

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
SAN FRANCISCO BAY REGION

ORDER NO. 96-059

REVISED SITE CLEANUP REQUIREMENTS FOR:

FAIRCHILD SEMICONDUCTOR CORPORATION  
APPLIED MATERIALS INCORPORATED

for the property located at

974 EAST ARQUES AVENUE  
SUNNYVALE  
SANTA CLARA COUNTY

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

1. **Site Location:** The site is located at 974 East Arques Avenue, in Sunnyvale. Located on the site is a large building, which is currently vacant. The building contained space for manufacturing and offices. Hazardous waste storage facilities were also located on the site. Areas surrounding the building are paved. Adjacent properties are developed for commercial and light manufacturing use. Residential areas are located within one quarter mile of the site.
2. **Site History:** Fairchild Semiconductor Corporation (Fairchild) constructed the building located at 974 E. Arques Avenue in 1967, and owned and occupied the property from 1968 to 1972. During that time Fairchild's manufacturing processes at the site included photo resist, screen printing, etching, alodining, and spray painting. TCE was typically used in these processes during that time period. Fairchild also utilized an acid waste neutralization sump at the site.

Hewlett Packard Company (Hewlett Packard) purchased the property in 1972, and utilized the site for light assembly, alodining, metal fabrication, and painting until 1993. From 1978 to 1986 Hewlett Packard used the sump to convey wastewater to the sanitary sewer. Hewlett Packard's use of TCE was short-lived and minor, and was unlikely to have resulted in TCE releases to soil or groundwater, based on site-specific operations information. Hewlett Packard ceased manufacturing operations at the site in 1993. In 1995, the site was purchased by Applied Materials Incorporated (Applied Materials). The site is currently vacant.

3. **Named Dischargers:** The pattern of soil and groundwater VOC contamination at the site indicate that releases occurred at the former acid waste neutralization sump. Because Fairchild was the only operator of the sump and the only occupant utilizing TCE in its manufacturing process, Fairchild is named as a discharger. Applied Materials, as the current owner of the site, is also named as a discharger. Applied Materials will be responsible for compliance only in the event that other named dischargers fail to comply with the requirements of this order.

The Board reserves jurisdiction over the question of whether to name Schlumberger Technology Corporation (Schlumberger) or National Semiconductor Corporation (National), given that both firms have acted as parent corporation to Fairchild and given that the Board has not determined whether these firms exercised substantial management and control of Fairchild's activities. Fairchild became a wholly-owned subsidiary of Schlumberger in 1979, and was sold to National in 1987. Schlumberger retained responsibility for environmental cleanup at this site as part of an indemnification agreement with National.

If additional information is submitted indicating that other parties caused or permitted any waste to be discharged on the site where it entered or could have entered waters of the state, the Board will consider adding that party's name to this order.

4. **Site Hydrogeology:** The site is flat, and slopes gently toward the north and San Francisco Bay. Calabazas Creek, approximately .75 miles east of the site, is the nearest surface water. The site is underlain by fluvial deposits consisting of interbedded, laterally discontinuous layers of clay, silt, sand, and gravel. A shallow groundwater zone, generally found between 10 and 30 feet below the ground surface, is referred to as the A-zone aquifer. Groundwater in the A-zone is migrating northeasterly. A deeper groundwater zone, found between 35 and 50 feet below the ground surface is referred to as the B-zone aquifer. Groundwater in the B-zone is also migrating northeasterly. The hydrogeologic conditions encountered at the site are typical of those found at other sites in the vicinity.
5. **Remedial Investigation:** Soil and groundwater samples obtained at the site indicate that VOCs, including trichloroethylene, 1,1,1-trichloroethane, dichloroethylene, methylene chloride, and perchloroethylene, have impacted soil and groundwater at the site. The source area has been identified as the former acid waste neutralization sump located at the western site edge of the building. Levels of soil contamination in the unsaturated zone across the site are relatively low (less than 1 ppm). However, in the A-zone near the former sump, groundwater contamination has been detected at levels significantly higher than drinking water standards (historical high of 70,000 ppb of TCE). In the B-zone near the former sump, low (less than 5 ppb) to non-detectable levels of contamination have been detected.

