring, sampling, and analytical testing activities for the groundwater monitoring. The narrative shall be sufficiently detailed to verify compliance with the WDR, this MRP, and the Standard Provisions and Reporting Requirements. The narrative shall be supported by field logs for each well documenting depth to groundwater; parameters measured before, during, and after purging; method of purging; calculation of casing volume; and total volume of water purged;
3. Calculation of groundwater elevations, an assessment of groundwater flow direction and gradient on the date of measurement, comparison of previous flow direction and gradient data, and discussion of seasonal trends if any;
4. A narrative discussion of the analytical results for all groundwater locations monitored including spatial and temporal trends, with reference to summary data tables, graphs, and appended analytical reports (as applicable);
5. A comparison of the monitoring data to the groundwater limitations and an explanation of any violation of those requirements;
6. Summary data tables of historical and current water table elevations and analytical results;
7. A scaled map showing relevant structures and features of the facility, the locations of monitoring wells and any other sampling stations, and groundwater elevation contours referenced to mean sea level datum; and
8. Copies of laboratory analytical report(s) for groundwater monitoring.

B. Semi-Annual Monitoring Reports

Semi-annual Monitoring Reports shall be submitted to the Regional Board on the **1st day of the second month following the end of each six-month period** (i.e. the January-June report is due by 1 August), and may be combined with the quarterly reports. At a minimum, the reports shall include:

1. Results of leachfield and seepage pit monitoring;
2. A comparison of monitoring data to the Discharge Specifications and Groundwater Limitations, 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.

The second Semi-Annual Report (for the months July through December) shall be submitted to the Regional Board by **1 February** each year. In addition to the information listed above, the second Semi-Annual Monitoring Report shall include the following:

1. A map and a summary of all septic systems completed during the previous calendar year including the name, address, and phone number of the homeowner; the design capacity and type of septic tank; location of designated primary and backup disposal areas; location of nearby wells to confirm compliance with setback requirements; confirmation of compliance with all other setbacks; and the type and design capacity of effluent disposal system installed.
2. The results of the annual monitoring for all septic systems in place during the preceding calendar year. The septic system monitoring information shall be tabulated by street address.
3. If requested by staff, tabular and graphical summaries of all data collected during the year;
4. Annual summary of the septic tank inspections for the year, including the addresses of septic tanks that were cleaned, the volume of sludge removed from each septic tank, and sludge disposal site(s) used;
5. A statement of when the O&M Manual was last reviewed for adequacy, and a description of any changes made during the year;
6. A summary of maintenance and repair activities performed on the sanitary sewer system;
7. Documentation of homeowner education activities;
8. A discussion of any compliance and the corrective actions taken, as well as any planned or proposed actions needed to bring the discharge into full compliance with the waste discharge requirements; and
9. A copy of the annual internal evaluation of the effectiveness of the treatment, disposal and monitoring systems in place; operation and maintenance procedures; homeowner education/involvement programs; and groundwater quality.

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

Ordered by: _____
THOMAS R. PINKOS, Acting Executive Officer

INFORMATION SHEET

ORDER NO. R5-2002-0170
CHARLES M. SOMERS, BONITA M. BAHRE
GREGORY GRAVES, AND THE DAVID J. TOWNSEND
AND SHARON J. USHER REVOCABLE TRUST
CLAY STATION 1200
SACRAMENTO COUNTY

Background

Approximately 746 acres of a 1,226-acre site in southeastern Sacramento County will be subdivided into 222 rural residential lots of three to five acres each. The remainder of the land (approximately 480 acres) will be left as open space and/or conservation easements. The residential lots will be sold singly or in groups as individual purchasers desire and final build out of the subdivision may take twenty years.

Each lot will have a septic tank served by its own subsurface disposal system consisting either of a leachfield or series of seepage pits, depending on subsurface percolation characteristics. Pending results of percolation testing for each lot, the Discharger estimates that approximately 50 percent of the lots will require seepage pits. Seepage pits will be installed with a carbonaceous reactive barrier to reduce the nitrogen content of effluent discharged deeper in the vadose zone. Each lot will have a private water supply well.

