

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2007-0050

WASTE DISCHARGE REQUIREMENTS
FOR
JOHN AND GAIL KAUTZ
JOHN KAUTZ FARMS
HAY STATION RANCH RECYCLED WATER REUSE AREAS
CALAVERAS COUNTY

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

1. John and Gail Kautz (hereafter Discharger) submitted a Report of Waste Discharge (RWD), dated 10 April 2006, for updating Waste Discharge Requirements (WDRs) for the reuse of recycled water produced by the Murphys Sanitary District (MSD) wastewater treatment plant. Supplemental information was submitted on 5 July 2006.
2. The Hay Station Ranch recycled water reuse areas, which are owned by John and Gail Kautz and operated by John Kautz Farms, are located on Hay Station Ranch at 1894 Six Mile Road in Murphys, Calaveras County. The reuse areas are on Assessors Parcel Nos. 66-010-04 and 66-022-01, which are in Sections 7, 8, and 18, T3N, R14E, MDB&M. The location of Hay Station Ranch is presented on Attachment A, which is attached hereto and made part of this Order by reference.
3. WDRs Order No. 5-01-063, adopted by the Regional Water Board on 16 March 2001, prescribes requirements for both the Ironstone Vineyards winery process wastewater treatment and disposal system, and the use of recycled water on Hay Station Ranch.
4. Updated requirements for the treatment, storage, and disposal of winery process wastewater at Ironstone Vineyards are found in WDRs Order No. R5-2007-0050, adopted by the Regional Water Board on 4 May 2007. Requirements for the use of recycled water on Hay Station Ranch are contained in this Order.
5. In April 1999, MSD renegotiated a contract with Kautz Vineyards, Inc., whereby MSD will supply Hay Station Ranch with all treated wastewater from the WWTP. This agreement calls for MSD to deliver a minimum of 180 acre-feet per year of treated wastewater with the understanding that additional wastewater may be supplied if available. Recycled water is supplied to Hay Station Ranch at a rate of 375 gallons per minute. The Murphys wastewater treatment plant is located directly across the street from Ironstone Vineyards and Hay Station Ranch as shown on Attachment A.

RECYCLED WASTEWATER REUSE AREAS

6. The Discharger's RWD indicates that recycled water obtained from MSD will be reused on approximately 120 acres of vineyards, orchards, and pasture land within Hay Station Ranch. The location of the recycled water reuse areas on Hay Station Ranch is

presented on Attachment B, which is attached hereto and made part of this Order by reference.

7. Recycled water supplied by MSD to Hay Station Ranch for reuse is treated to at least a secondary 2.2 disinfection standard using an oxidation, filtration, and disinfection process. The MSD wastewater treatment plant is regulated under WDRs Order No. 5-00-264 and Resolution No. R5-2007-0050, which prescribes requirements for the treatment, including effluent limits, and storage of wastewater prior to delivery to Hay Station Ranch for reuse.
8. Murphys Sanitary District is required to sample effluent and report the quality of the recycled water that is supplied to Hay Station Ranch. The following table presents the results of effluent quality sent to Hay Station Ranch for the years of 2004 through 2006.

<u>Constituent</u>	<u>Units</u>	<u>2004 Results Concentration Range</u>	<u>2005 Results Concentration Range</u>	<u>2006 Results Concentration Range</u>
Total Coliform Organisms	MPN/100mL	<2-240	<2-1,600	<2-2,400
Nitrate (as N)	mg/L	<0.05-1.4	<0.05-1.1	<0.05-0,73
Total Dissolved Solids	mg/L	218-1030	217-1200	162-561
Total Suspended Solids	mg/L	<0.5-31	<0.5-27	<0.5-44
Total Settleable Solids	mg/L	<0.1	<0.1	<0.1
TKN	mg/L	<1.0-20	<0.7-12	1.6-14
BOD	mg/L	7.7-54	7.3-24	6-36
PH	Std. Unit	6.6-8.5	6.4-8.2	6.6-8.7

9. Recycled water is applied to the vineyards and orchards via a drip irrigation system. Drip irrigation is used to ensure that recycled water does not come into contact with the fruit grapes and food crops. Irrigation of the pastureland is done via a spray irrigation system. Orchards and pasture lands irrigated with recycled water are graded in such a way that any potential tailwater runoff does not pond or pool up near public roads or public access areas, and does not flow towards surface drainage courses or surface waters. All the vineyards that use recycled water have berms on each row of grape vines to control any potential runoff and erosion. All areas being irrigated with recycled water are inspected on a daily basis. The entire recycled water reuse areas are inspected on a weekly basis.
10. All recycled water conveyance lines are clearly marked as such. Recycled water valves and valve boxes are marked with signage indicating that recycled water is being used.

11. The MSD is currently permitted to discharge up to a monthly average of 350,000 gallons per day (gpd) between 2 March and 29 November of each year. The maximum amount that MSD can discharge to Hay Station Ranch is approximately 85,750,000 gallons, or approximately 263 acre-feet. Hay Station Ranch proposes to apply the recycled water to approximately 120 acres of vineyards, orchards and pasture land.
12. Resolution No. R5-2007-0050 allows MSD to deliver up to 450,000 gpd year round to Hay Station Ranch. Based on application of recycled water to 120 acres at a rate of 450,000 gpd, approximately 514 acre feet would be applied to the 120 acres, or 4.2 feet per acre annually. As part of the RWD, John Kautz Farms submitted a hydraulic loading balance which indicates that the proposed 120 acres of land used for land application of recycled water can adequately accept 450,000 gpd without causing runoff.
13. The following table presents anticipated loading rates to the 120-acres land application area for BOD, total nitrogen, and total dissolved solids (TDS). These loading rates were calculated based on the effluent data obtained from MSD for the year 2006 and on annual wastewater flows of 514 acre feet.

<u>Constituent</u>	<u>Concentration Range</u>	<u>Loading Rate(lbs/acre/day)</u>	<u>Loading Rate (lbs/acre/year)</u>
BOD	10.2-30.5	0.3-1.0	118-355
Total Nitrogen	5.2-13.2	0.2-0.4	60.5-153
TDS	215-423	6.9-13.5	2,503-4,924

14. Based on the results of loading rate calculations, BOD loading rates are below the loading rate that typically causes objectionable odors and is unlikely to mobilize constituents in the subsurface. Applications of BOD at less than 100 lbs/ac•year generally do not cause nuisance conditions. Total nitrogen loading rates are low and should not impact groundwater quality as long as the recycled water is applied to cropland. TDS loading rates appear elevated but the crops should remove some salts. This Order requires groundwater monitoring to determine whether the discharge has the potential to impact groundwater quality.

Site Specific Conditions

15. Average annual rainfall for the Murphys area is approximately 35.89 inches per year; the 100-year return annual total rainfall is 64.92 inches per year.
16. The average evapotranspiration rate for the Murphys area is approximately 48.75 inches per year.
17. According to information presented in the RWD, the geologic conditions within the winery area consists of metamorphic rock (schist-like rock) overlaid by colluvium, which was derived from schist, which had developed into a soil. The contact between the soil

and underlying bedrock is not distinct or sharp but is mostly a gradual transition. The transition from plastic, fine-grained soil to weathered rock is generally decomposed bedrock to remoldable clay. The depth of soils to weathered bedrock or bedrock range from approximately 5.5 to 12 feet below ground surface.

