CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 91-051

SITE CLEANUP REQUIREMENTS FOR:

HONEYWELL INC.
AND
THE RREEF FUNDS

FORMER SYNERTEK #1 FACILITY
3050 CORONADO DRIVE
SANTA CLARA, SANTA CLARA COUNTY

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

1. **Site Location and Description** This Order presents the selected final remedial action plan (RAP) for the Synertek #1 Superfund site. Honeywell Inc. (Honeywell) acquired Synertek Inc. (Synertek) as a wholly owned subsidiary in 1979. Synertek Inc. manufactured semiconductor products in Synertek Building 1 (Synertek #1), a facility located at 3050 Coronado Drive, Santa Clara, Santa Clara County (Figure 1 and 2), from March 1978 to February 1985. The RREEF Funds is the current owner of the property. Honeywell Inc. and The RREEF Funds are hereinafter referred to as the dischargers.

   Synertek #1 is located in the City of Santa Clara in a relatively flat lying portion of the Santa Clara Valley. Ground surface elevations are generally between 27 feet and 35 feet above mean sea level. This is an industrial park setting, dominated by the electronics industry, particularly semiconductor manufacturing. As such, the majority of the area is developed, with large paved areas for streets and parking lots. Surface water is controlled by the storm sewer system which directs runoff to San Tomas Aquino Creek. The nearest residential areas are located 3600 feet south of the site. Other residential areas are located 6000 feet north-northeast of the site. None of these residential areas are within the area impacted by the past chemical releases from Synertek #1.

2. **Bases for Action** The site overlies the Santa Clara Valley groundwater basin. Groundwater from this basin provides up to 50% of the municipal drinking water for the 1.4 million residents of the Santa Clara Valley. In 1989, groundwater accounted for approximately 128,000 of the 315,000 acre feet of drinking water delivered to Santa Clara Valley Water District customers. Synertek #1 is a Superfund site primarily because of the past chemical releases' potential threat to the quality of this valuable resource.

3. **Basin Plan** The Board adopted a revised Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) on December 17, 1986. The Basin Plan contains water quality objectives and beneficial uses for South San Francisco Bay and contiguous surface and groundwaters.

4. **Beneficial Uses** The existing and potential beneficial uses of the groundwater underlying and adjacent to Synertek #1 include:

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

5. **National Priority List "Superfund"** Synertek #1 was proposed to be placed on the National Priority List (NPL) in June 1988. Synertek #1 was placed on the final NPL list in September 1989. Pursuant to Health and Safety Code Sections 25356.1 (c) and (d) Honeywell and The RREEF Funds are the only identified responsible parties associated with the release of pollutants to the subsurface at this location. Honeywell has accepted responsibility for the site cleanup.

6. **Site Regulatory Chronology** The site is on the NPL and is regulated by Board Orders, as indicated herein:

a.	October 6, 1982	Synertek submits completed Board Facility Questionnaire.
b.	May 20, 1987	Board adopted NPDES Permit No. CA0029211 (Order No. 87-050), for the discharge of treated extracted groundwater.
c.	July 15, 1987	Board adopted Order No. 87-084 issuing Site Cleanup Requirements.
d.	June 1988	Site proposed for the NPL.
e.	June 21, 1989	Board adopted Order No. 89-134 amending Site Cleanup Requirements and approving the Remedial Investigation / Feasibility Study (RI/FS) workplan.
f.	September 1989	Site added to the final NPL.

7. **Lead Agency** Pursuant to the South Bay Multi-Site Cooperative Agreement and the South Bay Ground Water Contamination Enforcement Agreement, entered into on May 2, 1985 (as subsequently amended) by the Board, EPA and DHS, the Board has been acting as the lead agency for Synertek #1. EPA is expected to agree with the selected remedy and issue a Record of Decision following adoption by the Board of the RAP. The Board will continue as appropriate to regulate the dischargers' remediation and administer enforcement actions in accordance with CERCLA as amended by SARA, the

California Water Code, Health and Safety Code, and regulations adopted there under.

8. **Site History** One 200 gallon solvent tank and three neutralization tanks were installed at Synertek #1 between 1974 and 1982. The solvent tank and the neutralization tanks along with polluted soil were excavated from the site in 1985. Synertek has used trichloroethylene (TCE), 1,1,1 trichloroethane (TCA), Xylene, and Freon-113 in its manufacturing processes.

   In 1982, Synertek submitted a completed Facility Questionnaire to Board staff describing Synertek #1's underground neutralization systems, sumps, and tanks. Based on these submittals, staff required initiation of subsurface pollution characterization at Synertek #1 in 1982. This remedial investigation (RI) work has been ongoing for the last eight years. Interim remedial actions began at Synertek #1 in 1985 with the excavation and removal of the solvent tank and the neutralization tanks. Groundwater extraction and treatment as additional interim remedial action began at Synertek #1 in 1987. The feasibility study (FS) evaluated the interim remedial actions that have been ongoing for the last three years and alternatives for the final remedial action. The RI/FS reports summarize the last eight years of the RI and the last five years of the interim remedial actions.