The Discharger will require that any failing effluent disposal systems be repaired or replaced. Replacement systems currently envisioned include new leach fields or seepage pits, supplementing or replacing reactive barrier material for seepage pits, and recirculating sand filters. The final subdivision map will specify the allowable locations of the domestic supply wells to ensure adequate separation between wells and disposal areas.

The Discharger will cooperate with Sacramento County to establish a public entity, such as a Septic Tank Maintenance District, to oversee and monitor the septic tanks and subsurface disposal systems. The public entity will have the authority to assess fees; perform system maintenance, repairs, or replacements; and seize property as necessary.

The *Guidelines for Waste Disposal from Land Development*, contained within the *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition*, (hereafter *Basin Plan*) allow the use of subsurface disposal systems in a rural subdivision provided an appropriate entity accepts responsibility for all aspects of wastewater utilities. The CWC similarly allows these systems where an authorized agency accepts all responsibility. Responsibilities set forth in the CWC and the *Basin Plan* include authority to finance and permit, and assure proper location, size, spacing, construction, operation, and maintenance, as well as authority to replace the system if found necessary. Shortly after adoption of the proposed Order, Sacramento County will form an appropriate public entity and assume responsibility for compliance with the proposed Order through the public entity.

Key conditions and requirements of the proposed Order are discussed below.

Septage and Sludge Disposal

Septic tanks provide primary treatment of the domestic wastewater. To ensure the proper operation of the septic tanks and protect the community leachfields from premature failure from solids carry-over

from the tanks, the accumulated solids must be periodically removed. The proposed Order requires that the Discharger inspect all septic tanks annually clean them as necessary.

Effluent Disposal

Hydraulic failure can occur when the leaching system cannot accept wastewater at the prescribed dose rates, which can result in wastewater rising to the ground surface. A common problem with leachfields is tree roots, which can infiltrate the leach lines and trenches and block the lines and eliminate pore spaces in the drainage rock. The proposed Order requires that trees and other vegetation capable of damaging subsurface disposal systems be adequately controlled.

Solids carry-over and biological clogging within the soil column may cause reduced percolation rates and may also result in surfacing of wastewater. This potential future problem will be addressed by dedicating replacement disposal areas for each lot and annual evaluations of system performance for each septic system.

Basin Plan, Beneficial Uses, and Regulatory Considerations

Surface water drainage is to the Cosumnes River, a tributary of the San Joaquin River. The Basin Plan designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin. The Basin Plan sets forth the applicable beneficial uses (industrial, agricultural, and domestic supply in this instance) of groundwater, procedure for application of water quality objectives, and the process for and factors to consider in allocating waste assimilation capacity.

The Basin Plan's *Guidelines for Waste Disposal from Land Development* sets forth minimum criteria for siting septic systems to protect public health and water quality, including setback distances from leachfields to property boundaries and to surface watercourses. The proposed Order implements those setback requirements.

State Board Resolution 68-16

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

Resolution 68-16 is applied on a case-by-case, constituent-by-constituent basis. It is incumbent upon the Discharger to provide technical information for the Board to complete the evaluation.

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

INFORMATION SHEET

CHARLES M. SOMERS, BONITA M. BAHRE, GREGORY GRAVES, AND
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assimilation capacity of the groundwater (CWC 13263(b)) and must consider other waste discharges and factors that affect that capacity.

Water quality objectives define the least stringent water quality limitations, except in some cases where ambient background quality already exceeds the objective due to uncontrollable factors. The criteria below reflect various concentrations above which specific beneficial uses of groundwater will be impaired. Unless natural background for a constituent proves higher, the translation process prescribed in the *Basin Plan* for interpreting narrative water quality objectives results in the most stringent of the criteria listed below as the governing water quality objective.

