**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD**
**SAN FRANCISCO BAY REGION**

**ORDER 01-043**
**WASTE DISCHARGE REQUIREMENTS FOR:**

**ARROYO DEL VALLE ENVIRONMENTAL EDUCATION CENTER & YOUTH CAMP**
**EAST BAY REGIONAL PARK DISTRICT**
**ALAMEDA COUNTY**

The California Regional Water Quality Control Board, San Francisco Bay Region, hereinafter called the Board, finds that:

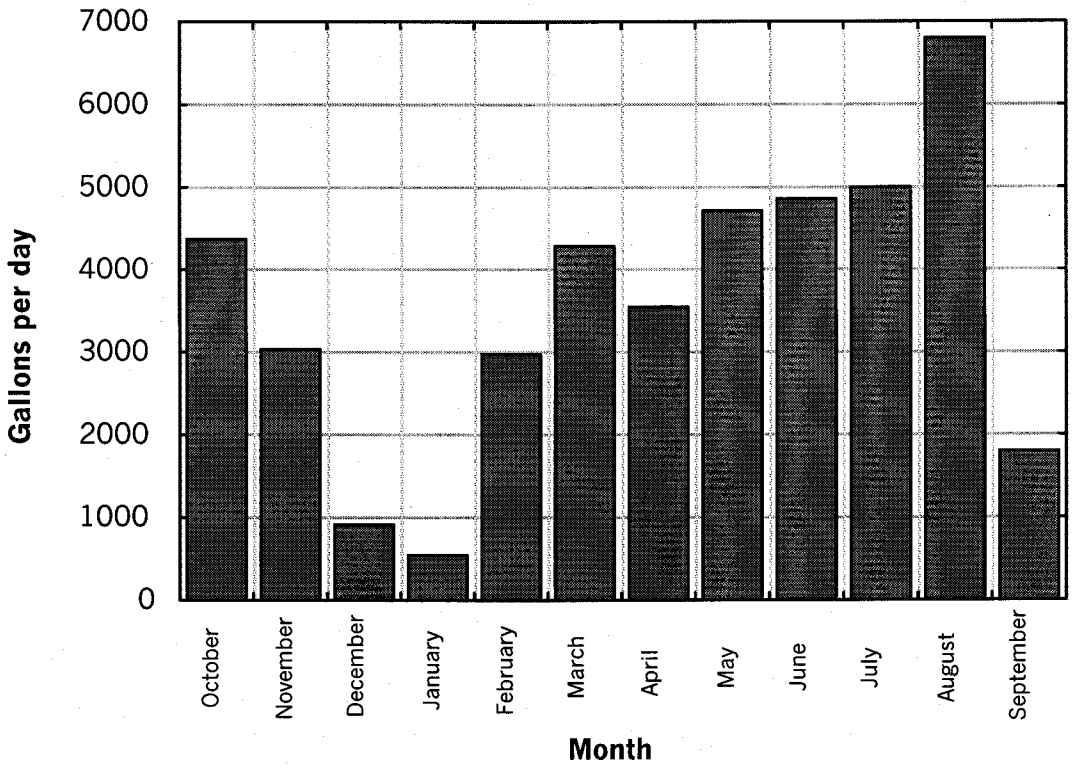
1. East Bay Regional Park District (hereinafter District) submitted a Report of Waste Discharge, dated January 25, 2001, for the construction and operation of a natural passive wastewater treatment and disposal system to serve a new residential environmental education center and summer youth camp. The Arroyo Del Valle parkland where the facilities are being constructed is a 138-acre site located at the south end of the Livermore Valley in unincorporated Alameda County just downstream of Lake Del Valle adjacent to Arroyo Valle Creek (Figure 1, Attachment 1).

2. Arroyo Del Valle Creek drains from Mt. Hamilton in Santa Clara County and forms the central portion of the Alameda Creek watershed. It drains from east to west, angling sharply to the north where it was dammed to form Lake Del Valle and returns to its original course to flow through the Livermore-Amador Valley. It receives year-round flows from Lake Del Valle, including high flows during spring run-off in wet years. At the site of the ancient Willow Marsh it combines with several other arroyos to drain through Niles Canyon as Alameda Creek and out to San Francisco Bay. The proposed camp site is estimated to receive average annual rainfall of about 16.5 inches, occurring mainly between the months of November through April. Stormwater runoff concentrates in swales and forms seasonal drainages that drain through existing culverts under Arroyo Road to Arroyo Creek.

3. The project area is the former site of a County health center for the treatment of tuberculosis. The property was transferred to the East Bay Regional Park District in 1995. The proposed Arroyo Del Valle environmental education center and youth camp facilities (Youth Camp) will serve 225 visitors and staff in residence, throughout the year. During special one-day events, the facilities will serve a maximum of 400 people. A camp director and a caretaker will live at the site year round. The project will include the construction of a six (6) camp residential units, visitors lodge, multipurpose dining hall, education center, swimming pool, bath house, infirmary, administration building, central services building, security residence, director's residence, unpaved parking areas for a total of 250 cars, and possibly other facilities of a similar scale. Other areas of the site will be developed for outdoor uses, such as play fields, a campfire circle, and an amphitheater.