Groundwater investigations by Hewlett Packard and others indicate that VOC

groundwater contamination is regional in extent. Significant levels of groundwater contamination have been detected at the upgradient, western site boundary. This contamination appears to be the result of migration from off-site, upgradient sources, who are conducting their own remedial investigations. Significant levels of groundwater contamination have also been detected at the northern site boundary, generally downgradient of the former sumps. Other dischargers north of the site have conducted remedial investigations north of the site boundary.

6. **Interim Remedial Measures:** In October 1986, Hewlett Packard removed the acid waste neutralization system (including the sump) and excavated approximately 190 cubic yards of soil. In September 1995 an additional 3000 cubic yards of soil was excavated from the saturated and unsaturated zone in the area of the former sump.

In September 1987 Hewlett Packard began extracting groundwater from the area of the former underground sump. As of September 1995, approximately 21 million gallons of groundwater were extracted, treated utilizing an air stripper, and discharged to surface waters. In September 1995, a reactive wall was installed in the area of the former sump. Preliminary evaluation indicates that the wall is effectively remediating A-zone groundwater contamination in the immediate vicinity of the former sump.

7. **Adjacent Sites:** Several sites exist in the vicinity of the former Fairchild site that are currently under Site Cleanup Requirements to remediate soil and/or groundwater VOC contamination. These sites include:

Operable Unit 1

National Semiconductor Corporation	2900 Semiconductor Drive
United Technologies Corporation (former)	1050 E. Arques Avenue
Advanced Micro Devices	1165 E. Arques Avenue

Operable Unit 2

999 Arques Avenue Corporation	999 E. Arques Avenue
Sobrato Development Company	968-970 Stewart Drive
CAE Electronics	1077 East Arques Avenue

sites west and south of former Fairchild site

City of Sunnyvale Corporation Yard	221 Commercial Street
Mohawk Laboratories	932 Kifer Road
Pilkington Barnes Hind	895 Kifer Road

All of the above sites have completed, or are in the process of conducting, remedial investigations. All of the above sites except for the Sunnyvale Corporation Yard have implemented interim or final groundwater remedial measures. Additional work will be required of these sites, as well other sites, if necessary.

8. **Regulatory Status:** The Board adopted Order No. 87-8 (Site Cleanup Requirements) on February 18, 1987; Hewlett Packard was named as the discharger. Work completed pursuant to the order included characterization of A-zone and B-zone groundwater pollution, and proposal, implementation, and evaluation of soil and groundwater remedial measures. The intent of this Order is to revise Order 87-8 to: 1) revise the list of named dischargers based on new site and chemical use information, and 2) include requirements to reevaluate the performance of the interim groundwater remedial actions and continue groundwater monitoring at the site.

A task requiring implementation of final groundwater cleanup plan has not been specified in this order. Additional remedial investigation needs to be completed at sites west and south of the former Fairchild site prior to determining whether additional dischargers should be responsible for final groundwater cleanup. In addition, the Regional Board is currently evaluating regional groundwater cleanup strategies, and will determine which option best resolves issues complicating final cleanup of commingled plumes.

9. **Basin Plan:** The Board adopted a revised Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) 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, 1995, and November 13, 1995, respectively. A summary of regulatory provisions is contained in 23 CCR 3912. The Basin Plan defines beneficial uses and water quality objectives for waters of the State, including surface waters and groundwaters.

The potential beneficial uses of groundwater underlying and adjacent to the site include:

- a. Municipal and domestic water supply
- b. Industrial process water supply
- c. Industrial service water supply
- d. Agricultural water supply

At present, there is no known use of groundwater underlying the site for the above purposes.

10. **Other Board Policies:** Board Resolution No. 88-160 strongly encourages dischargers of extracted, treated groundwater from site cleanups to reuse it or discharge it to the sanitary sewer.