<u>Constituent</u>	<u>Units</u>	<u>Value</u>	<u>Beneficial Use</u>	<u>Criteria or Justification</u>
Ammonia	mg/L	0.5	MUN ¹	Taste and Odor ²
Boron	mg/L	0.7	AGR	Boron Sensitivity ⁴
Chloride	mg/L	106	AGR ³	Chloride sensitivity on certain crops irrigated via sprinklers ⁴
		142	AGR ³	Chloride sensitivity on certain crops ⁴
		250	MUN ¹	Recommended Secondary MCL ⁵
		500	MUN ¹	Upper Secondary MCL ⁵
Iron	mg/L	0.3	MUN ¹	Secondary MCL ⁶
Manganese	mg/L	0.05	MUN ¹	Secondary MCL ⁶
Nitrate as N	mg/L	10	MUN ¹	Primary MCL ⁷
Nitrite as N	mg/L	1	MUN ¹	Primary MCL ⁷
Sodium	mg/L	69	AGR ³	Sodium sensitivity on certain crops ⁴
Total Dissolved Solids	mg/L	450 ⁸	AGR ³	Salt sensitivity ⁴
Total Coliform Organisms	MPN/100 mL	2.2	MUN ¹	<i>Basin Plan</i>
		500	MUN ¹	Recommended Secondary MCL ⁵
		1,000	MUN ¹	Recommended Upper MCL ⁵
		6.5 to		
pH	pH Units	8.5	MUN ¹	Secondary MCL ⁸

¹ Municipal and domestic supply

² Council of the European Union, On the Quality of Water Intended for Human Consumption, Council Directive 98/83/EC (3 November 1998).

³ Agricultural supply

⁴ Ayers, R. S. and D. W. Westcot, Water Quality for Agriculture, Food and Agriculture Organization of the United Nations – Irrigation and Drainage Paper No. 29, Rev. 1, Rome (1985)

⁵ Title 22, California Code of Regulations (CCR), section 64449, Table 64449-B

⁶ Title 22, CCR, section 64449, Table 64449-A

⁷ Title 22, CCR, section 64431, Table 64431-A

⁸ Title 22, CCR, section 64439

Domestic wastewater contains numerous dissolved inorganic waste constituents (i.e., salts, minerals) that together comprise total dissolved solids (TDS). No component constituent is individually critical to a beneficial use. Critical constituents are individually listed above. The cumulative impact from these

other constituents, along with the cumulative affect of the constituents that are individually listed, can be effectively controlled using TDS as a generic indicator parameter. However, not all TDS constituents pass through the treatment process and soil profile in the same manner or rate.

Treatment and Control Technology

There are treatment and control technologies that are better than septic systems. However, conditions at the site are favorable for subsurface disposal systems and the Discharger proposes to use carbonaceous reactive barriers to enhance nitrogen removal within all seepage pits. Sand filters may also be used as a retrofit system at a later date if groundwater monitoring shows an inappropriate level of degradation. The proposed Order requires the discharger to meet water quality objectives and appropriately maintain and operate the systems.

Given the character of domestic wastewater and number of small, discrete discharge points, it is appropriate to use three indicator parameters to regulate the discharge: TDS, total coliform, and nitrogen.

Total coliform organisms, the indicator parameter for pathogenic organisms, should not be found in groundwater under a well-sited and designed subsurface disposal system. The applicable water quality objective is less than 2.2 MPN/100 mL (i.e., not detectable). Compliance with this objective as a groundwater limitation should be readily achieved given the depth to groundwater and the fines content of the vadose zone soil.

Domestic wastewater typically contains nitrogen in several forms in concentrations greater than water quality objectives. For appropriately sited and designed septic systems, it is reasonable to expect a high degree of nitrification and denitrification before any percolate reaches the water table. Given the site-specific conditions cited above and the special design seepage pit system proposed, the nitrogen content of percolate that reaches the water table is expected to be no greater than 10 mg/L as nitrogen. A groundwater limitation of 5 mg/L for nitrate nitrogen is reasonable and adequately protective of beneficial uses because of dilution and dispersion within the saturated zone pending the results of a site-specific background groundwater quality study. The background groundwater quality study will be used to determine whether revision of the interim Groundwater Limitation for nitrate nitrogen is appropriate. If the final Groundwater Limitation is exceeded, the Discharger must investigate source control and additional treatment to assure the water quality objective is met.