**TREATMENT AND DISPOSAL SYSTEMS**

4. The Youth Camp facilities proposes to discharge a maximum of 7,000 gallons per day (gpd) of domestic wastewater from 225 people (approximately 30 gpcd) to be treated on-site with sufficient storage to allow irrigation reuse of all effluent (Figure 2).




D. **Figure 2 Design peak monthly wastewater flows from facility**

## A. Wastewater Treatment System

7. The objective of the system is to provide a natural passive wastewater treatment system which will be disposed of by subsurface irrigation. The treatment system is composed of grease interceptors to handle kitchen wastes, up-flow anaerobic sludge blanket (UASB) septic tanks, oxidation ponds, constructed wetland (emergent plants), stainless steel automatic cleaning solids filter, and Ultraviolet (UV) disinfection. The effluent quality will meet the Title 22 reuse/reclamation standards for subsurface irrigation and will produce an effluent with less than 10 mg/l of total inorganic nitrogen (ammonia, nitrite, and nitrate nitrogen), 5-day Biological Oxygen Demand ($BOD_5$) and Total Suspended Solids (TSS). The subsurface irrigation system is designed to deliver only evapo-transpiration water requirements and nitrogen needs to the soil/plant system. There will be no liquid effluent percolation below the boundary of the A horizon and the subsurface soils. If for some reason the effluent does migrate pass the A horizon the total inorganic nitrogen (TIN) level will be less than 10 mg/l.

8. The system is designed to use a minimal amount of energy by incorporating UASB technology (up-flow entrance to septic tank with baffling to enhance settling), oxidation ponds (utilizing algae to produce oxygen to satisfy biochemical oxygen demand and long detention periods to allow for pathogen die-off), and the use of constructed wetlands (to further remove human pathogens, remove the algae solids and to reduce TIN levels). The result of this type of passive wastewater treatment process is an effluent of high quality, less than 10 mg/l BOD/TSS/TIN, and a reduced level of human pathogens. The average total detention time in the system is approximately 30 days. With the addition of a polishing filter and UV disinfection the effluent can be used as source of water for subsurface irrigation.

## B. Wastewater Treatment Units

(1) Up-flow anaerobic sludge blanket (UASB) Reactor

The USAB Reactor consists of five 200-gallon septic tanks. These systems are similar in appearance and function as a septic tank except for several major differences. Principal advantages are its simplicity (no moving parts, low capital cost, low O and M cost), low HRT, low sludge volume, resiliency (organic/hydraulic loading), and others. The system relies on a series of baffles to force wastewater containing organic pollutants to flow under and over (or through) the baffles as it passes from the inlet to the outlet. Decomposing bacterial populations within the reactor move up and down with the incoming flow and associated gas production. The inflow to the enters the bottom of the tank via an inlet manifold which allows for continuing contact of the influent degradable material and the active mass of anaerobic bacteria in the influent zone of the reactor. UASB's routinely achieve 50-60% Total Suspended Solids (TSS) and Biological Oxygen Demand (BOD) removal. The tanks will have to have their solids removed every 2 to 3 years.

(2) Oxidation Pond Treatment System

Effluent from the USAB flows by gravity to the oxidation ponds. The two oxidation ponds are a passive solar reaction wastewater treatment system. The primary pond (Pond 1) is approximately 10 feet deep with a hydraulic retention time (HRT) of 5 days, allowing further removal of solids including anaerobic breakdown of dissolved waste materials to carbon dioxide, nitrates, and sulfates The secondary oxidation pond (Pond 2) has a minimum operating depth of 2 feet and a normal operating depth of 5 feet. The total HRT through both oxidation ponds is approximately 20 days. The final effluent from the oxidation ponds is expected to have BOD/TSS of 75 mg/l on a monthly average basis during the summer months. Most of the ammonia is expected to be converted to nitrate and the coliform levels reduced by 99.9%.

(3) Constructed Wetland Treatment System

The final effluent from the oxidation pond system (Pond 2) flows by gravity to the first of two wetland cells (Cells 1 and 2). In many applications a treatment system comprised of primary treatment (UASB) and oxidation ponds is considered sufficient treatment to discharge to receiving waters and with the addition of chlorination sufficient to use as a source of irrigation water for pasture reclamation. In the Arroyo Del Valle constructed wetlands are incorporated into the treatment process to serve as a polishing treatment process to provide a higher level of treatment for on-site subsurface irrigation. The constructed wetland area will be approximately 0.25 acres or 11,000 ft (approximately 5, 500 ft per wetland cell). The cells will have an average operating depth of 1.5 to 2 feet, except the middle portions which have a depth of 3.5 feet to assist in nitrification and to minimize emergent plant communities and encourage submergent and floating aquatic plants. Each of the wetland cells will have a HRT of approximately 5 days. The constructed wetlands cells are expected to effectively remove Total Suspended Solids (TSS), reduce 5-day Biological Oxygen Demand ($BOD_5$) and fecal coliform, and assist in the conversion/removal of nitrogen forms. The constructed wetlands will reduce the TSS/BOD to levels below 10 mg/l 90% of the time and to less than 5 mg/l on average. This reduction in TSS will also reduce the turbidity levels in the wetland effluent to levels less than 10 NTU's. These TSS and turbidity levels are necessary to insure satisfactory performance of the UV disinfection unit and prevent clogging of the emitters in the subsurface irrigation system.

