

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

SAN FRANCISCO BAY REGION

ORDER NO. 89-059

SITE CLEANUP REQUIREMENTS FOR:

VARIAN ASSOCIATES
601 CALIFORNIA AVE.
PALO ALTO
SANTA CLARA COUNTY

STANFORD UNIVERSITY
PALO ALTO
SANTA CLARA COUNTY

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

1. Varian Associates manufactures electronic components at a site located at 601 California Avenue, Palo Alto, Santa Clara County. The land is owned by Stanford University and has been leased by Varian Associates since 1966. Varian Associates is primarily responsible for this discharge and is hereinafter called a discharger for purposes of this Order.
2. Stanford University, as landowner of the property at 601 California Avenue, is secondarily responsible under this Order and as such, shall not be primarily responsible for compliance with this Order.
3. Site Cleanup Requirements (Order No. 87-039) were adopted for this site on April 15, 1987. These requirements specified a schedule for site pollution characterization and interim remediation and for the preparation of a final cleanup plan.
4. The site consists of two main buildings as shown on Attachment 1, Site Plan, hereinafter a part of this Order. The complex houses research and production facilities for Varian Associates Electro Optical Sensors Division (formerly Image Tube Division).
5. The site is located on a series of overlapping alluvial fans deposited by east-flowing streams descending from the Santa Cruz Mountains. The site is underlain primarily by interbeds of unconsolidated clayey to silty sand and sandy clays. The uppermost saturated zone was encountered at approximately 17 to 20 feet below grade. The groundwater gradient in this zone is northeast toward San Francisco Bay.
6. The subsurface soil and groundwater at this site are polluted with organic solvents believed to have originated from past activities at solvent storage and use areas. Groundwater monitoring wells constructed on and offsite have detected trichloroethene (TCE), 1,1,1-trichloroethane (TCA), 1,2-dichloroethene (DCE), 1,1-dichloroethane (DCA), and other chemicals. TCE concentrations of

26,000 ppb were detected in 1987, in a groundwater monitoring well near an area where TCE and other solvents were formerly stored.

7. As an interim remedial measure, the discharger in 1987 installed an extraction well and treatment system to remove volatile organic compounds (VOC's) from groundwater underneath suspected source areas. The intent of this measure was to reduce offsite migration of contaminated groundwater. The four most recent monitoring episodes indicated that TCE concentrations were below 4500 ppb in the suspected source areas.
8. There are four backup municipal wells and several private wells downgradient from the site. The closest municipal well is approximately 1/2 mile to the northeast and the closest private well is approximately 1 1/4 mile to the northeast.
9. The former Mayfield School property is located immediately east of the Varian site. The Mayfield site has been investigated under Site Cleanup Requirements (issued to Varian Associates and Hewlett-Packard Company) which require interim remediation of total VOC's in groundwater at concentrations greater than or equal to 1 ppm.
10. It is the Board's intent to continue interim groundwater remediation at the 601 California Avenue site and at the Mayfield School site. However, this Order will supersede and rescind Orders No. 87-039, 87-142, and 87-164.
11. The discharger submitted a remedial action plan on February 1, 1989, which proposed final remediation measures for soils and groundwater at and immediately adjacent to the 601 California Avenue site. The remedial action plan is incomplete in that it does not include further activities which need to be conducted in those portions of the plume of pollutants beneath the Mayfield School site and downgradient of El Camino Real, including that merged with pollutants from other sources.
12. Board staff commented on the remedial action plan in letters to the discharger dated March 15, 1989, and April 14, 1989. These Staff comments shall be addressed by the discharger in an expanded remedial action plan to be prepared pursuant to this Order.
13. Based on available information, the Board believes that the discharger and the Hewlett-Packard site located at 640 Page Mill Road are primarily responsible for the plume of merged pollutants downgradient of the two sites, including the former Mayfield School site. The Board has issued Site Cleanup Requirements (Order No. 89-037) to the Hewlett-Packard site to also investigate and propose remedial measures for their entire pollutant plume, including the portion merged with pollutants from other sites. The Board encourages the discharger and Hewlett-Packard to jointly investigate and propose remedial measures for the merged plume area. However, if a cooperative approach cannot be arranged, the discharger is still required to comply with this Order.