18. The facility is within the Angels Camp Hydrologic Area (No. 534.22), as depicted on interagency hydrologic maps prepared by the Department of Water Resources in August 1986.
19. The site is outside the 100-year flood zone.
20. Groundwater monitoring has never been conducted at the reuse site, and no information was presented in the RWD regarding groundwater quality. This Order requires the installation of groundwater monitoring wells and requires that groundwater be monitored.

Basin Plan, Beneficial Uses and Regulatory Considerations

21. The *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition*, (hereafter Basin Plan) designates beneficial uses, establishes water quality objectives, contains implementation plans and policies for protecting waters of the basin, and incorporates by reference plans and policies adopted by the State Water Resources Control Board. Pursuant to §13263(a) of the California Water Code (CWC), waste discharge requirements must implement the Basin Plan.
22. Six Mile Creek, a seasonal creek, flows through the property. It begins as a drainage adjacent to the MSD wastewater treatment plant storage ponds, flows through Hay Station Ranch and the Ironstone Winery facility, and finally enters Angels Creek, which is a tributary of New Melones Reservoir.
23. The beneficial uses of surface waters tributary to New Melones Reservoir as stated in the Basin Plan are municipal and domestic supply; agricultural supply; industrial process supply; hydropower generation; water contact recreation; non-contact water recreation; warm and cold freshwater habitat; spawning, reproduction, and/or early development; and wildlife habitat.
24. The beneficial uses of underlying groundwater are municipal and domestic water supply; agricultural supply; industrial service supply; and industrial process supply.
25. The Basin Plan establishes numerical and narrative water quality objectives for surface water and groundwater within the basin, and recognizes that water quality objectives are achieved primarily through the Water Board's adoption of waste discharge requirements and enforcement orders. Where numerical water quality objectives are listed, these are limits necessary for the reasonable protection of beneficial uses of the water. Where compliance with narrative water quality objectives is required, the Water

Board will, on a case-by-case basis, adopt numerical limitations in orders, which will implement the narrative objectives to protect beneficial uses of the waters of the state.

26. The Basin Plan specifies a numerical water quality objective for ground waters for Bacteria that states, in part, the following:
- *“The following objectives apply to all ground waters of the Sacramento and San Joaquin River Basins, as the objectives are relevant to the protection of designated beneficial uses.”*
 - *“**Bacteria** in ground waters used for domestic or municipal supply (MUN), the most probable number of coliform organisms over any seven-day period shall be less than 2.2/100mL.”*
 - Groundwater, as described in the Basin Plan (page I-1.00), includes all subsurface waters that occur in fully saturated zones and fractures within soils and other geologic formations.
27. The Regional Water Board applies the bacteria objective to all groundwaters designated as municipal or domestic supply (MUN), not just those waters currently used for MUN. This interpretation is consistent with the California Water Code (CWC) and the Basin Plan. The Regional Water Board has consistently interpreted the objective to apply to groundwater designated for MUN. The Regional Water Board has a long-standing pattern and practice of adopting WDRs that reflect this interpretation. The following excerpts from the Basin Plan clearly support the plain meaning of the Basin Plan as well as the Regional Water Board’s established pattern and practice:
- a. The introductory paragraph on Water Quality Objectives for Ground Waters (page III-9.00 of the Basin Plan) states: *“The following objectives apply to all ground waters of the Sacramento and San Joaquin River Basins, as the objectives are relevant to the protection of designated beneficial uses.”*
 - b. The Policy for Application of Water Quality Objectives (page IV-16.00) states: *“Water quality objectives apply to all waters within a surface water or ground water resource for which beneficial uses have been designated, rather than at intake, wellhead, or other point of consumption.”* Consistent with the CWC and the Basin Plan, the Regional Water Board applies the bacteria objective to all groundwaters designated as municipal or domestic supply (MUN), not just those waters currently used for MUN.
 - c. State Board Resolution No. 88-63 (Adoption of Policy Entitled “Sources of Drinking Water”) defines all groundwaters of the State to be suitable or potentially suitable for MUN uses, and states that they should be designated as MUN in Basin Plans unless at least one the following three criteria are satisfied:

- ◆ The total dissolved solids concentration of the resource exceeds 3,000 mg/L (5,000 μ mhos/cm, electrical conductivity) and it is not reasonably expected by the Water Board to supply a public water system, or
 - ◆ There is contamination, either by natural processes or human activity (unrelated to a specific pollution incident), that cannot reasonably be treated for domestic use using either Best Management Practices or best economically achievable treatment practices, or
 - ◆ The water source does not provide sufficient water to supply a single well capable of producing an average sustained yield of 200 gallons per day.
28. Accordingly, the Regional Water Board designated all groundwaters of the basins as suitable or potentially suitable for MUN in the Basin Plan (pages II-2.00 and -3.00). The Regional Water Board can only “de-designate” beneficial uses of a particular water resource through amendment of the Basin Plan.
29. State Board Order No. WQO-2003-0014 upheld the Regional Water Board’s interpretation of the Basin Plan with respect to implementation of the bacteria objective, stating: *“The Basin Plan contains a water quality objective for bacteria that applies to groundwater that states: ‘In groundwaters used for domestic or municipal supply (MUN) the most probable number of coliform organisms over any seven-day period shall be less than 2.2/100 mL.’ Since the groundwater is designated for municipal or domestic supply, a groundwater limitation for coliform of less than 2.2MPN/100 mL is appropriate.”*
30. The Basin Plan includes a water quality objective for chemical constituents that, at a minimum, requires waters designated as domestic or municipal supply to meet the maximum contaminant levels (MCLs) specified in the following provisions of Title 22, California Code of Regulations: Tables 64431-A (Inorganic Chemicals) and 64431-B (Fluoride) of Section 64431, Table 64444-A (Organic Chemicals) of Section 64444, and Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Rangers) of Section 64449. The Basin Plan’s incorporation of these provisions by reference is prospective, and includes future changes to the incorporated provisions as the changes take effect. The Basin Plan recognizes that the Regional 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.
31. 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 animals, or aquatic life. 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.

32. Section 13241 of the Water Code requires the Regional Water Board to consider various factors, including economic considerations, when adopting water quality objectives into its Basin Plan. Water Code Section 13263 requires the Regional Water Board to address the factors in Section 13241 in adopting waste discharge requirements. The State Board, however, has held that a Regional Water 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.
33. Under the “Antidegradation” section, the attached Information Sheet lists the various waste constituents identified thus far as fitting the restriction of the Findings along with limits of each constituent necessary to maintain beneficial uses known to be adversely affected at certain concentrations of the waste constituent in groundwater. The listing identifies the constituent, the beneficial use, and its associated limit, as well as the technical reference for the limit. Some limits become less restrictive when the water supply is limited to certain applications of a beneficial use, but that requires additional factual information. Interim groundwater limitations for each constituent reflect the most restrictive listed limit for the waste constituent, except if natural background quality is greater, in which case background becomes the interim limitation.