7. UV Disinfection System

UV disinfection will be used to disinfect the wastewater prior to its reuse in sub-surface irrigation. Both UV disinfection and subsurface irrigation require a wastewater of very low turbidity, total suspended solids (TSS), and biochemical oxygen demand (BOD). The low turbidity and TSS is necessary to insure that the UV transmission is not compromised by interfering with the UV radiation as it penetrates the water column. UV disinfection design criteria is based upon the period of radiation, the radiation intensity, and /or particulate material in the water column. In the case of wastewater this results in contact time of 20 to 40 seconds. While the wetland is designed to produce a quality of effluent capable of being disinfected with UV, a filter will be used prior to the UV units to remove any carryover TSS particles from the constructed wetland. This 200-mesh stainless steel filter unit is self-cleansing and has the ability to remove small particles.

5. Basis For Treatment System Design

(a) The basis for the design of the various processes in the Arroyo Del Valle wastewater/reclaimed water system is found in the following discussion and calculations. Influent raw wastewater concentrations for the system are listed in Table 1 below.

**Table 1. Design Wastewater characteristics for Camp Arroyo's treatment/reuse system**

| Parameter | Influent | Effluent |
|---|---|---|
| BOD | 300 mg/l | 10 mg/l |
| TSS | 350 mg/l | 10 mg/l |
| Total nitrogen | 40 mg/l | 10 mg/l |
| Total phosphorus | 10 mg/l | 2 mg/l |
| Fecal coliform | $10^{7}$cfu/100 ml | Less than 2 cfu/100 ml |

(b) Water Conservation

State of the art water conservation technology will be used for bathing and washing, flushing toilets, dishwashing (efficient institutional dishwasher), and irrigation systems. The kitchen will not have a garbage grinder. A grease trap will collect grease from the kitchen prior to flow into the UASBs. All organic food waste will be collected and composted and/or disposed of off-site.

(c) Wastewater Treatment System Safeguards

To prevent wastewater infiltration to groundwater the 2-celled oxidation pond system and 2-celled treatment wetland system will be lined with a "Bentomat" clay. To preclude public contact with treated wastewater the entire wastewater treatment unit will be fenced with proper signage. In addition, there will be sufficient wastewater storage capacity to allow for total containment of wastewater during non-irrigation periods and sufficient pond/wetland levee free-board will be maintained to allow for capturing and containing normal rainfall events.

(d) Wastewater Reuse Through Subsurface Irrigation:

Final disposal of the treated effluent will be achieved through a subsurface landscape irrigation system. Wastewater irrigation will demand approximately 6,800 gallons per day per acre of landscape at a 0.025 inch/day water requirement. At full design flow about one acre of land will be needed to dispose through irrigation the steady state production of reclaimed water (See Finding 9). About 2 acres will be needed to utilize both the steady state production and the stored water. Use of highly efficient irrigation techniques could extend the areal coverage of the reclaimed water.

The capacity of the pond and wetland system is sized to store wastewater for periods of up to 5 months. The necessary storage through the non-irrigation period is about 400 cubic feet/day during the fall and winter periods (see Provision C.1.c).

**GROUNDWATER ISSUES**

6. Arroyo Valle Creek is a tributary to the Amador groundwater basin, managed as a groundwater basin by Zone 7 of the Alameda County Flood Control and Water Conservation District. The groundwater resource is being actively managed to minimize nitrogen loading and other contamination from urban runoff, agriculture and wastewater sources. However, the Arroyo Del Valle site including the waste treatment and disposal facilities are located outside of the Amador groundwater basin management zone and will have no significant adverse impact on the basin's water quality.

7. Nitrate loading from on-site wastewater disposal systems can potentially degrade ground water supplies and contribute to nutrient enrichment of surface water bodies. The groundwater at the Arroyo Del Valle site is not currently used as a drinking water supply due to natural high levels of total dissolved solids. With respect to Arroyo Valle Creek, shallow ground water down gradient of the project site could potentially be affected by nitrate additions. The proposed oxidation pond/wetland systems are being lined to prevent wastewater from infiltrating to groundwater and the subsurface irrigation system is designed to maximize nitrogen uptake and minimize nitrates from reaching the creek.