14. Regional Board staff is currently investigating other possible sources to the commingled plume downgradient of El Camino Real. Site Cleanup Requirements will be drafted for these sources as they are discovered. The Board may modify this Order to add other sites in the future and/or supply information to the discharger for their cost recovery purposes.
15. The Regional Board adopted a revised Water Quality Control Plan for the San Francisco Bay Region (Basin Plan) on December 17, 1986. The Basin Plan contains water quality objectives for South San Francisco Bay and contiguous surface and groundwaters.
16. The existing and potential beneficial uses of the groundwater underlying and adjacent to the discharger's facilities include:
 - a. Industrial process water supply
 - b. Industrial service supply
 - c. Agricultural supply
 - d. Municipal and domestic supply
17. The discharger caused or permitted waste to be discharged or deposited where it is or probably will be discharged to waters of the State and creates or threatens to create a condition of pollution or nuisance.
18. This action is an Order to enforce the laws and regulations administered by the Board. This action is categorically exempt from the provisions of CEQA pursuant to Section 15321 of the Resources Agency Guidelines.
19. The Board has notified the discharger and all interested agencies and persons of its intent under California Water Code Section 13304 to prescribe Site Cleanup Requirements for the discharges and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
20. The Board, at a public meeting, heard and considered all comments pertaining to this discharge.

IT IS HEREBY ORDERED, pursuant to Section 13304 of the California Water Code, that the discharger shall cleanup and abate the effects described in the above findings as follows:

A. PROHIBITIONS:

1. The discharge of wastes or hazardous materials in a manner which will degrade water quality or adversely affect beneficial uses of the waters of the State is prohibited.
2. Further significant migration of pollutants through subsurface transport to waters of the State is prohibited.

3. Activities associated with the subsurface investigation and cleanup which will cause significant adverse migration of pollutants are prohibited.

B. SPECIFICATIONS:

1. The storage, handling, treatment or disposal of polluted soil or groundwater shall not create a nuisance as defined in Section 13050(m) of the California Water Code.
2. The discharger shall conduct monitoring activities as needed to define the local hydrogeological conditions, and the lateral and vertical extent of the soil and groundwater pollution. Should monitoring results show evidence of pollution migration, additional plume characterization of pollutant extent shall be required.
3. The discharger shall continue interim remediation at the 601 California Avenue site until the final cleanup plan required by Provision C.2.d.1) of this Order is adopted by the Board.
4. The discharger shall continue interim remediation at the Mayfield School site until the evaluation required by Provision C.2.a.1) of this Order is approved in writing by Board staff.

C. PROVISIONS:

1. Varian Associates shall submit to the Board acceptable monitoring program reports containing results of work performed according to a program prescribed by the Board's Executive Officer.
2. Varian Associates shall comply with this Order immediately upon adoption with the exception that Varian Associates shall comply with Prohibitions A.1., A.2., and A.3., and Specifications B.1., B.2., B.3., and B.4., as modified in accordance with the time schedule and tasks listed below. Within sixty (60) days of the Executive Officer's determination and actual notice to Stanford University that Varian Associates has failed to comply with this Order, Stanford University, as landowner, shall comply with this Order.

COMPLETION DATE/TASK:

- a. 1) **COMPLETION DATE:** June 22, 1989
TASK: EVALUATE INTERIM HYDRAULIC CONTAINMENT MEASURES: Submit a technical report acceptable to the Executive Officer which evaluates the effectiveness of the interim hydraulic containment system at the former Mayfield School site. Such an evaluation shall include, but need not be limited to, an estimation of the flow capture zone of the extraction wells, establishment of the cones of depression by field measurements, and presentation of chemical monitoring data.
- b. 1) **COMPLETION DATE:** July 7, 1989
TASK: WORK PLAN TO ADDRESS COMMINGLED PLUME: The discharger shall submit a technical report acceptable to the Executive Officer which contains a workplan for investigations and development and evaluation of potential remedial actions for the entire pollutant plume originating and extending from the discharger's site, including the former Mayfield School site, and groundwater downgradient of El Camino Real, including that which has merged with pollutants from other sources. This report shall also inform the Executive Officer of the status of coordination of these investigations with Hewlett-Packard Company.
- c. 1) **COMPLETION DATE:** July 7, 1989
TASK: BASELINE PUBLIC HEALTH EVALUATION WORKPLAN: Submit a technical report acceptable to the Executive Officer containing a workplan for the completion of a baseline public health evaluation prepared in accordance with the Superfund Baseline Public Health Evaluation Manual (EPA 540/1-86-060, October 1986).
- 2) **COMPLETION DATE:** September 1, 1989
TASK: BASELINE PUBLIC HEALTH EVALUATION: Submit a technical report acceptable to the Executive Officer containing a baseline public health evaluation prepared in accordance with the Superfund Baseline Public Health Evaluation Manual (EPA 540/1-86-060, October 1986).
- d. 1) **COMPLETION DATE:** December 8, 1989
TASK: PROPOSED FINAL CLEANUP OBJECTIVES AND ACTIONS: Submit a technical report acceptable to the Executive Officer