Salinity constituents typically pass through septic systems and the vadose zone, and long-term discharge of waste with higher concentrations of TDS than background groundwater will ultimately degrade groundwater quality beneath the subdivision. The quality of the water supply for Clay Station is very good, with a TDS of 300 mg/L or less. Predicted salt addition through domestic use is relatively high, but consistent with extensive use of water-conserving plumbing fixtures. Because of the number of subsurface disposal systems planned, the proposed Order does not contain effluent limits for salinity or other constituents. However, for this facility, groundwater degradation to no more than 450 mg/L TDS is reasonable and protective of all beneficial uses pending the results of a site-specific background

groundwater quality study. The background groundwater quality study will be used to determine whether revision of the interim Groundwater Limitation for TDS is appropriate. If the final Groundwater Limitation is exceeded, the Discharger must investigate source control and additional treatment to assure the water quality objective is met.

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

It is imperative that extraneous water sources be precluded from entering the subsurface disposal systems. Pool and spa drainage, rainfall drainage from individual homes, inflow and infiltration, and rainfall run-on to the leachfield area should all be controlled to the extent feasible. The proposed Order focuses on user rules and education.

Title 27

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

Discharges of domestic sewage and treated effluent can be treated and controlled to a degree that will not result in unreasonable degradation of groundwater. For this reason, they have been conditionally exempted from Title 27, except for residual sludge and solid waste generated as part of the treatment process [Section 20090(a) of Title 27]. The condition requires that the discharge not result in violation of any water quality objective in groundwater.

Monitoring Requirements

Section 13267 of the CWC authorizes the Board to require monitoring and technical reports as necessary to investigate the impact of a waste discharge on waters of the state. In recent years, there has been increased emphasis on obtaining all necessary information, assuring the information is timely as well as representative and accurate, and thereby improving accountability of any discharger for meeting the conditions of discharge. Section 13268 of the CWC authorizes assessment civil administrative liability where appropriate.

The proposed Order requires the Discharger to conduct septic tank, leachfield, seepage pit, and groundwater monitoring. The Discharger is required to monitor pH, coliform, TDS, and nitrogen in groundwater.

INFORMATION SHEET

CHARLES M. SOMERS, BONITA M. BAHRE, GREGORY GRAVES, AND
THE DAVID J. TOWNSEND AND SHARON J. USHER REVOCABLE TRUST
CLAY STATION 1200
SACRAMENTO COUNTY

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

Therefore, the Discharger must monitor groundwater for constituents present in the discharge and that are capable of reaching groundwater and violating groundwater limitations. The Discharger does not currently have a complete groundwater monitoring well network and therefore is required to install one. For each constituent listed in the Groundwater Limitations section, the Discharger must compare concentrations of selected groundwater constituents to prescribed numerical limitations to determine compliance.