**NITROGEN BALANCE AND IRRIGATION REQUIREMENTS**

8. The District performed annual and monthly nitrogen balances. The analyses showed that the monthly nitrogen balance is more sensitive to allowable discharges of nitrogen during the critical winter months. During these months, the nitrogen uptake in the irrigated area is limited, thus irrigation rates are reduced. The monthly nitrogen balance is used to determine the maximum irrigation and percolation rates that can be used without exceeding the allowable concentration of 10 mg/l nitrate-nitrogen in the groundwater. The assumptions of the nitrogen balance are shown in the following table:

**Table 2: Nitrogen Balance Design Criteria**

| | |
|---|---|
| Avg. Annual Flow | 3,750 gallons per day |
| Max. Nitrate Nitrogen (Nitrate as N) in Effluent | 15 mg/l |
| Denitrification in soil | 20 percent |
| Max. Nitrate in Groundwater | 10 mg/l |
| Plant Nitrogen (Nitrate as N) Uptake | 50 pounds/Acre/Year |

9. Irrigation area requirements for the wastewater system to prevent nitrogen degradation of groundwater are summarized in the following table:

**Table 3: Irrigation Design Criteria**

| Water/Nitrogen Balance Criteria | Irrigation Acreage Needed |
|---|---|
| Water balance based on max. Nitrogen uptake | |
| Normal year | .45 Acres |
| 100-year wet season | .65 Acres |
| Annual Nitrogen removal | .55 Acres |
| Maximum irrigation rate (2.5 inches/week) | .38 Acres |
| Desirable minimum irrigation area | .65 Acres |

Based on the above analyses an irrigation area of at least one acre is set aside for irrigation with recycled water to allow for flexibility in the design of the reuse application area.

**BASIN PLAN AND BENEFICIAL USES**

10. The Board adopted a revised Water Quality Control Plan (Basin Plan) for the San Francisco Bay Region on June 21, 1995. This updated and consolidated plan represents the Board's master water quality control planning document. The revised Basin Plan was approved by the State Water Resources Control Board and the Office of Administrative Law on July 20 and November 13, 1995, respectively. A summary of regulatory provisions is contained in Title 23 of the California Code of Regulations at Section 3912. The Basin Plan defines beneficial uses and water quality objectives for surface waters and groundwaters in the region, as well as effluent limitations and discharge prohibitions intended to protect beneficial uses. This Order implements the plans, policies and provisions of the Board's Basin Plan.

11. The Basin Plan defines beneficial uses and water quality objectives for waters of the State within the San Francisco Bay Region, including surface and ground waters.

12. The beneficial uses identified in the Basin Plan for the Del Valle Reservoir and Arroyo Del Valle Creek include:

    a. Municipal and domestic water supply
    b. Ground water recharge
    c. Cold freshwater habitat
    d. Fish spawning
    e. Wildlife habitat
    f. Water contact and non-contact recreation

13. The beneficial uses identified in the Basin Plan for ground water in the Arroyo Del Valle area include:

    a. Industrial process water supply
    b. Industrial service and supply
    c. Agricultural supply

## REGULATORY ISSUES AND APPLICATIONS

14. On January 28, 1998 the East Bay Park District filed a Negative Declaration in which the environmental effects of the proposed project were evaluated. The District Board of Directors certified the Negative Declaration and a adopted a Land Use Plan for the project on April 7, 1998 (Resolution 1998-4-58). The Mitigated Negative Declaration and its mitigation measures are in accordance with California Environmental Quality Act (Public Resources Code Section 2100 et. seq.).

15. The project as regulated by this Order will not have a significant adverse impact on water quality.

16. The Board has notified the District and interested agencies and persons of its intent to prescribe waste discharge requirements for the discharge and has provided them with the opportunity for a public hearing and opportunity to submit their written views and recommendations.

17. The Board, in a properly noticed public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED that East Bay Regional Park District, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, shall comply with the following:

### A. Prohibitions

1. The treatment or disposal of waste shall not create a nuisance as defined in Section 13050(m) of the California Water Code.

2. The discharge of waste other than domestic wastes into the waste treatment and disposal system is prohibited.

3. Wastewater shall not be discharged to waters of the State, via either surface flow or surfacing after subsurface irrigation.

4. The average dry weather flow to the wastewater treatment system shall not exceed 7,000 gpd.

### B. Discharge Specifications

1. The treatment or disposal of waste shall not create a nuisance as defined in Section 13050(m) of the California Water Code.

2. The disposal of waste shall not cause degradation of ground or surface water suitable for domestic water supply or cause an increase in any water quality parameter that would impair the beneficial uses listed in Findings 11 and 12 of this Order.

3. The oxidation pond and wetland treatment cells shall be lined with a 'Bentomat'/clay, or equivalent, liner with sufficient impermeability to prevent infiltration to groundwater.

4. Both the oxidation system ponds and wetland treatment system cells shall be fenced to preclude unauthorized public access.

5. The District shall adequately post signs informing the public that the liquid contained in the pond and wetland systems is wastewater and unfit for human consumption or human contact.

6. The following limitations pertain to the fully treated wastewater effluent from the wastewater treatment facility, as discharged to the irrigation area during the irrigation period.

   a. The effluent discharged shall not exceed the following limits:

| Constituent | | Unit | Daily Maximum |
|---|---|---|---|
| 1) | $BOD_5$ | mg/l | 10 |
| 2) | TSS | mg/l | 10 |
| 3) | Oil & Grease | mg/l | 10 |
| 4) | Nitrate Nitrogen as N | mg/l | 10 |
| 5) | Free Chlorine Residual | mg/l | 0.5 |

   b. pH: The pH of the discharge shall not exceed 8.4 nor be less than 6.5

   c. Total Coliform Bacteria:

   The treated wastewater shall meet the following limits of bacteriological quality:

   The moving median value for the most Probable Number (MPN) of total coliform bacteria in any five consecutive samples shall not exceed 23 MPN/100 ml; and any single sample shall not exceed 240 MPN/100 ml when verified by a repeat sample taken within 48 hours.