incorporating appropriate provisions from the remedial action plan described in Finding 11, as revised pursuant to Finding 12, and the work plan required by Provision C.2.b.1. of this Order, containing the results of the feasibility study evaluating alternative final remedial measures; and a separate technical report acceptable to the Executive Officer containing the recommended measures necessary to achieve final cleanup objectives; and the tasks and time schedule necessary to implement the recommended final remedial measures.

The submittal of technical reports evaluating immediate, interim and final remedial measures will include a projection of the cost, effectiveness, benefits and impact on public health, welfare and environment of each alternative measure. The remedial investigation and feasibility study shall be consistent with the guidance provided by Subpart F of the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR Part 300); Section 25356.1 (c) of the California Health and Safety Code; CERCLA guidance documents with reference to Remedial Investigation, Feasibility Studies, and Removal Actions; and the State Water Resources Control Board's Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California".

3. If the discharger is delayed, interrupted or prevented from meeting one or more of the completion dates specified in this Order, the discharger shall promptly notify the Executive Officer and the Board may consider revision to this Order.
4. The discharger shall continue to submit to the Board monthly technical reports on compliance with the Prohibitions, Specifications, and Provisions of this Order. These reports shall consist of a letter report that, (1) summarizes work completed since submittal of the previous report, and work projected to be completed by the time of the next report, (2) identifies any obstacles which may threaten compliance with the schedule of this Order and what actions are being taken to overcome these obstacles, and (3) includes, in the event of non-compliance with Provision C.2. or any other Specification or Provision of this Order, written notification which clarifies the reasons for non-compliance and which proposes specific measures and a schedule to achieve compliance. This written notification shall identify work not completed that was projected for completion, and shall identify the impact of non-compliance on achieving compliance with the remaining requirements of this Order. These reports shall be submitted by the 15th of each month, summarizing the previous month's activities.

5. The discharger shall submit to the Board technical reports acceptable to the Executive Officer containing Site Safety Plans, and Site Sampling Plans.
6. All hydrogeological plans, specifications, reports, and documents shall be signed by or stamped with the seal of a registered geologist, engineering geologist or professional engineer. This requirement shall not apply to monthly reports and quarterly progress reports provided the hydrogeological information contained in these reports has been submitted or is scheduled for submittal by a registered geologist, engineering geologist, or professional engineer.
7. All samples shall be analyzed by State certified laboratories or laboratories accepted by the Board using approved EPA methods for the type of analysis to be performed. All laboratories shall maintain quality assurance/quality control records for Board review.
8. The discharger shall maintain in good working order, and operate as efficiently as possible, any facility or control system installed to achieve compliance with the requirements of this Order.
9. Copies of all correspondence, reports, and documents pertaining to compliance with the Prohibitions, Specifications, and Provisions of this Order, shall be provided to the following agencies:
 - a. Santa Clara Valley Water District
 - b. Santa Clara County Health Department
 - c. City of Palo Alto
 - d. State Department of Health Services/TSCD
 - e. U. S. Environmental Protection Agency,
Region IX T45

The Executive Officer may additionally require copies of correspondence, reports and documents pertaining to compliance with the Prohibitions, Specifications, and Provisions of this Order to be provided to a local repository for public use and for compilation of an Administrative Record.