Groundwater Degradation

34. State Water Resources Control Board (State Board) Resolution No. 68-16 (hereafter Resolution 68-16 or the “Antidegradation Policy”) requires the Regional Water Board in regulating the discharge of waste to maintain high quality waters of the state until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the State, will not unreasonably affect beneficial uses, and will not result in water quality less than that described in the State Board and Regional Water Board policies (e.g., quality that exceeds water quality objectives).
35. The Regional Water Board finds that some degradation of groundwater beneath the recycled water reuse areas is consistent with Resolution 68-16 provided that:
 - a. The degradation is confined within a specified boundary;
 - b. The Discharger minimizes the degradation by fully implementing, regularly maintaining, and optimally operating best practicable treatment and control (BPTC) measures;
 - c. The degradation is limited to waste constituents typically encountered in municipal wastewater as specified in the groundwater limitations in this Order; and
 - d. The degradation does not result in water quality less than that prescribed in the Basin Plan.

36. Some degradation of groundwater by some of the typical waste constituents released with discharge from a municipal wastewater utility after effective source control, treatment, and control is consistent with maximum benefit to the people of California. The technology, energy, water recycling, and waste management advantages of municipal utility service far exceed any benefits derived from a community otherwise reliant on numerous concentrated individual wastewater systems, and the impact on water quality will be substantially less. Degradation of groundwater by constituents (e.g., toxic chemicals) other than those specified in the groundwater limitations in this Order, and by constituents that can be effectively removed by conventional treatment (e.g., total coliform bacteria) is prohibited. When allowed, the degree of degradation permitted depends upon many factors (i.e., background water quality, the waste constituent, the beneficial uses and most stringent water quality objective, source control measures, and waste constituent treatability).
37. Economic prosperity of local communities and associated industry is of benefit to the people of California, and therefore sufficient reason exists to accommodate growth and some groundwater degradation around the recycled water reuse areas, provided that the terms of the Basin Plan are met. It is noted that MSD's only method of wastewater disposal is through percolation and evaporation in the effluent storage reservoir and through irrigation of recycled water at Hay Station Ranch.
38. The Discharger does not currently monitor groundwater quality beneath the recycled water reuse areas. Therefore, it is unknown if the discharge of waste at Hay Station Ranch is in compliance with Resolution 68-16. This Order requires the Discharger to install groundwater monitoring wells and begin groundwater monitoring to determine whether the discharge of waste is in compliance with Resolution 68-16.

Treatment and Control Practices

39. Murphys Sanitation District provides treatment and control of the discharge to Hay Station Ranch that incorporates:
 - a. Technology for secondary 2.2 disinfected treatment of municipal wastewater;
 - b. Application of wastewater at agronomic application rates; and
 - c. Certified operators to assure proper operation and maintenance of the MSD WWTP.
40. The WWTP design and reuse of recycled water on Hay Station Ranch incorporates minimal BPTC measures. In order to determine compliance with Resolution No. 68-16 it is appropriate to establish a schedule for installation and sampling of groundwater monitoring wells and to formally determine background groundwater concentrations for selected constituents. If groundwater is degraded or there is evidence that the discharge may cause degradation, then the Discharger will be required to evaluate and implement additional BPTC measures for each conveyance, treatment, storage, and disposal component of the system. Completion of these tasks will ensure that BPTC

and the highest water quality consistent with the maximum benefit to the people of the state will be achieved.

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

Water Recycling

42. State Board Resolution No. 77-1, *Policy with Respect to Water Recycling in California*, encourages recycling projects that replace or supplement the use of fresh water, and *The Water Recycling Law* (CWC sections 13500-13529.4) declares that utilization of recycled water is of primary interest to the people of the State in meeting future water needs.
43. The California Department of Health Services (DHS) has established statewide water recycling criteria in Title 22, CCR, Section 60301 et. seq. (hereafter Title 22). The MSD will treat the wastewater to secondary standards and disinfect the effluent per Title 22 requirements.
44. A 1988 Memorandum of Understanding between DHS and the State Board on the use of recycled water establishes basic principles relative to the two agencies and the regional water boards. The Memorandum allocates primary areas of responsibility and authority between the agencies and provides for methods and mechanisms necessary to assure ongoing, continuous future coordination of activities relative to use of recycled water.
45. DHS requires that the American Water Works Association (AWWA) Guidelines for Distribution of Non-Potable Water and Guidelines for the On-site Retrofit of Facilities Using Disinfected Tertiary Recycled Water be implemented in design and construction of recycling equipment. The guidelines require installation of purple pipe, adequate signs, and adequate separation between the recycled water lines and domestic water lines and sewer lines. It is unknown if the Discharger currently uses purple pipes, but this Order requires that all future recycled water distribution pipes be purple.
46. Section 60323(a) of Title 22 states that no person shall produce or supply recycled water for direct reuse from a proposed water recycling plant unless an engineering report is submitted for review and approval by DHS and the Regional Water Board. Irrigation of vineyards, orchards, and pasture lands used for grazing is considered a beneficial reuse. In May 2001 the MSD and Kautz Vineyards, Inc. submitted the

required Title 22 Engineering Report to DHS and the Regional Water Board. The Title 22 Engineering Report was approved by DHS in January 2002.

OTHER REGULATORY CONSIDERATIONS

47. 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. Industrial Storm Water permitting requirements do not apply to facilities irrigating agricultural lands with recycled water, therefore the Discharger is not required to apply for a stormwater NPDES permit.
48. The action to update WDRs for this existing facility is exempt from the California Environmental Quality Act (CEQA) because it is an action taken by a regulatory agency to assure the protection of the environment, and the regulatory process involves procedures for protection of the environment (14 California Code of Regulations [CCR] Section 15308). The actions required by this Order do not have the potential to cause a significant effect on the environment and is, therefore, exempt from CEQA pursuant to Section 15061(b)(3) of Title 14 CCR.
49. Section 13267(b) of the California Water Code provides that: "In conducting an investigation specified in subdivision (a), the regional water board may require that any person who has discharged, discharges, or is suspected of discharging, or who proposes to discharge within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of discharging, or who proposes to discharge waste outside of its region that could affect the quality of the waters of the state within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the board requires. The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. In requiring those reports, the regional water 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."
50. The technical reports required by this Order and the attached "Monitoring and Reporting Program No. R5-2007-0050" are necessary to assure compliance with these waste discharge requirements. The Discharger owns and operates the facility that discharges the wastes subject to this Order.
51. The California Department of Water Resources sets standards for the construction and destruction of groundwater wells, as described in *California Well Standards Bulletin 74-90* (June 1991) and *Water Well Standards: State of California Bulletin 94-81* (December 1981). These standards, and any more stringent standards adopted by the state or county pursuant to CWC Section 13801, apply to all monitoring wells.

52. 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 land application area 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.
53. 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 20005 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 municipal wastewater treatment plant.
54. 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

55. 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.
56. The Discharger and interested agencies and persons have been notified of the intent to prescribe waste discharge requirements for this discharge, and they have been provided an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
57. In a public meeting, all comments pertaining to the discharge were heard and considered.