## C. Treatment/Storage Pond Specifications

### 1. Pond Design and Capacities

During a normal year the wastewater storage requirement is 1.17 acre-feet of water (380,000 gallons). This increases during above normal wet seasons. For the 100-year wet season, the storage requirement increases to 1.70 acre-feet, or 550,000 gallons. This water will be stored in the ponds, (primarily), and to a lesser degree in the wetland cells. At the beginning of the rainy season the weirs will be raised, until they reach their maximum position. During the irrigation season, the weirs will be periodically lowered, transferring stored water from ponds 1 and 2 to wetland cells 1 and 2 from where it would be used for subsurface irrigation.

(a) The oxidation ponds and wetland cells will be operated in series. The primary oxidation pond will have more volume than the secondary pond. This added volume in the primary oxidation pond is the volume in the deeper inlet zone that will be used to remove and store carry over solids from the UASB. Assuming an average operating depth of 10-ft depth in the inlet zone to the primary unit, an average operating depth of 3 feet in the remainder of the primary and secondary oxidation ponds, and an average flow of 7000 gallons, the hydraulic detention (HRT) in both oxidation ponds is estimated to be 20 days.

(b) In addition to passive treatment, the oxidation ponds will provide the primary storage volume for wastewater during the non-irrigation period. The actual depth of the pond system will vary between 2 and 6 feet. Sufficient freeboard exists for the oxidation ponds to allow for rainfall accumulation for the 100-year rainfall event. Approximately 550,000 gallons of storage will be required to store treated wastewater produced during the non-irrigation period and to store rainfall collected on the surface of the oxidation ponds and wetlands.

(c) The treatment ponds and constructed wetland systems design conditions are summarized below

| Ponds Cells | Min. Operating Vol. (Gal) | Min Operating Depth | Detention Time At Vol. (days) | Storage Volume (Gal) | Surface Area (SQFT) |
|---|---|---|---|---|---|
| Pond | | | | | |
| 1 | 82,442 | 2 | 13.7 | 232,351 | 6,575 |
| 2 | 57,775 | 2 | 9.6 | 232,351 | 6,575 |
| Cell | | | | | |
| 1 | 32,038 | 1.5 | 5.3 | 50,036 | 3,926 |
| 2 | 32,038 | 1.5 | 5.3 | 50,036 | 3,926 |
| **TOTAL** | **204,293** | | **33.9** | **564,774** | **21,002** |

2. Wastewater grab samples within one foot of the surface of the treatment ponds and wetland cells shall meet the following quality limits at all times:

a. Dissolved oxygen — 2.0 mg/l minimum
b. Dissolved sulfides — 0.1 mg/l maximum
c. pH — 6.0, minimum; 9.0, maximum

3. A minimum freeboard of 12 inches shall be maintained in the ponds and wetland cells at all times. The normal freeboard requirement of 2 feet is reduced for the following reasons:

Use of the 100-year wet season, versus a 10-year wet seasons normally required by the Regional Board for storage calculations.

a. The surface area in these treatment ponds and wetland cells are very small compared to other typical pond treatment systems, thus reducing amount of rain water collected.

b. The size of the ponds and the vegetation planted in the wetland cells will help limit any adverse impacts of wave action.

Provision for a contained emergency overflow:

An emergency overflow is provided from wetland cell 1. It connects to the existing sewer line that terminates in a 30,000 gallon storage tank. In the past septic waste effluent was stored in the tank. The emergency overflow of wastewater would be considered as septic tank waste and will be trucked by the District to wastewater agencies for disposal.

4. The treatment system shall be protected from erosion, washout, and flooding from the maximum flood having a predicted frequency of once in 100 years.

## D. Wetland Management Plan

1. The District shall develop a Wetland Management Plan by August 31, 2001.

2. The District shall review, and update as necessary, a Wetland Management Plan, annually, or within 90 days of completion of any significant facility or process changes. The District shall submit to the Board, by April 30 of each year, a letter describing the results of the review process including an estimated time schedule for completion of any revisions determined necessary, and a description or copy of any completed revision.

3. Wetland Cell Aquatic Plant Control

   The Board expects the District to operate and maintain the wetland treatment system without chemical treatment (i.e., herbicides and algaecides) and to implement all feasible measures prior to using chemical treatment. If chemical treatment is proposed by the District for aquatic plant control, then such treatment shall be approved in writing by the Board's Executive officer.

4. Wetland Mosquito Vector Control

   Chemical treatment to the wetland cells for mosquito vector control shall be in accordance with the District's Wetland Management Plan.

## E. Subsurface Irrigation Plan

The District shall develop **Reclamation Landscape Plan by August 31, 2001**. The Plan shall describe the subsurface irrigation system, type of flora to be maintained by the irrigation system, and operation and maintenance of the entire water reuse system.