Board Resolution No. 89-39, "Sources of Drinking Water," defines potential sources of drinking water to include all groundwater in the region, with limited exceptions for

areas of high TDS, low yield, or naturally-high contaminant levels.

11. **State Water Board Policies:** State Water Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California," applies to this discharge and requires attainment of background levels of water quality, or the highest level of water quality which is reasonable if background levels of water quality cannot be restored. Non-background cleanup levels must be consistent with the maximum benefit to the people of the State, not unreasonably affect present and anticipated beneficial uses of such water, and not result in exceedance of applicable water quality objectives.

State Water Board Resolution No. 92-49, "Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304," applies to this discharge. This order and its requirements are consistent with the provisions of Resolution No. 92-49, as amended.

12. **Basis for 13304 Order:** The dischargers have caused or permitted waste to be discharged or deposited where it is or probably will be discharged into waters of the State and creates or threatens to create a condition of pollution or nuisance.
13. **Cost Recovery:** Pursuant to California Water Code Section 13304, the dischargers are hereby notified that the Board is entitled to, and may seek reimbursement for, all reasonable costs actually incurred by the Board to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action, required by this order.
14. **CEQA:** This action is an order to enforce the laws and regulations administered by the Board. As such, this action is categorically exempt from the provisions of the California Environmental Quality Act (CEQA) pursuant to Section 15321 of the Resources Agency Guidelines.
15. **Notification:** The Board has notified the dischargers and all interested agencies and persons of its intent under California Water Code Section 13304 to prescribe site cleanup requirements for the discharge, and has provided them with an opportunity to submit their written comments.
16. **Public Hearing:** 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 dischargers (or their agents, successors, or assigns) shall cleanup and abate the effects described in the above findings as follows:

## A. PROHIBITIONS

1. The discharge of wastes or hazardous substances in a manner which will degrade water quality or adversely affect beneficial uses of waters of the State is prohibited.
2. Further significant migration of wastes or hazardous substances 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 wastes or hazardous substances are prohibited.

## B. TASKS

### 1. REEVALUATION OF REMEDIAL ACTIONS

COMPLIANCE DATE: August 15, 1996

Submit a technical report acceptable to the Executive Officer evaluating the performance of the groundwater remedial measures. The report should also evaluate modifications to the system, and propose modifications as appropriate.

2. **Delayed Compliance:** If the dischargers are delayed, interrupted, or prevented from meeting one or more of the completion dates specified for the above tasks, the dischargers shall promptly notify the Executive Officer and the Board may consider revision to this Order.

## C. PROVISIONS

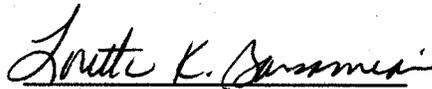
1. **No Nuisance:** The storage, handling, treatment, or disposal of polluted soil or groundwater shall not create a nuisance as defined in California Water Code Section 13050(m).
2. **Good O&M:** The dischargers shall maintain in good working order and operate as efficiently as possible any facility or control system installed to achieve compliance with the requirements of this Order.
3. **Cost Recovery:** The dischargers shall be liable, pursuant to California Water Code Section 13304, to the Board for all reasonable costs actually incurred by the Board to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action, required by this Order. If the site addressed by this Order is enrolled

in a State Board-managed reimbursement program, reimbursement shall be made pursuant to this Order and according to the procedures established in that program. Any disputes raised by the dischargers over reimbursement amounts or methods used in that program shall be consistent with the dispute resolution procedures for that program.