IT IS HEREBY ORDERED that Order No. 5-01-063 is rescinded and, pursuant to Sections 13263 and 13267 of the California Water Code, John and Gail Kautz, and John Kautz Farms, 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 wastes to surface waters or surface water drainage courses is prohibited.
2. Bypass or overflow of recycled water or tailwater containing recycled water is prohibited.
3. Discharge of waste classified as 'hazardous', as defined in Sections 2521(a) of Title 23, CCR, Section 2510, et seq., (hereafter Chapter 15), or 'designated' as defined in Section 13173 of the California Water Code, is prohibited.
4. Surfacing of wastewater outside or downgradient of the recycled water reuse areas is prohibited.
5. The use of recycled water on land at which winery wastewater has been, or is, used for irrigation is prohibited.

B. Discharge Specifications:

1. The discharge of recycled water to the Hay Station Ranch recycled water reuse areas shall not exceed a monthly average of 450,000 gallons per day.
2. The discharge of recycled water shall remain within the designated disposal areas (as described in Finding No. 6) at all times.
3. The discharge of recycled water shall be managed to minimize erosion and prevent runoff from the designated recycled water areas.
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. Neither the treatment nor the discharge shall cause a condition of pollution or nuisance as defined by the California Water Code, Section 13050.
6. Public contact with wastewater shall be precluded or controlled through such means as fences and signs, or acceptable alternatives.
7. The Discharger shall operate all systems and equipment to maximize treatment of wastewater and optimize the quality of the discharge.

C. Recycled Water Specifications

Irrigation of recycled water shall not be performed within 24 hours of a forecasted storm, during a storm, within 24 hours after any measurable precipitation event, or when the ground is saturated.

Recycled water used for irrigation shall be managed to minimize saturation, pooling, and runoff from the vineyards, orchards, and pasture land.

Application of recycled water shall comply with the following setback requirements:

<u>Setback Definition</u> ¹	<u>Minimum Irrigation Setback (feet)</u>
Edge of recycled water reuse areas in the vineyards to property boundary	10
Edge of recycled water reuse areas in the orchards and pasture land to property boundary	25
Edge of recycled water reuse areas in the vineyards to public roads	10
Edge of recycled water reuse areas in the orchards and pasture land to public roads	50
Edge of recycled water reuse areas to irrigation wells	100
Edge of recycled water reuse areas to domestic wells	100
Edge of recycled water reuse areas to manmade or natural surface water drainage course ² or spring	25

¹ As defined by the wetted area produced during irrigation.

² Excluding ditches used exclusively for tailwater return.

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.

Objectionable odors originating at this facility shall not be perceivable beyond the limits of the land application areas.

Crops shall be grown on the land application areas. Crops shall be selected based on nutrient uptake capacity, tolerance to high soil moisture conditions, and consumptive use of water and irrigation requirements. Cropping activities shall be sufficient to take up all the nitrogen applied.

Hydraulic loading of recycled water and supplemental irrigation water shall be at reasonable agronomic rates designed to maximize uptake and breakdown of waste constituents in the root zone and minimize the percolation of waste constituents below the root zone (i.e., deep percolation).

Recycled water distribution lines installed after the date of the this Order shall meet the AWWA Guidelines described in Finding No. 45.

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

Irrigation systems shall be labeled as containing recycled water. If wastewater and irrigation water utilize the same pipeline, then backflow prevention devices shall be installed to protect the potable water supply.

Irrigation runoff (i.e., tailwater) shall be completely contained within the designated recycled water reuse areas and shall not enter any surface water drainage course.

Spray irrigation of recycled water is prohibited when wind velocities exceed 30 mph.

The recycled water areas shall be managed to prevent breeding of mosquitoes. In particular:

- a. There shall be no standing water 48 hours after irrigation ceases;
 - b. Tailwater ditches must be maintained essentially free of emergent, marginal, and floating vegetation, and;
 - c. Low-pressure and unpressurized pipelines and ditches accessible to mosquitoes shall not be used to store recycled wastewater.
1. Any tailwater ditches used to contain runoff shall be adequately sloped such that the wastewater flows to a collection point.
 2. Tailwater ditches shall not be operated such that their primary purpose is recycled water storage, evaporation, or percolation.

D. Groundwater Limitations:

1. Release of waste constituents from the use of recycled water shall not cause groundwater under and beyond that system component, 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 ambient background quality, whichever is greater:

<u>Constituent</u>	<u>Units</u>	<u>Limitation</u>
Ammonia (as NH ₄)	mg/l	1.5
Boron	mg/L	0.7
Chloride	mg/L	106
Iron	mg/L	0.3
Manganese	mg/L	0.05
Sodium	mg/L	69
Total Coliform Organisms	MPN/100 mL	<2.2
Total Dissolved Solids ¹	mg/L	450
Total Nitrogen	mg/L	10
Nitrite (as N)	mg/L	1
Nitrate (as N)	mg/L	10
Bromoform	µg/l	4
Bromodichloromethane	µg/l	0.27
Chloroform	µg/l	1.1
Dibromochloromethane	µg/l	0.37

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
- c. Impart taste, odor, or color that creates nuisance or could impair any beneficial use.

E. Provisions

1. The following reports shall be submitted pursuant to Section 13267 of the California Water Code and shall be prepared as described by Provision E.3.
 - a. By **15 July 2007**, the Discharger shall submit and implement an *Operation and Management Plan* (O&M Plan) that addresses operation of the land application facility that receives recycled water. At a minimum, the *O&M Plan* shall (a) provide a map that defines all the areas where recycled water is used, and procedures used for the application of wastewater to these areas to prevent excessive BOD, nitrogen, and dissolved solids application loading rates, (b) provide a map showing the areas that have been bermed and grading to prevent recycled water from running off the land application areas, and (c) maintenance of the land application areas. A copy of the *O&M Plan* shall be

kept at the facility for reference by operating personnel and they shall be familiar with its contents.

- b. By **15 July 2007**, the Discharger shall submit a *Groundwater Monitoring Well Installation Workplan*. The workplan shall describe the installation of sufficient wells to allow evaluation of the groundwater quality upgradient and downgradient of the recycled water reuse areas. The workplan shall conform to items listed in Section 1 of Attachment C (*Items to be Included a Monitoring Well Installation Workplan*), which is attached to this Order.
 - c. By **1 October 2007**, the Discharger shall submit a *Groundwater Monitoring Well Installation Report*. The report shall be consistent with, and include the items listed in, the second section of Attachment C of this Order. The report shall describe the installation and development of the monitoring wells, explain any deviation from the approved workplan, and clearly show that Discharger has the expertise and equipment necessary to collect groundwater samples. Alternatively, the report may describe the qualified consultant that the Discharger will use to collect groundwater samples.
 - d. By **1 February 2010**, the Discharger shall submit a *Background Groundwater Quality Study Report*. For each groundwater parameter/constituent identified in the Groundwater Limitations section of this Order, the report shall present a summary of monitoring data, calculation of the concentration in background monitoring wells, and comparison of background groundwater quality to that in wells used to monitor the facility. Determination of background quality shall be made using the methods described in Title 27, Section 20415(e)(10) or equivalent, and shall be based on data from at least eight consecutive quarterly (or more frequent) groundwater monitoring events. For each monitoring parameter/constituent, the report shall compare measured concentrations for compliance monitoring wells with: 1) the calculated background concentration, and 2) the interim numeric limitations set forth in Groundwater Limitation 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 for waste constituents listed therein. Subsequent use of a concentration as a final groundwater limitation will be subject to the discretion of the Executive Officer.
2. If the *Background Groundwater Quality Study Report* shows 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 a request by the Executive Officer, the Discharger shall submit a *BPTC Evaluation Workplan* that sets forth the scope and schedule for a systematic and comprehensive technical evaluation of the land application system to determine best practicable treatment and control for each waste constituent listed in the Groundwater Limitation D.1.a of this Order. The workplan shall contain a

preliminary evaluation of the land application system and propose a time schedule for completing the comprehensive technical evaluation. The schedule to complete the evaluation shall be as short as practicable, and shall not exceed one year. The Discharger shall also coordinate and cooperate with the MSD in any BPTC evaluation that the Regional Water Board requires of the MSD wastewater treatment system.