## F. Provisions

1. The District shall comply with all sections of this Order immediately upon commencement of discharge.

2. The District shall maintain a copy of this Order at the site so that it will be available at all times to personnel operating waste treatment and disposal facilities.

3. The District shall maintain in good working order and operate as efficiently as possible any treatment, disposal, and monitoring facility or control system installed by the District to achieve compliance with these waste discharge requirements.

4. The District shall comply with the attached self-monitoring program as adopted by the Board and as may be amended by the Executive Officer.

5. The District shall notify the Board, in writing, at least 60 days before making any material change in the character, location, or volume of the wastewater treatment or disposal practices regulated by this Order, except in emergencies, in which case the Board shall be notified as soon as possible.

6. The District shall implement a program to regularly review and evaluate its wastewater collection, treatment and disposal facilities in order to ensure that all facilities are adequately staffed, supervised, operated, maintained, and repaired as necessary, in order to provide adequate and reliable treatment,

and disposal of all wastewater. A **Treatment Facilities Evaluation Program** report discussing the status of this evaluation program, including any recommended or planned actions, shall be submitted to the Board by **April 30** of each year.

7. The District shall submit to the Board an **Operational and Maintenance Manual** for the entire wastewater treatment and disposal facilities **by June 15, 2001**.

8. The District shall provide employee training to ensure proper operation of wastewater treatment and disposal facilities. All personnel responsible for operation and maintenance of the wastewater treatment and disposal facilities shall be provided with a copy of the Operation and Maintenance Manual furnished by the designer of the waste discharge facilities.

9. The District shall permit the Regional Board or its authorized representative in accordance with California Water Code Section 13267(c):

   a. Entry upon premises in which an effluent source is located or in which any required records are kept.

   b. Access to copy any records required to be kept under the terms and conditions of this Order.

   c. Inspection of monitoring equipment or records, and

   d. Sampling of any discharge.

10. In the event of any change in control or ownership of the land or the waste discharge facilities presently owned or controlled by the District, the District shall notify the succeeding owner or operator of the existence of this Order by a letter, a copy of which shall be forwarded to the Board.

11. This Board will review this Order periodically and may revise the requirements as necessary.

I, Loretta K. Barsamian, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of the Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on April 18, 2001.

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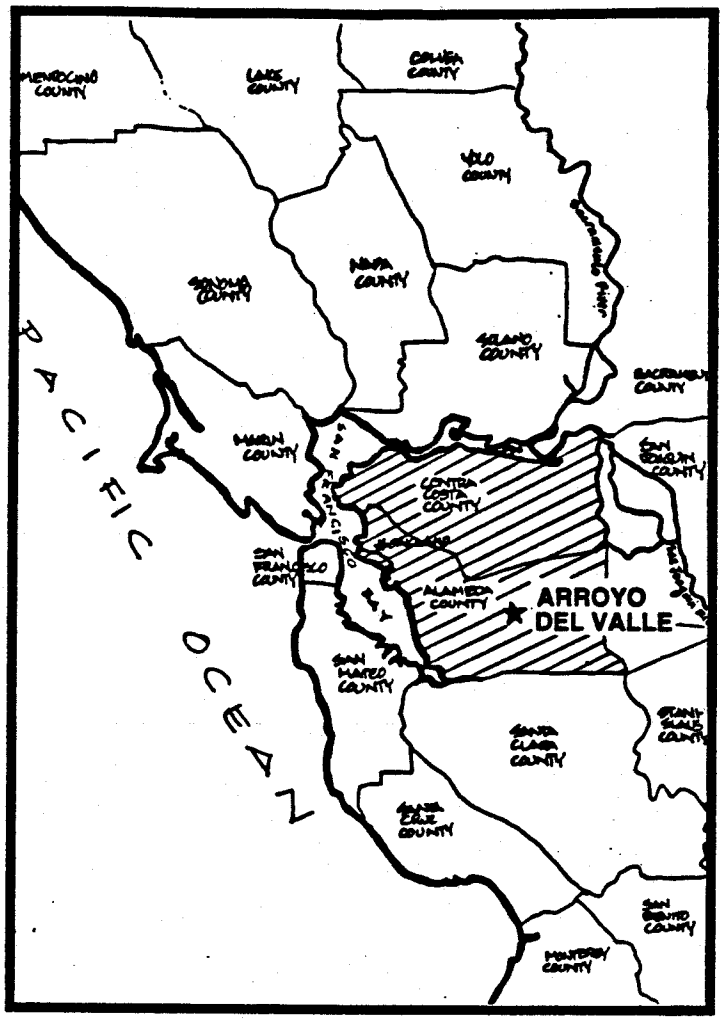
Loretta K. Barsamian