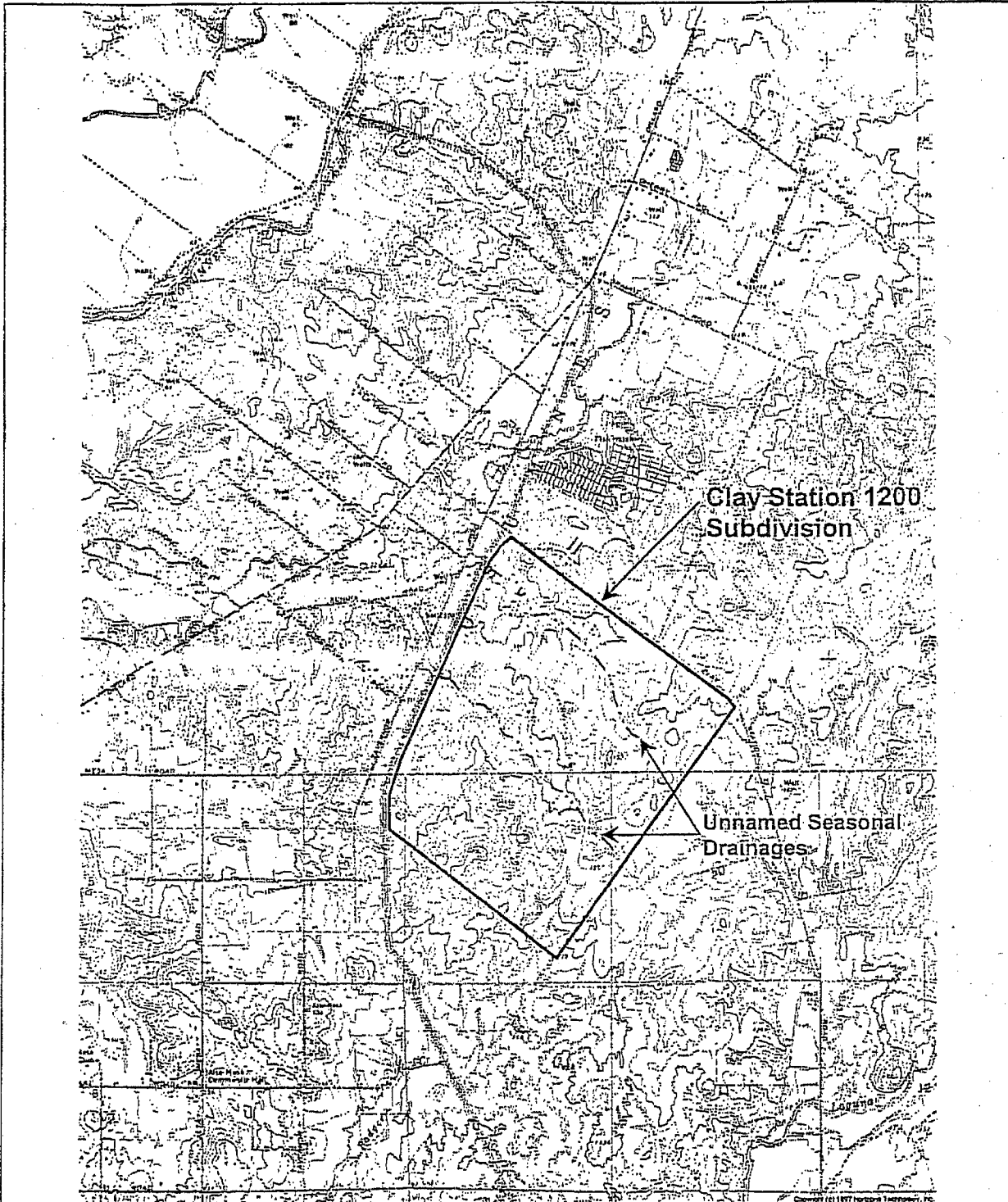
Sanitary Sewer System

The sanitary sewer system, which is limited to gravity flow pipes from the house to the septic tank and from the septic tank to the disposal area, is subject to overflows that could expose the public or waters of the State to unnecessary risk of pollution and nuisance. Accordingly, conditions of the proposed Order require a homeowner spill prevention and response plan as part of an overall Operation and Maintenance Plan to be implemented by the Discharger.

Reopener

The proposed Order was developed based on currently available technical information and applicable water quality laws, regulations, policies, and plans, and is intended to assure conformance with them. Additional information must be developed and documented by the Discharger as required by schedules set forth in the proposed Order. As this additional information is obtained, decisions will be made concerning the ability of the system to comply with requirements of discharge. If controls and treatment prescribed by the proposed Order prove insufficient for sustained compliance, modifications or replacement will be necessary. The modifications may represent a significant change to the system, and therefore may be sufficient basis for reopening the waste discharge requirements.