4. **Access to Site and Records:** In accordance with California Water Code Section 13267(c), the dischargers shall permit the Board or its authorized representative:
  - a. Entry upon premises in which any pollution source exists, 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 requirements of this Order.
  - c. Inspection of any monitoring or remediation facilities installed 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.
5. **Self-Monitoring Program:** The dischargers shall comply with the Self-Monitoring Program as attached to this Order and as may be amended by the Executive Officer.
6. **Contractor/ Consultant Qualifications:** All hydrogeologic documents (plans, specifications, and reports) shall be signed by and stamped with the seal of a California registered geologist, a California certified engineering geologist, or a California registered civil engineer.
7. **Lab Qualifications:** 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 (QA/QC) records for Board review. This provision does not apply to analyses that can only reasonably be performed on-site (e.g. temperature).
8. **Document Distribution:** Copies of all correspondence, technical reports, and other documents pertaining to compliance with this Order shall be provided to the following agencies:

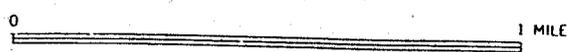
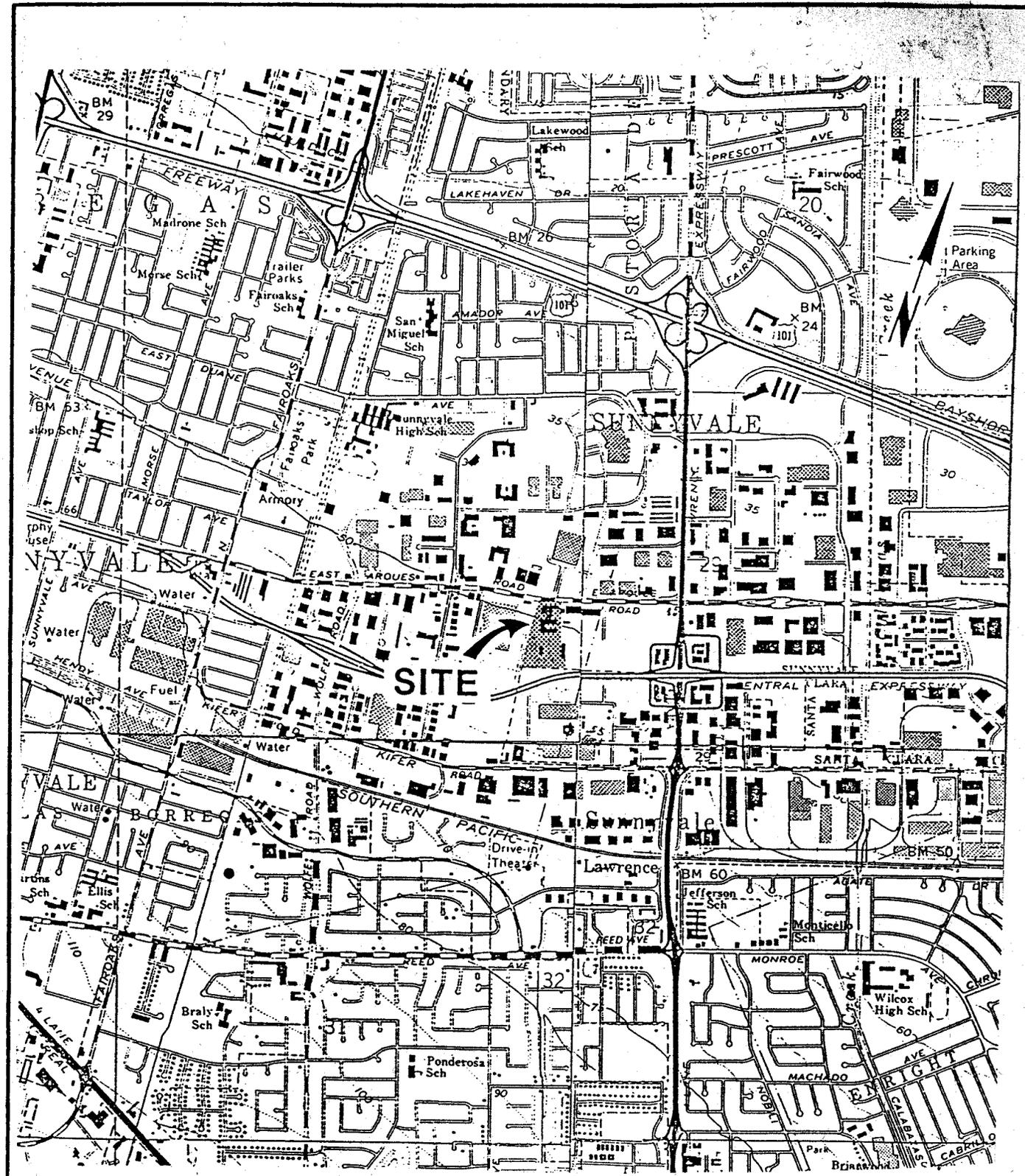
- a. City of Sunnyvale
  - b. Santa Clara County Health Department
  - c. Santa Clara Valley Water District
9. **Reporting of Changed Owner or Operator:** The dischargers shall file a technical report on any changes in site occupancy or ownership associated with the property described in this Order.
10. **Reporting of Hazardous Substance Release:** If any hazardous substance is discharged in or on any waters of the State, or discharged or deposited where it is, or probably will be, discharged in or on any waters of the State, the dischargers shall report such discharge to the Regional Board by calling (510) 286-1255 during regular office hours (Monday through Friday, 8:00 to 5:00).
- A written report shall be filed with the Board within five working days. The report shall describe: the nature of the hazardous substance, estimated quantity involved, duration of incident, cause of release, estimated size of affected area, nature of effect, corrective actions taken or planned, schedule of corrective actions planned, and persons/agencies notified.
- This reporting is in addition to reporting to the Office of Emergency Services required pursuant to the Health and Safety Code.
11. **Rescission of Existing Order:** This Order rescinds Order No. 87-8.
12. **Periodic SCR Review:** The Board will review this Order periodically and may revise it when necessary. The dischargers may request revisions and upon review the Executive Officer may recommend that the Board revise these requirements.