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 the professional's signature and/or stamp of the seal.
4. The Discharger shall comply with Monitoring and Reporting Program No. R5-2007-0050, 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. As described in the Standard Provisions, the Discharger shall report promptly to the Regional Water Board any material change or proposed change in the character, location, or volume of the discharge.
8. The Discharger shall report to the Regional 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."
9. 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 includes rainfall, groundwater, cooling waters, and condensates that are essentially free of pollutants.

10. The Discharger shall submit to the Regional 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 Regional Water Board in writing when it returns to compliance with the time schedule.
11. In the event of any change in control or ownership of the recycled water reuse areas, the Discharger must notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to this office. To assume operation as Discharger under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the state of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Regional 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.
12. The Discharger must comply with all conditions of this Order, including timely submittal of technical and monitoring reports as directed herein or by the Executive Officer pursuant to Section 13267 of the CWC. Violations may result in enforcement action, including Regional Water Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or rescission of this Order.
13. A copy of this Order shall be kept at Hay Station Ranch. Key operating personnel shall be familiar with its contents.
14. The Regional 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 4 May 2007.

Original signature on file

PAMELA C. CREEDON, Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2007-0050

FOR
JOHN AND GAIL KAUTZ
JOHN KAUTZ FARMS
HAY STATION RANCH RECYCLED WATER REUSE AREAS
CALAVERAS COUNTY

This monitoring and reporting program (MRP) incorporates requirements for monitoring of the recycled water reuse areas, 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.

All wastewater samples should be representative of the volume and nature of the discharge. The time, date, and location of each grab sample shall be recorded on the sample chain of custody form. Recycled water flow monitoring shall be conducted continuously using a flow meter and shall be reported in cumulative gallons per day.

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

1. The operator is trained in the proper use of the instrument;
2. The instruments are field calibrated prior to each use;
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.

RECYCLED WATER REUSE AREA MONITORING

When irrigating with recycled water from Murphys Sanitary District, monitoring of the recycled water reuse areas (i.e., vineyards, orchards, and pasture land) shall be conducted daily and the results shall be included in the monthly monitoring report. Evidence of erosion, saturation, irrigation runoff, or the presence of nuisance conditions shall be noted in the report. Murphys Sanitary District effluent monitoring results shall be used in calculations to ascertain loading rates at the application area. Monitoring of the recycled water reuse areas shall include the following:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Flow ¹	mgd	Continuous	Daily	Monthly
Rainfall	Inches	Observation	Daily	Monthly
Application Rate ²	gal/acre/day	Calculated	Daily	Monthly
Total Nitrogen Loading Rate ²	lbs/ac/month	Calculated	Monthly	Monthly
Total Dissolved Solids Loading Rate ²	lbs/ac/month	Calculated	Monthly	Monthly

¹ Flow measurement shall be provided for recycled water being supplied to each area

² For each land application area, provide the field name and type of crop grown.

The entire irrigated area shall be inspected weekly during or immediately following an irrigation event to identify any equipment malfunction or other circumstances that might allow irrigation runoff to leave the irrigation area and/or create ponding conditions that violate the Waste Discharge Requirements. A daily log of these inspections shall be kept at the facility and made available for review upon request.

GROUNDWATER MONITORING

Groundwater monitoring shall commence with the fourth quarter 2007. Prior to construction and/or sampling of any groundwater monitoring wells, the Discharger shall submit plans and specifications to the Regional Water Board for approval. Once installed, all new wells shall be added to the monitoring network and shall be sampled and analyzed according to the schedule below. All samples shall be collected using approved EPA methods. Water table elevations shall be calculated to determine groundwater gradient and direction of flow.

Prior to sampling, the groundwater elevations shall be measured and the wells shall be purged of 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. Groundwater monitoring shall include, at a minimum, the following:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency⁴</u>
Depth to Groundwater	±0.01 feet	Measurement	Quarterly	Quarterly
Groundwater Elevation ¹	±0.01 feet	Calculated	Quarterly	Quarterly
Gradient	feet/feet	Calculated	Quarterly	Quarterly
Gradient Direction	Degrees	Calculated	Quarterly	Quarterly
PH	pH units	Grab	Quarterly	Quarterly
Nitrate as Nitrogen	mg/L	Grab	Quarterly	Quarterly
Total Kjeldahl Nitrogen	mg/L	Grab	Quarterly	Quarterly
Total Dissolved Solids	mg/L	Grab	Quarterly	Quarterly
Trihalomethanes ⁵	ug/L	Grab	Quarterly	Quarterly
Standard Minerals ^{2,3}	mg/L	Grab	Annually	Annually

¹ Groundwater elevation shall be determined based on depth-to-water measurements from a surveyed measuring point elevation on the well.

² Standard Minerals shall include at least the following compounds: boron, calcium, iron, magnesium, manganese, potassium, sodium, chloride, sulfate, total alkalinity (including alkalinity series), and hardness

³ Standard Minerals shall be analyzed in the fourth quarter of the year.

⁴ Beginning with the fourth quarter, 2007.

⁵ Individual trihalomethane constituents concentrations shall be identified using EPA Method 8260B or equivalent.

REPORTING

In reporting monitoring data, the Discharger shall arrange the data in tabular form so that the date, sample type (e.g., recycled water reuse areas, groundwater monitoring well, 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 professional engineer or geologist and signed by the registered professional.

A. Monthly Monitoring Reports

Monthly reports shall be submitted to the Regional Water Board by the **1st day of the second month** following the end of the reporting period (i.e. the January monthly report is due by 1 March). Monthly reports for the months of March, June, September, and December may be submitted as part of the Quarterly Monitoring Report, if desired. The monthly reports shall include the following:

1. Results of recycled water reuse area 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);
4. A calibration log verifying calibration of all hand held monitoring instruments and devices used to comply with the prescribed monitoring program;
5. The amount of acreage that was irrigated during the month;
6. The cumulative volume of recycled water used at Hay Station Ranch during the year to date;
7. The total pounds of total dissolved solids (year to date) that have been applied to the land application area, as calculated from the sum of monthly loadings; and
8. The total pounds of nitrogen (year to date, from all sources including fertilizer) applied to the land application area as calculated from the sum of monthly loadings.