ATTACHMENT A



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

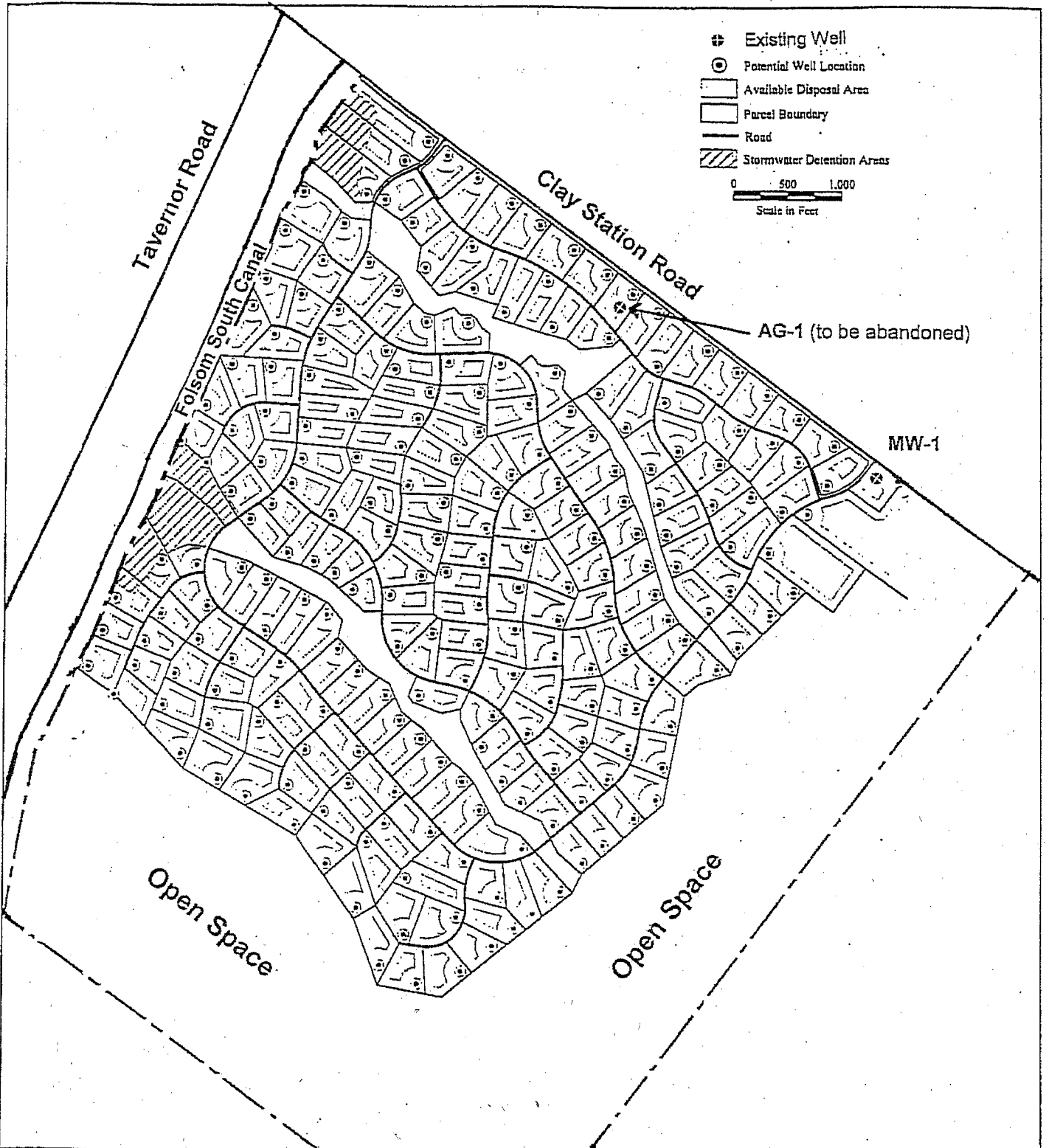
Vicinity Map
CLAY STATION 1200
SUBDIVISION
SACRAMENTO COUNTY