I, Loretta K. Barsamian, 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 17, 1996.

  
Loretta K. Barsamian  
Executive Officer

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**FAILURE TO COMPLY WITH THE REQUIREMENTS OF THIS ORDER MAY  
SUBJECT YOU TO ENFORCEMENT ACTION, INCLUDING BUT NOT LIMITED TO:  
IMPOSITION OF ADMINISTRATIVE CIVIL LIABILITY UNDER WATER CODE  
SECTIONS 13267 OR 13350, OR REFERRAL TO THE ATTORNEY GENERAL FOR  
INJUNCTIVE RELIEF OR CIVIL OR CRIMINAL LIABILITY**  
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**Attachments: Site Map  
Self-Monitoring Program**



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

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**SITE LOCATION MAP**

**FORMER FAIRCHILD FACILITY**  
**974 EAST ARQUES AVENUE**  
**SUNNYVALE, SANTA CLARA COUNTY**

<b>DRAWN BY:</b>	<b>DATE:</b>	<b>DRWG. NO.</b>
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**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
SAN FRANCISCO BAY REGION**

**SELF-MONITORING PROGRAM FOR:**

**FAIRCHILD SEMICONDUCTOR CORPORATION  
APPLIED MATERIALS INCORPORATED**

for the property located at

**974 EAST ARQUES AVENUE  
SUNNYVALE  
SANTA CLARA COUNTY**

1. **Authority and Purpose:** The Board requests the technical reports required in this Self-Monitoring Program pursuant to Water Code Sections 13267 and 13304. This Self-Monitoring Program is intended to document compliance with Board Order No. 96-059 (site cleanup requirements).
  