Loretta K. Barsamian
Executive Officer

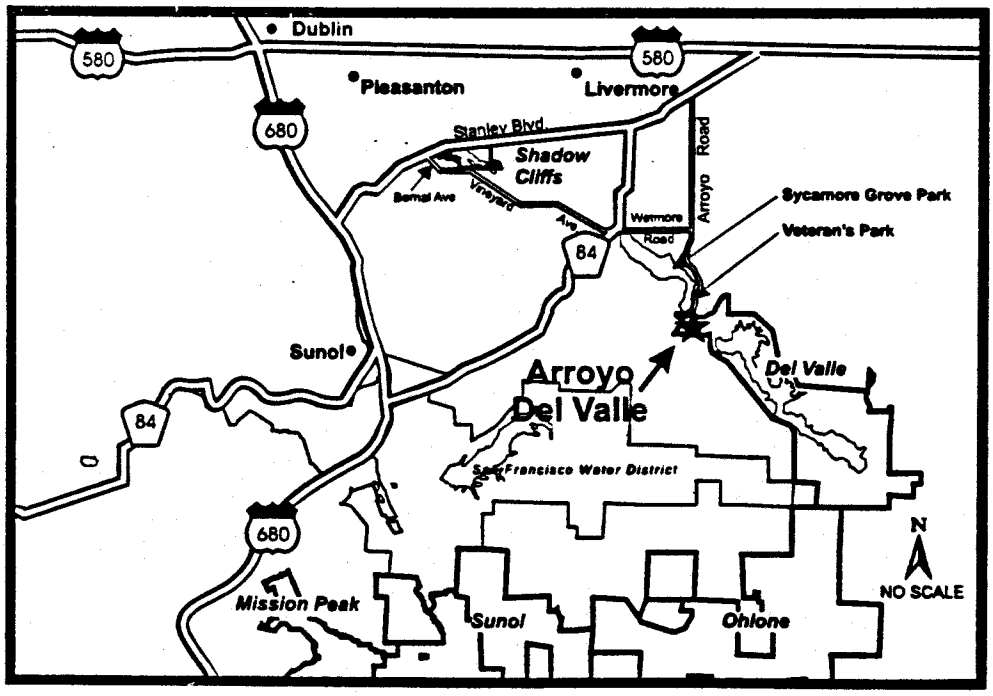
Attachments:
1. Location Map, Figure 1
2. Self-Monitoring Program
3. Standard Provisions & Reporting Rquirements (WDR Short Version)

File No. 2199.9425
Originator/Reviewer: RJC/BDA

**ATTACHMENT 1**




**PROJECT LOCATION**




**VICINITY MAP**

**FIGURE 1**

**APPENDIX B**

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

# SELF-MONITORING PROGRAM

for

Arroyo Del Valle Environmental Education Center & Youth Camp
East Bay Regional Park District
Alameda County

ORDER NO. 01-043

April 2001

## 1. GENERAL

Reporting responsibilities of waste dischargers are specified in Sections 13225(a), 13267(b), 13268, 13383, and 13387(b) of the California Water Code.

The principal purposes of a monitoring program by a waste discharger, also referred to as a self-monitoring program, are:

1. To document compliance with wastewater requirements and prohibitions established by this Regional Board; and

2. To facilitate self-policing by the discharger in the prevention and abatement of pollution arising from wastewater treatment and disposal.

## II. MONITORING PROGRAM

A. Sampling, analysis, and observation shall be performed at the following locations:

c. A-1
At any point in the collection system, before the pond system, where all waste tributary to Pond 1 is present.

2. L-'n'
Located along the perimeter levees of the four ponds/wetland cells at equidistant intervals which will not exceed 100 feet. (A sketch showing the location of these stations shall accompany each SMP quarterly report).

3. P-'n'
A sample of water from each pond/wetland cell one foot beneath the surface at the upstream portion of their weir boxes

4. D-1
Located at the outlet of wetland cell 2 and after the UV disinfection station and prior to the discharge to the irrigation system.

B. Sampling, analysis, and observations shall be performed as follows:

1. A-1
**Weekly** flow readings (gal/week):

**Quarterly**: Chemical analyses for Total Kjeldahl Nitrogen and Nitrate-Nitrogen (mg/l as N), $BOD_5$ (mg/l) to check performance of the USAB Reactor.

d. L-'n'
Standard observations shall be performed monthly.

a. Determine height of the freeboard at the lowest point of the levees confining the wastes.
b. Odor: presence or absence, characterization, source, and distance of travel.
c. Note the presence and concentration of algae or other floating aquatic plants.

d. Warning signs properly posted to inform public that ponds contain treated wastewater.
e. Weather conditions: wind-direction and estimated velocity.
f. Rainfall

e. P-'n'
Dissolved oxygen and pH shall be analyzed twice each month during the period May through September and monthly during the period October-April. Sulfides shall be sampled whenever dissolved oxygen is less than 1 mg/l. Samples shall be taken by grab sample during the morning hours when the lowest oxygen levels are expected. All values shall be reported in mg/l.

f. D-1
The following reading shall be performed weekly during irrigation periods:

a. Effluent flow rate readings (gal/week).

The following analyses shall be performed twice each month during the period May-September and monthly during the period October through April.

b. Chemical analyses: Nitrate-Nitrogen (mg/l), $BOD_5$ (mg/l), Total Suspended Solids (mg/l), Oil & Grease (mg/l), pH
c. Total Coliform Bacteria (MPN)/100 ml

## III. SYSTEM PERFORMANCE/MAINTENANCE MONITORING

A. To prolong the life of the on-site systems and assist in early detection of possible problems, the following are recommended:

1. Protect the disposal field areas from vehicle traffic or other activities that might create ruts or excessive compaction of the soil.