B. Quarterly Report

Beginning with the fourth quarter 2007, the Discharger shall establish a quarterly sampling schedule for groundwater monitoring such that samples are obtained approximately every three months. Quarterly monitoring reports shall be submitted to the Regional Water Board by the **1st day of the second month after the quarter** (i.e. the January-March quarter is due by May 1st) each year. The Quarterly Report shall include the following:

1. Results of groundwater monitoring;
2. A narrative description of all preparatory, monitoring, sampling, and analytical testing activities for the groundwater monitoring. The narrative shall be sufficiently detailed to verify compliance with the 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 monitoring data to the groundwater limitations and an explanation of any violation of those requirements;
6. Summary data tables of historical and current water table elevations and analytical results;
7. A scaled map showing relevant structures and features of the facility, the locations of monitoring wells and any other sampling stations, and groundwater elevation contours referenced to mean sea level datum; and
8. Copies of laboratory analytical report(s) for groundwater monitoring.

C. Annual Report

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

1. The contents of a regular December monthly monitoring report;
2. The contents of the regular quarterly monitoring report for the last quarter of the year;
3. If requested by staff, tabular and graphical summaries of all data collected during the year;
4. Tabular and graphical summaries of historical monthly total loading rates for wastewater generation, process water used for irrigation (hydraulic loading in gallons and inches), total nitrogen, and total dissolved solids.
5. A comprehensive evaluation of the effectiveness of the past year's wastewater application operation in terms of odor control, surface water protection, and groundwater

protection, including consideration of application management practices (i.e.: waste constituent and hydraulic loadings, application cycles, drying times, and cropping practices), and groundwater monitoring data;

6. An evaluation of the groundwater quality beneath the land application area;
7. A discussion of compliance and 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
8. A discussion of any data gaps and potential deficiencies/redundancies in the monitoring system or reporting program.

A letter transmitting the self-monitoring reports shall accompany each report. Such a letter shall include a discussion of requirement violations found during the reporting period, and actions taken or planned for correcting noted violations, such as operation or facility modifications. If the Discharger has previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. The transmittal letter shall contain a statement by the Discharger, or the Discharger's authorized agent, under penalty of perjury, that to the best of the signer's knowledge the report is true, accurate and complete.

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

Original signature on file
Ordered by: _____
PAMELA C. CREEDON, Executive Officer

4 May 2007
(Date)

SK: 5/4/07

INFORMATION SHEET

ORDER NO. R5-2007-0050
JOHN AND GAIL KAUTZ
JOHN KAUTZ FARMS
HAY STATION RANCH RECYCLED WATER REUSE AREAS
CALAVERAS COUNTY

Facilities and Discharge

John and Gail Kautz own Hay Station Ranch on which recycled water obtained for the Murphys Sanitary District (MSD) is used for irrigation of vineyards, orchards, and pasture land.

The use of recycled water on Hay Station Ranch was previously regulated by Waste Discharge Requirements Order No. 5-01-063. WDRs Order No. 5-01-063 also prescribed requirements for treatment, storage, and disposal of process winery wastewater generated at Ironstone Vineyards. Updated requirements for the treatment, storage, and disposal of winery wastewater at Ironstone Vineyards are included in separate WDRs. This Order only prescribes requirements for use of recycled water on Hay Station Ranch.

In April 1999, MSD renegotiated a contract with Kautz Vineyards, Inc., whereby MSD will supply Hay Station Ranch with all treated wastewater from the WWTP. This agreement calls for MSD to deliver up to 180 acre-feet per year of treated wastewater with the understanding that additional wastewater may be supplied if available. Recycled water is supplied at a rate of 375 gallons per minute.

Recycled wastewater supplied by MSD to Hay Station Ranch for reuse is treated to a secondary 2.2 disinfection standards using a oxidation, filtration, and disinfection process. The MSD wastewater treatment plant is regulated under WDRs Order No. 5-00-264 and Resolution No. R5-2007-0050, which prescribe requirements for the treatment, including effluent limits, and storage of wastewater prior to delivery to Hay Station Ranch for reuse.

Recycled water obtained from MSD will be used on approximately 120 acres of vineyards, orchards, and pastureland. Recycled water is applied to the vineyards and orchards via a drip irrigation system so that recycled water does not come into contact with the wine and food crops. Irrigation of the pastureland is done via a spray irrigation system. Orchards and pasture lands irrigated with recycled water are graded in such a way that any potential tailwater runoff does not pond or pool up near public road or public access areas, and does not flow towards surface drainage courses or surface waters. All the vineyards that use recycled water have berms on each row of grapes to control any potential runoff and erosion.

Basin Plan, Beneficial Uses, and Regulatory Considerations

Six Mile Creek, a seasonal creek, flows through the property. It begins as drainage adjacent to the Murphys Sanitary District wastewater treatment plant storage ponds, flows through Hay Station Ranch and the Ironstone Winery facility, and finally enters Angels Creek, which is a tributary of New Melones Reservoir. The *Water Quality Control Plan for the California Regional Water Quality Control Board Central Valley Region, Fourth Edition* (Basin Plan), designates beneficial uses, establishes water quality objectives, and contains implementation plans and

policies for all waters of the Basin. Beneficial uses often determine the water quality objectives that apply to a water body. For example, waters designated as municipal and domestic supply must meet the maximum contaminant levels (MCLs) for drinking waters. The Basin Plan sets forth the applicable beneficial uses (industrial, agricultural, and domestic supply in this instance) of groundwater, procedure for application of water quality objectives, and the process for and factors to consider in allocating waste assimilation capacity.

Antidegradation

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

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

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

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

This discharge has been occurring for years. Certain waste constituents in municipal wastewater are not fully amenable to waste treatment and control and it is reasonable to expect some impact on groundwater. Some degradation for certain constituents is consistent with maximum benefit to the people of California because the technology, energy, water recycling, and waste

management advantages of municipal utility service to the state far outweigh the environmental impact damage of a community that would otherwise be reliant on numerous concentrated individual wastewater systems. Economic prosperity of local communities is of maximum benefit to the people of California, and therefore sufficient reason to accommodate increases in wastewater discharge provided terms of reasonable degradation are defined and met. The proposed Order authorizes some degradation consistent with the maximum benefit to the people of the state, but does not authorize pollution.