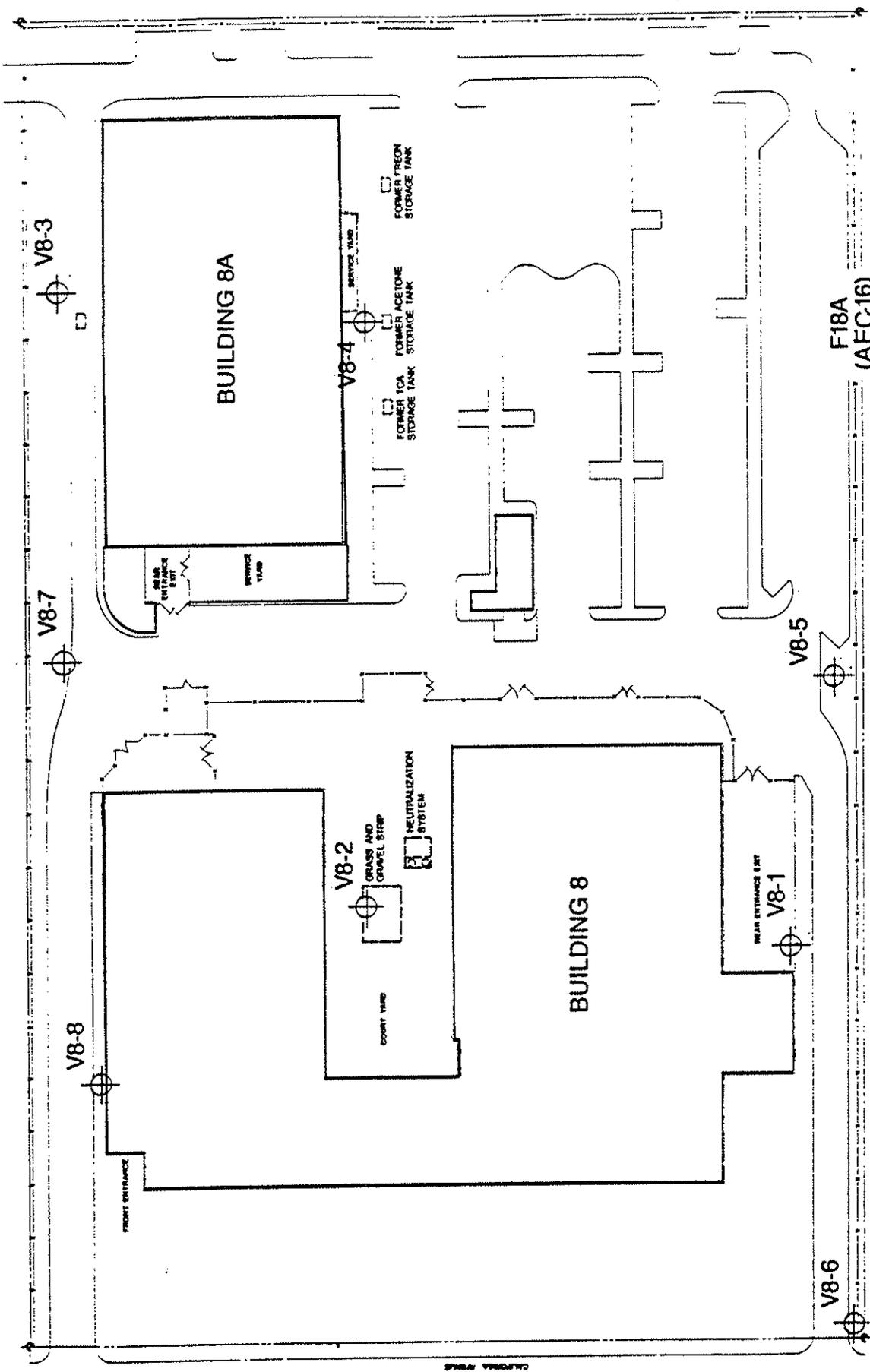
10. The discharger shall permit the Board or its authorized representative, in accordance with Section 13267(c) of the California Water Code:
 - a. Entry upon premises in which any pollution sources exist, or may potentially exist, or in which any required records are kept, which are relevant to this Order.