ORDER NO. R5-2002-0170

N

Approx. Scale
1" = 4,000'

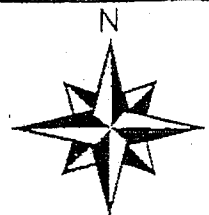
ATTACHMENT B



Drawing Reference:
CONDOR EARTH TECHNOLOGIES, INC.
SONORA, CA
March 2002

Site Map
CLAY STATION 1200
SUBDIVISION
SACRAMENTO COUNTY

ORDER NO. R5-2002-0170



ATTACHMENT C

MONITORING WELL WORKPLAN AND MONITORING WELL INSTALLATION REPORT GUIDANCE

CHARLES M. SOMERS, BONITA M. BAHRE, GREGORY GRAVES, AND
THE DAVID J. TOWNSEND AND SHARON J. USHER REVOCABLE TRUST
CLAY STATION 1200
SACRAMENTO COUNTY

Prior to installation of groundwater monitoring wells, the Discharger shall submit a workplan containing at least the information listed below. Following installation of the monitoring wells, the Discharger shall submit a report of results, as described below. All workplans and reports must be prepared under the direct supervision of, and signed by, a geologist registered by the State of California.

Monitoring Well Installation Workplan

A. General Information:

- Proposed monitoring well locations and rationale for location selection
- Equipment decontamination procedures
- Topographic map showing any existing monitoring wells, proposed wells, waste handling facilities, utilities, and other major physical and man-made features.

B. Drilling Details: describe proposed drilling and logging methods

C. Monitoring Well Design:

- Casing diameter
- Borehole diameter
- Depth of surface seal
- Well construction materials
- Diagram of well construction
- Type of well cap
- Size of perforations and rationale
- Grain size of sand pack and rationale
- Thickness and position of bentonite seal and sand pack
- Depth of well, length and position of perforated interval

D. Well Development:

- Method of development to be used
- Method of determining when development is complete
- Method of development water disposal

E. Surveying Plan: discuss how each well will be surveyed to a common reference point.

F. Well Sampling:

- Minimum time after development before sampling (48 hours)
- Well purging method and amount of purge water
- Sample collection and preservation method
- QA/QC procedures

G. Water Level Measurement:

The elevation reference point at each monitoring well shall be within 0.01 foot.
Ground surface elevation at each monitoring well shall be within 0.1 foot.
The method and time of water level measurement shall be specified.

H. Proposed time schedule for well installation and development.

Monitoring Well Installation Report

A. Well Construction:

Number and depth of wells drilled
Date(s) wells drilled
Description of drilling and construction
Approximate locations relative to facility site(s)
A well construction diagram for each well must be included in the report, and should contain the following details:

Total depth drilled
Depth of open hole (same as total depth drilled if no caving occurs)
Footage of hole collapsed
Length of slotted casing installed
Depth of bottom of casing
Depth to top of sand pack
Thickness of sand pack
Depth to top of bentonite seal
Thickness of bentonite seal
Thickness of concrete grout
Boring diameter
Casing diameter
Casing material
Size of perforations
Number of bags of sand
Well elevation at top of casing
Depth to ground water
Date of water level measurement
Monitoring well number
Date drilled
Location

B. Well Development:

Date(s) of development of each well
Method of development
Volume of water purged from well
How well development completion was determined

Method of effluent disposal

Field notes from well development should be included in report.

- C. Well Survey Data: provide reference elevations for each well and surveyor's notes
- D. Water Sampling:
 - Date(s) of sampling
 - How well was purged
 - How many well volumes purged
 - Levels of temperature, EC, and pH at stabilization
 - Sample collection, handling, and preservation methods
 - Sample identification
 - Analytical methods used
 - Laboratory analytical data sheets
 - Water level elevation(s)
 - Groundwater contour map
- E. Explanation of any deviation from the approved workplan.