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

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

<u>Constituent</u>	<u>Units</u>	<u>Value</u>	<u>Beneficial Use</u>	<u>Criteria or Justification</u>
Ammonia	mg/L	0.5	MUN ¹	Taste and Odor ²
Boron	mg/l	0.7	AGR ³	Boron Sensitivity ⁴
	mg/l	0.63	MUN ¹	USEPA toxicity level ⁹
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	Secondary MCL ⁵ - Recommended
		500	MUN ¹	Secondary MCL ⁵ - Upper
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	AGR ³	Salt sensitivity for certain crops ⁴
		500	MUN ¹	Secondary MCL ⁵ - Recommended
		1,000	MUN ¹	Secondary MCL ⁵ - Upper
Total Coliform Organisms	MPN/100	2.2	MUN ¹	Basin Plan

<u>Constituent</u>	<u>Units</u>	<u>Value</u>	<u>Beneficial Use</u>	<u>Criteria or Justification</u>
Trihalomethanes	ml			
	µg/L	100	MUN ¹	MCL ⁸
Bromoform	µg/L	4	MUN ¹	USEPA Cancer Potency Factor ⁹
Bromodichloromethane	µg/L	2.7	MUN ¹	Cal/EPA Cancer Potency Factor ¹⁰
Chloroform	µg/L	1.1	MUN ¹	Cal/EPA Cancer Potency Factor ¹⁰
Dibromochloromethane	µg/L	0.37	MUN ¹	Cal/EPA Cancer Potency Factor ¹⁰
pH	pH Units	6.5 to 8.5	MUN ¹	Secondary MCL ⁹

- 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
- 9 USEPA Integrated Risk Information System
- 10 Cal/EPA Toxicity Criteria Database (OEHHA)

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

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

Treatment Technology and Control

Given the character of municipal wastewater, secondary treatment technology is generally sufficient to control degradation of groundwater from decomposable organic constituents. Adding disinfection significantly reduces populations of pathogenic organisms, and reasonable soil infiltration rates and unsaturated soils can reduce them further. Neither organics nor total coliform organisms, the indicator parameter for pathogenic organisms, should be found in groundwater in a well-designed, well-operated facility.

Chlorine disinfection of effluent causes formation of trihalomethanes, which are toxic priority pollutants. Treatment to reduce these in wastewater generally has not been performed, and little is known at this point on the typical impact on groundwater.

Municipal wastewater typically contains nitrogen in concentrations greater than water quality objectives, which vary according to the form of nitrogen. Degradation by nitrogen can be controlled by an appropriate secondary treatment system (e.g., oxidation ditch), tertiary treatment for nitrogen reduction, and agronomic reuse on harvested crops. The effectiveness varies, but generally best practicable treatment and control should be able to control nitrogen degradation at a concentration well below the water quality objectives. The proposed interim limitation reflects water quality objectives.

Waste constituents that are forms of salinity pass through the treatment process and soil profile and effective control of long-term affects relies upon effective source control and pretreatment measures. In the best of circumstances, long-term land discharge of treated municipal wastewater will degrade groundwater with salt (as measured by TDS and EC) and the individual components of salts (e.g., sodium, chloride). The proposed Order sets water quality objectives for the interim while site-specific, constituent-specific limits are developed in conjunction with a BPTC evaluation of source control and pretreatment. The next Order will likely contain effluent limits for salt components other than chloride that, if met, assure groundwater quality will be controlled to an acceptable level.

Other constituents in treated municipal waste that may pass through the treatment process and the soil profile include recalcitrant organic compounds (e.g., ethylene glycol, or antifreeze), radionuclides, and pharmaceuticals. Hazardous compounds are not usually associated with domestic wastes and when present are reduced in the discharge to inconsequential concentrations through dilution with domestic waste, treatment, and the implementation of effective pretreatment programs. It is inappropriate to allow degradation of groundwater with such constituents, so proposed limitations are nondetect.

A discharge of wastewater that overloads soils with nutrients and organics can result in anaerobic conditions in the soil profile, which in turn creates organic acids and decreases soil pH. Under conditions of low soil pH (i.e., below 5), iron and manganese compounds in the soil can solubilize and leach into groundwater. Discharge of residual sludge to land may also lead to increases in groundwater alkalinity and hardness to concentrations that impair the water's beneficial uses and contribute to an overall increase in TDS. Overloading is preventable. Though iron and manganese limits are set at the water quality objective, groundwater pH is expected to remain the same as background.

Title 27

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

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

Proposed Order Terms and Conditions

Discharge Prohibitions and Specifications

The proposed Order establishes an average monthly discharge flow limit to the recycled water reuse areas of 450,000 gpd.

Monitoring Requirements

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

The proposed Order includes monitoring requirements for recycled water reuse areas, and groundwater.

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

Title 27 regulations pertaining to groundwater monitoring and the detection and characterization of waste constituents in groundwater have been in effect and successfully implemented for many years. No regulation currently specifies similar criteria more suitable

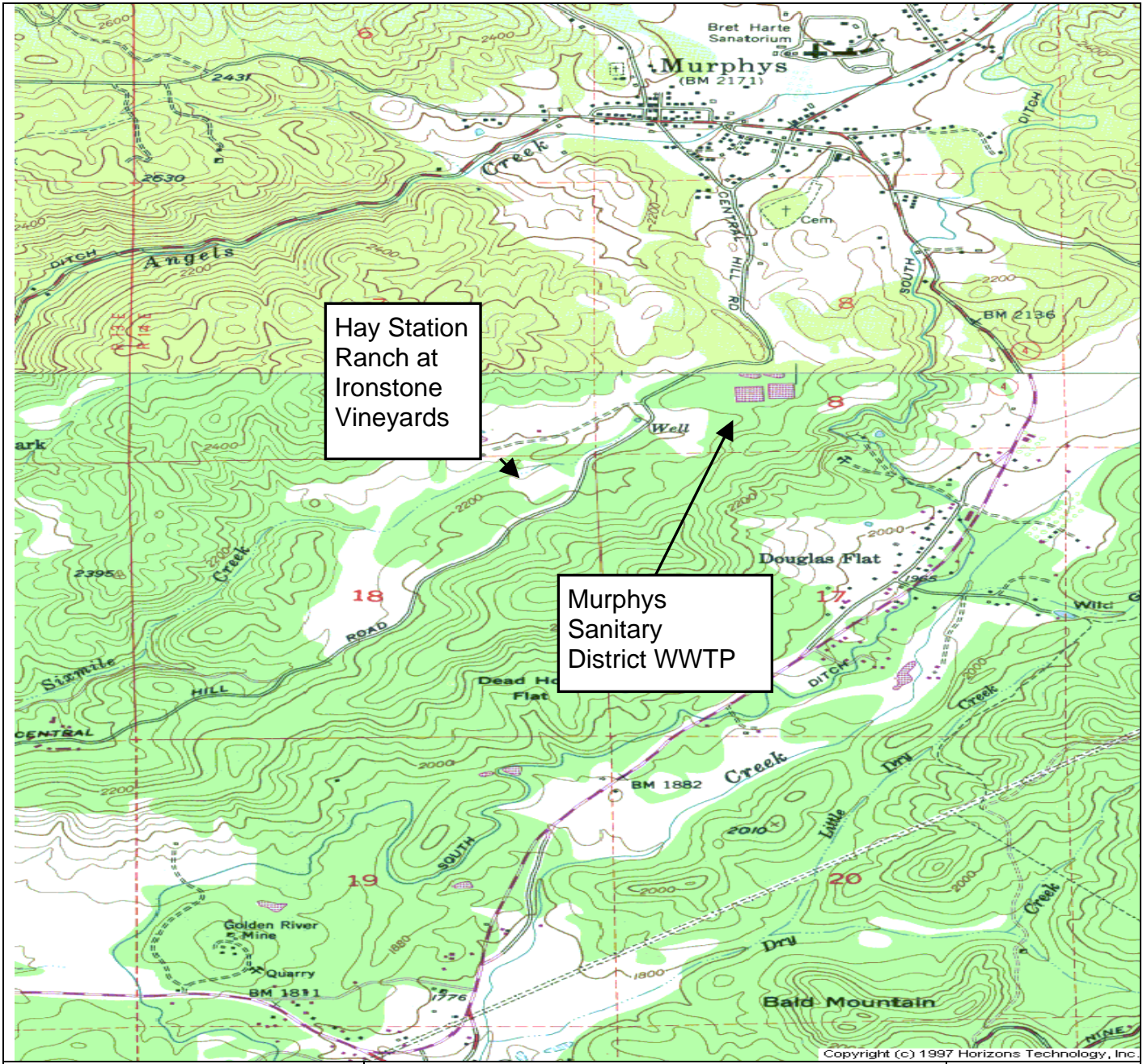
for a situation where extensive infiltration into groundwater occurs. However, where, as here, such infiltration occurs, it is appropriate that the Title 27 groundwater monitoring procedures be extended and applied on a case-by-case basis under Water Code section 13267.