9. **Source Investigation** The RI has determined that the sources of the groundwater pollution at Synertek #1 were leaks from onsite solvent and neutralization tanks. These sources overlie the area of highest groundwater pollution. Soil samples collected from the walls and bottom of the excavations appear to indicate that soils containing volatile organic compounds (VOCs) at concentrations higher than 1 part-per-million (ppm) were excavated.

10. **Regional Hydrogeology** Synertek #1 is located near the center of the Santa Clara Valley which extends southeast from San Francisco Bay and is bounded by the Diablo Range on the northeast, and by the Santa Cruz and Gabilan Ranges on the southwest.

    The Santa Clara Valley is a large structural depression in the Central Coastal Ranges of California. The Valley is filled with alluvial and fluvial deposits from the adjacent mountain ranges. These deposits are up to 1,500 feet in thickness. At the base of the adjacent mountains, gently sloping alluvial fans of the basin tributaries laterally merge to form an alluvial apron extending into the interior of the basin.

    The Santa Clara Valley groundwater basin is divided into two broad areas: 1) the forebay, and 2) the confined area, where Synertek #1 is located. The forebay occurs along the elevated edges of the basin where the basin receives its principal recharge. The confined area is located in the flatter interior portion of the basin and is stratified or divided in individual beds separated by significant aquitards. The confined area is divided into the upper and lower aquifer zones. The division is formed by an extensive regional aquitard that occurs at depths ranging from about 100 feet near the confined area's southern boundary to about 150 to 250 feet in the center of the confined area and beneath San Francisco Bay. Thickness of this regional aquitard varies from about 20 feet to over 100 feet.

Several aquifer systems occur in the upper aquifer zone separated by aquitards which may be leaky or very tight. Groundwater pollution at Synertek #1 is confined to the shallowmost zone within the upper aquifer zone. The lower aquifer zone occurs beneath the practically impermeable regional aquitard. Numerous individual aquifers occur within this predominantly aquitard zone and all groundwater in this zone occurs confined (Santa Clara Valley Water District, Geology and Water Quality, 1989).

Municipal water supply wells are generally perforated in the lower aquifer zone. Perforated intervals in City of Santa Clara water supply wells located within 2 miles of Synertek #1 begin from 250 to 320 feet below ground surface, although sanitary seals are only installed down to 100 feet below ground surface. Currently, the nearest municipal drinking water supply well downgradient of the site is the City of Santa Clara's Well No. 33 located 1.6 miles north of the site. No pollutants have been found in this well to date.

11. **Site Hydrogeology** Three shallow aquifer zones have been identified beneath the site. These zones are designated as the A, B, and B1 aquifer zones. The A, B, and B1 aquifer zones are subdivisions of the upper aquifer zone described in Finding 10. The shallowest, or A aquifer zone (A zone), has its upper boundary at about 10 feet below ground surface (BGS), and lower boundary about 20 feet BGS. The B aquifer zone (B zone) lies between about 30 and 40 feet BGS. The two zones are separated by a 2 to 10 feet thick aquitard composed of clay to silty sand. It is suspected that hydraulic separation between the two zones is imperfect owing to the discontinuous nature of sediment types. The deeper B1 aquifer zone (B1 zone) lies between 100 and 108 feet BGS. The stratigraphy below 108 feet consists of clay to 171 feet as indicated on the log of the former agricultural well 6S1W28K04. Below 171 feet is a sequence of sands, clays and gravels that are believed to make up the lower aquifer zone below the site. Shallow groundwater flow in the A and B zone, beneath the site, is generally to the north. This flow regime is consistent with the northerly regional flow towards the San Francisco Bay.

12. **State Board Resolution 88-63** On March 30, 1989, the Regional Board incorporated the State Board Policy of "Sources of Drinking Water" into the Basin Plan. The policy provides for a Municipal and Domestic Supply designation for all waters of the State with some exceptions. Groundwaters of the State are considered to be suitable or potentially suitable for municipal or domestic supply with the exception of: 1) the total dissolved solids in the groundwater exceed 3000 mg/L, and 2) 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. Based on data submitted by Honeywell, the Board finds that neither of these two exceptions apply to the A and B zones at Synertek #1. Thus, the A and B zones at Synertek #1 are potential sources of drinking water.

13. **Groundwater Investigation** Since 1985, 32 monitoring wells have been installed to define the vertical and horizontal extent of the pollutant plume beneath Synertek #1. Groundwater monitoring data indicates that the plume extends vertically, through the A zone, into the B zone, to a depth of 48 feet and horizontally for a distance of 1200 feet from the source. Results from a B1 zone monitoring well indicate that the B1 zone has not been impacted.

    As of June 1990, the highest levels of groundwater pollution were: TCE up to 2600 parts per billion (ppb); TCA up to 530 ppb; DCA up to 140 ppb and vinyl chloride less than 400 ppb.