2. **Monitoring:** The dischargers shall measure groundwater elevations semi-annually in all monitoring wells, and shall collect and analyze representative samples of groundwater according to the following schedule:

Well #	Sampling Frequency	Analyses	Well #	Sampling Frequency	Analyses
EW01A	SA	8010	M16A	A	8010
EW-02	SA	8010	M17A	A	8010
EW-03	SA	8010	M18A	A	8010
EW-04	SA	8010	M19A	A	8010
M2A	A	8010	M20A	A	8010
M3A	A	8010	M22A	SA	8010
M4A	SA	8010	M23A	SA	8010
M5A	SA	8010	M24A	A	8010
M6A	SA	8010	AEC1	A	8010
M7A	SA	8010	M2B	A	8010

M8A	SA	8010	M4B	A	8010
M9A	A	8010	M7B	SA	8010
M10A	A	8010	M20B	A	8010
M12A	SA	8010	M22B	A	8010
M13A	A	8010	M25B	A	8010

Key: SA = Semi-Annually  
A = Annually

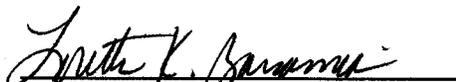
8010 = EPA Method 8010 or equivalent

The dischargers shall sample any new monitoring or extraction wells quarterly and analyze groundwater samples for the same constituents as shown in the above table. All wells should be monitored semi-annually for groundwater elevation. The dischargers may propose changes in the above table; any proposed changes are subject to Executive Officer approval.

3. **Semi-annual Monitoring Reports:** The dischargers shall submit semi-annual monitoring reports to the Board no later than 30 days following the end of the second and fourth quarters. The first semi-annual report will be due July 30, 1996. The reports shall include:
- a. **Transmittal Letter:** The transmittal letter shall discuss any violations during the reporting period and actions taken or planned to correct the problem. The letter shall be signed by the dischargers' principal executive officer or his/her duly authorized representative, and shall include a statement by the official, under penalty of perjury, that the report is true and correct to the best of the official's knowledge.
  - b. **Groundwater Elevations:** Groundwater elevation data shall be presented in tabular form, and a groundwater elevation map should be prepared for each monitored water-bearing zone. Historical groundwater elevations shall be included in the second semi-annual report each year.
  - c. **Groundwater Analyses:** Groundwater sampling data shall be presented in tabular form, and an isoconcentration map should be prepared for one or more key contaminants for each monitored water-bearing zone, as appropriate. The report shall indicate the analytical method used and detection limits obtained for each reported constituent. Historical groundwater sampling results shall be included in the second semi-annual report each year. The report shall describe any significant increases in contaminant concentrations since the last report, and any measures proposed to address the increases. Supporting data, such as lab data sheets, need not be included (however, see record keeping - below).

- d. **Groundwater Extraction:** If applicable, the report shall include groundwater extraction results in tabular form, for each extraction well and for the site as a whole, expressed in gallons per minute and total groundwater volume for the quarter. The report shall also include contaminant removal results, from groundwater extraction wells and from other remediation systems (e.g. soil vapor extraction), expressed in units of chemical mass per day and mass for the quarter. Historical mass removal results shall be included in the fourth quarterly report each year.
  - e. **Status Report:** The semi-annual report shall describe relevant work completed during the reporting period (e.g. site investigation, interim remedial measures) and work planned for the following reporting period.
- 4. **Violation Reports:** If the dischargers violate requirements in the Site Cleanup Requirements, then the dischargers shall notify the Board office by telephone as soon as practicable once the dischargers have knowledge of the violation. Board staff may, depending on violation severity, require the dischargers to submit a separate technical report on the violation within five working days of telephone notification.
  - 5. **Other Reports:** The dischargers shall notify the Board prior to any site activities, such as construction or underground tank removal, which have the potential to cause further migration of contaminants or which would provide new opportunities for site investigation.
  - 6. **Record Keeping:** The dischargers or their agent shall retain data generated for the above reports, including lab results and QA/QC data, for a minimum of six years after origination.
  - 7. **SMP Revisions:** Revisions to the Self-Monitoring Program may be ordered by the Executive Officer, either on his/her own initiative or at the request of the dischargers. Prior to making SMP revisions, the Executive Officer will consider the burden, including costs, of associated self-monitoring reports relative to the benefits to be obtained from these reports.

I, Loretta K. Barsamian, Executive Officer, hereby certify that this Self-Monitoring Program was adopted by the Board on April 17, 1996.

  
Loretta K. Barsamian  
Executive Officer