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

Reopener

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

JSK: 12 March 2007

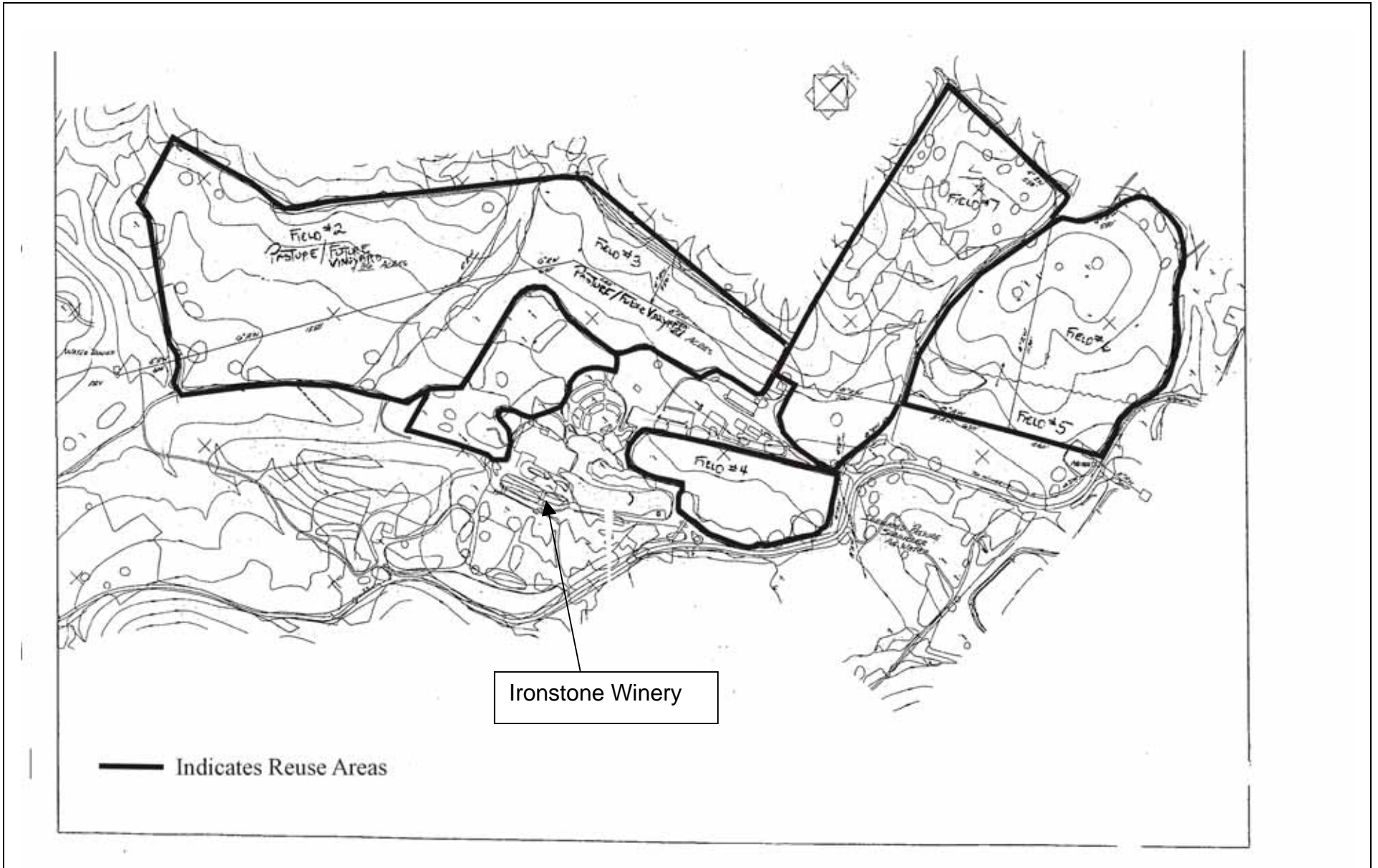


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Drawing Reference:
 U.S.G.S TOPOGRAPHIC
 MAP
 7.5 MINUTE QUADRANGLE

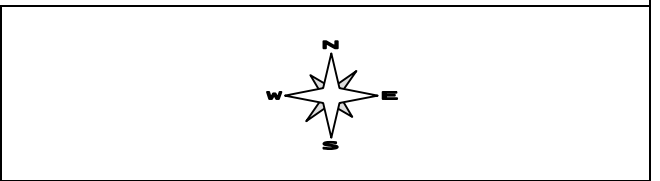
SITE LOCATION MAP
 JOHN AND GAIL KAUTZ
 HAY STATION RANCH RECYCLED
 WASTEWATER REUSE AREAS

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



DRAWING REFERENCE:
Hay Station Ranch RWD
Approximate Scale:
Not to Scale

John and Gail Kautz
Hay Station Ranch
Recycled Water Reuse Areas





California Regional Water Quality Control Board

Central Valley Region

Karl E. Longley, ScD, P.E., Chair



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ATTACHMENT C

ORDER NO. R5-2007-0050

REQUIREMENTS FOR MONITORING WELL INSTALLATION WORKPLANS AND MONITORING WELL INSTALLATION REPORTS

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

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

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

A. General Information:

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

B. Drilling Details:

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

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

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

California Environmental Protection Agency

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

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

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

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

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

F. Schedule for Completion of Work

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

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

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

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

SECTION 2 - Monitoring Well Installation Report

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

A. General Information:

Purpose of the well installation project

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

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

Topographic map showing facility location, roads, surface water bodies

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

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

On-site supervision of drilling and well installation activities

Drilling contractor and driller's name

Description of drilling equipment and techniques

Equipment decontamination procedures

Soil sampling intervals and logging methods

Well boring log

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

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

Well construction diagram, including:

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

E. Well Development:

Date(s) and method of development

How well development completion was determined

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

Field notes from well development should be included in report

- F. Well Survey (survey the top rim of the well casing with the cap removed):
- Identify the coordinate system and datum for survey measurements
 - Describe the measuring points (i.e. ground surface, top of casing, etc.)
 - Present the well survey report data in a table
 - Include the Registered Engineer or Licensed Surveyor's report and field notes in appendix