- b. Access to copy any records required to be kept under the terms and conditions of this Order.
 - c. Inspection of any monitoring equipment or methodology implemented in response to this Order.
 - d. Sampling of any groundwater or soil which is accessible, or may become accessible, as part of any investigation or remedial action program undertaken by the discharger.
- 11. The discharger shall file a report on any changes in site occupancy and ownership associated with the facility described in this Order within 60 days of said changes.
 - 12. If any hazardous substance is discharged in or on any waters of the State, or discharged and deposited where it is, or probably will be discharged in or on any waters of the State, the discharger shall report such discharge to this Regional Board, at (415) 464-1255 on weekdays during office hours from 8 a.m. to 5 p.m., and to the Office of Emergency Services at (800) 852-7550 during non-business hours. A written report shall be filed with the Regional Board within five (5) working days and shall contain information relative to: the nature of waste or pollutant, quantity involved, duration of incident, cause of spill, Spill Prevention, Control, and Countermeasure Plan (SPCC) in effect, if any, estimated size of affected area, nature of effects, corrective measures that have been taken or planned, and a schedule of these activities, and persons/agencies notified.
 - 13. The Board will review this Order periodically and may revise the requirements when necessary.
 - 14. Regional Board Orders No. 87-039, 87-142, and 87-164 are hereby rescinded.

I, Steven R. Ritchie, Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on April 19, 1989.



Steven R. Ritchie
Executive Officer



Kennedy/Jenks/Chilton
 Varian Associates
 601 California Ave.
 Palo Alto, CA.
Site Plan
 K/J/C 6072
 October 1986

DRAFT



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APPROX. GRAPHIC
 SCALE IN FEET

NOTE
 1. ALL LOCATIONS APPROXIMATE.
 2. CHEMICAL TANK LOCATIONS BASED ON VARIAN DWG. X-4.1 PLUMBING PLOT PLAN.

LEGEND

⊕ EXISTING MONITORING WELL

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

VARIAN ASSOCIATES
601 CALIFORNIA AVENUE
GROUNDWATER SELF-MONITORING PROGRAM

A. GENERAL

Reporting responsibilities of waste dischargers are specified in Sections 13225(a), 13267(b), 13268, 13383, and 13387(b) of the California Water Code and this Regional Board's Resolution No. 73-16.

The principal purposes of a waste discharger's monitoring program, also referred to as a self-monitoring program, are: (1) To document compliance with site cleanup requirements and prohibitions established by this Regional Board, (2) To facilitate self-policing by the waste discharger in the prevention and abatement of pollution arising from waste discharge, (3) To develop or assist in the development of effluent or other limitations, discharger prohibitions, national standards of performance, pretreatment and toxicity standards, and other standards, and (4) To prepare water and wastewater quality inventories.

B. SAMPLING AND ANALYTICAL METHODS

Sample collection, storage, and analyses shall be performed according to the EPA Method 8000 series described in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods", dated November 1986; or other methods approved and specified by the Executive Officer of this Regional Board.

C. REPORTS TO BE FILED WITH THE REGIONAL BOARD

1. Self-Monitoring Reports

a. Reporting Period:

Commencing with the report due August 14, 1989, written reports shall be filed regularly each quarter within forty-five days from the end of the quarter monitored.

b. Letter of Transmittal:

A letter transmitting 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 any requirement violation. If the discharger has previously submitted a detailed time schedule for correcting requirement violations, a reference to this correspondence will be satisfactory. Monitoring reports and the letter transmitting reports shall be signed by either a principal executive officer or his duly authorized

employee. 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.

c. Data Results:

- (1). Results from each required analysis and observation shall be submitted in the quarterly self-monitoring report (SMR). GC/MS analysis shall be performed and all peaks identified and reported on each well according to Table 1 and on each new well immediately after installation and well development. Results shall also be submitted for any additional analyses performed by the discharger at the specific request of the Board.
- (2). The quarterly reports shall identify the analytical procedures used for analyses either directly in the report or by reference to a standard plan accepted by the Executive Officer. Any special methods shall be identified and shall have prior approval of the Board's Executive Officer.
- (3). The quarterly reports shall include, but need not be limited to, groundwater elevations for all wells sampled, updated water table and piezometric surface maps for all affected water bearing zones, cross-sectional geological maps describing the hydrogeological setting of the site, and appropriately scaled and detailed base maps showing the location of all monitoring wells and extraction wells, and identifying adjacent facilities and structures.
- (4). Varian Associates shall describe, in the quarterly SMR, the reasons for significant increases in a pollutant concentration at a well onsite. The description shall include:
 - 1). the source of the increase,
 - 2). how Varian Associates determined or will investigate the source of the increase, and
 - 3). what source removal measures have been completed or will be proposed.
- (5). Original lab results shall be retained and shall be made available for inspection for three years after origination or until after all continuing or impending legal or administrative actions are resolved.

- (6). The quarterly reports shall include a discussion of unexpected operational changes which could affect performance of the extraction system, such as flow fluctuations, maintenance shutdown, etc.
- (7). Varian Associates shall describe in the quarterly monitoring report the effectiveness of the actions taken to regain compliance if compliance is not achieved. The effectiveness evaluation shall include the basis of determining the effectiveness.
- (8). An annual report shall be combined with the fourth quarter regular report and shall include cumulative data for each well. The annual report shall also include minimum, maximum, median and average water quality data for the year.

d. SMP Revisions:

Additional long term or temporary changes in the sample collection frequency and routine chemical analysis may become warranted as monitoring needs change. These changes shall be based on the following criteria and shall be proposed in a quarterly SMR. The changes shall be implemented only upon receipt of written approval from Board staff.

Criteria for SMP revision:

- (1). Discontinued analysis for a routine chemical parameter for a specific well after a one-year period of below detection limit values for that parameter.
- (2). Changes in sampling frequency for a specific well after a one-year period of below detection limit values for all purgeable organic chemicals from that well.
- (3). Temporary increases in sampling frequency or changes in requested chemical parameters for a well or group of wells because of a change in data needs (e.g., evaluating groundwater extraction effectiveness or other remediation strategies).
- (4). Alteration of sampling frequency based on evaluation of collective data base.

D. DESCRIPTION OF SAMPLING STATIONS
Groundwater

<u>Stations</u>	<u>Description</u>
Listed in Table 1	Monitoring wells

E. SCHEDULE OF SAMPLING AND ANALYSIS

The schedule of sampling and analysis shall be given in Table 1.

I, Steven R. Ritchie, Executive Officer, hereby certify that the foregoing Self-Monitoring Program:

1. Has been developed in accordance with the procedure set forth in this Regional Board's Resolution No. 73-16 in order to obtain data established in Regional Board Order No. 89-059.
2. Is effective on the date shown below.
3. May be reviewed at any time subsequent to the effective date upon written notice from the Executive Officer or request from the discharger and revisions will be ordered by the Executive Officer.



Steven R. Ritchie
Executive Officer

Effective Date: April 19, 1989

Attachments: Table 1

TABLE 1
SCHEDULE FOR SAMPLING, MEASUREMENTS, AND ANALYSIS

SAMPLING STATION >>	V8-1 V8-2 V8-2X V8-3 V8-3A1 V8-5 V8-7 V8-7A1 V8-8
TYPE OF SAMPLE	G
EPA 8010/8020 for: purgeable priority pollutants	Q
GC/MS Scan(EPA 8240)	1/Y*

TABLE 1 (continued)

SAMPLING STATION >>	V-9 V-9A1 V-11A1 F30A1 F31A2 F36A2 F38A2
TYPE OF SAMPLE	G
EPA 8010/8020 for: purgeable priority pollutants	Q
GC/MS Scan(EPA 8240)	1/Y*

TABLE 1 (continued)

SAMPLING STATION >>	V8-4 V8-6 V-10 F29A1 F35B F37A2
TYPE OF SAMPLE	G
EPA 8010/8020 for: purgeable priority pollutants	2/Y
GC/MS Scan(EPA 8240)	1/Y*

LEGEND FOR TABLE 1

- G = grab sample
- Q = quarterly, January-March, April-June, July-September, October-December
- 2/Y = twice per year
- 1/Y = once per year

* EPA 8010/8020 not required when EPA 8240 is performed.
EPA 8240 shall be performed with open scan.