2. Maintain water use to a minimum; repair leaking fixtures when detected; install ultra-low flush toilets, and shower heads.

B. The Park District staff shall monitor the disposal system performance:

### 1. Weekly Monitoring

**Water Usage.** Maintain accurate weekly records of water usage to determine the degree of loading to the systems. The monthly average of weekly flows shall be the basis of comparison with system design specifications.

### 2. Quarterly Monitoring

**Grease Interceptor:** Make inspection of the grease interceptor serving the kitchen facilities and have the tank cleaned as needed. The grease interceptor is likely to require more frequent pumping than the USAB tank, and it is important that this be done. Carryover of excessive concentrations of grease can be especially damaging to the irrigation system.

3. **Annual Monitoring**

**USAB Reactor**. Inspect effluent filter in the USAB reactor for evidence of solids the screen; if present, remove filter screen and clean, directing all backwash into septic tank; this work should be undertaken during septic tank pump-out activities.

**OPERATION AND MAINTENANCE TABLE**

| Process | Operational Requirements | Maintenance Requirements |
|---|---|---|
| UASB | -Check inlets and outlets<br>-If ponds are at their maximum water levels redirect the effluent to the 30,000 gallon storage tank | -Remove accumulated solids<br>-Clean-out influent splitter box |
| Oxidation Ponds Wetland Cells | - Set weir in Wetland 1 (Wetland cells 1 and 2 operate at the same elevation) for maximum storage at the end of the irrigation season-October 30<br>- Set weir at highest elevation in Pond 2 at end of irrigation season-October 30<br>-Set weir at highest elevation in Pond 1 when Pond 2 reaches maximum elevation<br>-Reduce the weir setting of Wetland Cell 2 from maximum storage setting<br>-At the beginning of the irrigation season-when UV and irrigation system has been readied reduce Wetland Cell 2 weir to normal operating depth (2 feet) and step down each upstream storage unit as irrigation demands require.<br>-Mosquito vector control will be in accordance with the Wetland Management Plan | -Check weir structures for operational ease<br>-Check filtrate return pipe<br>-Check Wetland Cell 1 overflow weir and pipe<br>-Check integrity of berms, weir structures, transfer structures, liner, and vegetation in wetland. |
| Effluent Filter (Cell 2) | -Check for operating conditions of filter<br>-Clean outlet bar guard on a weekly basis or more often if required | |
| UV Filter/Pump | -Check to see if filter is operating correctly | -Annual inspection of pump and filter during non-irrigation |
| UV Disinfection | -Check to see if transmissibility meets operational criteria | -Clean and/or replace UV bulbs<br>-check user manual |

## IV. REPORTS TO BE FILED WITH THE REGIONAL BOARD

1. Violation of Requirements

In event the District is unable to comply with conditions of the wastewater requirements and prohibitions the District shall notify the Regional Board in writing within two weeks of the non-

compliance. The written report shall include pertinent information explaining reasons for the non-compliance and shall indicate what steps are being taken to prevent the problems from recurring.

2. Self-monitoring Reports

Written reports shall be filed regularly on a quarterly basis; the fifteenth of January, April (part of Annual Report), July and October. The Reports shall be comprised of the following:

a. Letter of Transmittal

A letter transmitting self-monitoring reports should accompany each report. Such a letter shall include a discussion of violations found during the past quarter related to the District's program and actions taken for correcting violations. The letter shall contain a statement by the official, under penalty of perjury, that to the best of the signer's knowledge the report is true and correct.

b. Program Information

The following information should be included in the quarterly report:

a) Violations Summary
b) System Performance Review & Monitoring

The quarterly report content and format may be changed in consultation with Board staff.

3. Annual Report

An annual report shall be submitted by April 15. This report should summarize for the past year all the information collected in the quarterly reports. It should also include a discussion of the overall success and weaknesses of the wastewater treatment and disposal, with recommendations for changes or improvements.

## V. ADDITIONAL REPORTING

Recognizing the County's and the State's interest in the performance and maintenance of the proposed system, the District will assume responsibility for informing the Alameda County Health Department and the S.F. Bay RWQCB of problems that arise and corrective actions taken during the course of operating the oxidation pond system, wetland treatment system and final irrigation system.

The Alameda County Flood Control & Water Conservation District (Zone 7) has requested that all reports filed under Sections III. and IV. above also be submitted to them due to the proximity of the project to Lake Del Valle, a drinking water supply. Their address is as follows:

ACFC & WC (Zone 7)
5997 Parkside Dr.
Pleasanton, CA 94588-5127
Ph: (925) 484-2600

I, Loretta K. Barsamian, Executive Officer, do hereby certify that the foregoing Self-monitoring Program is effective on the date shown below and may be reviewed at any time subsequent to the effective date upon written notice from the Executive Officer or request from the District.

Loretta K. Barsamian
Executive Officer

Effective Date: April 18, 2001