14. **Vertical Conduit Study** A well search for abandoned agricultural wells within 1/2 mile of the site was conducted in February 1986. The search was extended to one mile north of the site in November 1989. The focus of the well search was to identify wells that potentially may form migration pathways to the deeper aquifer. The two searches identified 56 wells. Of the wells identified, 23 are shallow groundwater extraction wells. Another 31 wells are deep former agricultural wells that are located at least 800 feet beyond the plume area and are unlikely to pose a threat to the deeper aquifer. However, two other wells were close enough to Synertek #1's plume to warrant further investigation. Both of these wells were deep former agricultural wells listed as destroyed with no record of sealing. One well, 6S1W28K04, has been located and sealed.

    Attempts to field locate the other well, No. 6S1W28J01, have thus far been unsuccessful. To date, Honeywell has used both a metal-pipe locating company and a proton-precession magnetometer survey to locate this well. Both surveys have been unsuccessful. Currently Honeywell is planning on extending the magnetometer survey. The results of the magnetometer survey will be submitted as part of Task 3 of Provision C.2, below.

15. **Interim Remedial Actions** Interim remedial actions at Synertek #1 have included the extraction of polluted groundwater and the removal of underground tanks and contaminated soils. In 1985, the 200 gallon solvent storage tank and a three-tank neutralization system were removed along with contaminated soils. It is believed that the excavation of the tanks and substantial portion of the contaminated soils has removed a majority of the potential source of further groundwater pollution.

    Honeywell has been extracting onsite A and B zone groundwater since 1987. Additional interim remedial actions, in the form of an offsite A zone groundwater extraction system, began operation in January 1989. This extraction system, consisting of two wells pumping at a combined rate of approximately five gallons per minute, is expected to 1) halt the advance of the pollution plume and 2) initiate clean-up of the offsite groundwater pollution.

    As of May 1990, groundwater was being pumped at a combined rate of 15 gallons per minute from five extraction wells (3 onsite and 2 offsite) and treated by an air stripper. As of June 1990, 17.1 million gallons of groundwater have been extracted to remove 92 pounds of VOCs. The treated water is discharged to a storm sewer system tributary of

San Tomas Creek as specified under NPDES Permit #CA0029211.

16. **Disagreement Relative to the B Zone Extraction System** Board staff have previously commented by letter that the lone B zone groundwater extraction well (well PW-3) does not appear to be efficiently remediating the B zone plume. Monitoring well 4B has consistently had concentrations of TCE ten to one thousand times the concentration in PW-3. During the period between April 1989 and March 1990 the concentration of TCE in well 4B remained relatively constant at approximately 3000 parts-per-billion (ppb). However, the concentration of TCE in extraction well PW-3 has been less than 500 ppb since June 1988 and was less than 4 ppb in July 1989. Thus, it does not appear that PW-3 has not been fully effective in cleaning up the groundwater pollution in the vicinity of well 4B.

    Honeywell has subsequently submitted data indicating that PW-3 is capturing the entire B zone plume. In addition, a groundwater injection test will be conducted at the site. If the injection test shows that injecting water into the B zone is feasible, then additional extraction wells may be necessary to capture the injected water. Based on these two facts, staff have postponed requiring additional B zone extraction wells until after the injection test is completed. If the injection test shows that injecting water into the B zone is not feasible, then an additional B zone well(s) will be required (see Task 2).

17. **Baseline Public Health Evaluation** Honeywell submitted a Baseline Public Health Evaluation (BPHE) dated September 28, 1990. Draft versions of this report were reviewed by Board staff, an EPA toxicologist, and the Board's BPHE contractor, Clement Inc. The BPHE was conducted to evaluate current and potential future health risks posed by the site. Since the shallow zone groundwater from beneath the site is not currently used for drinking water supply, no current risk was identified at the site. Potential future health risks are based on exposures that could potentially occur in the future if untreated shallow zone groundwater was used for human consumption and residential development occurred on the site. To ensure that human health is protected, the BPHE incorporated conservative assumptions. Therefore, it is unlikely that the actual risks posed by the site in the future would be greater than estimated. Average case and maximum case scenarios are presented in the BPHE. This finding refers to the maximum case scenarios using a 30 year duration exposure.

    Using the above hypothetical scenario of future groundwater use; the carcinogenic risk from ingestion and inhalation of VOCs is 5.0×10^{-3}. A carcinogenic risk of 5.0×10^{-3} is equal to five excess occurrences of cancer in a population of 1000. EPA's acceptable carcinogenic risk range for cleanup standards selected for a site is 10^{-4} (1 in 10,000) to 10^{-6} (1 in 1,000,000) as an acceptable cleanup level.

    Using the same scenario, the noncarcinogenic hazard index for ingestion and inhalation of VOCs from the use of shallow groundwater is 3.3. EPA's acceptable hazard index for cleanup standards selected for a site is less than or equal to 1.0.

    Thus the carcinogenic risk and hazard index associated with a "no action" remedy

exceed EPA's acceptable carcinogenic risk and hazard index range.

18. **Remedial Investigation/Feasibility Study/Proposed Remedial Action Plan (RI/FS/RAP)** Honeywell has submitted a RI, dated September 28, 1990, and an FS, dated November 30, 1990, which satisfy the requirements of Board Order 89-113. This RI/FS includes a BPHE and serves as the basis for, as well as part of this, proposed RAP. The technical information contained in the RI/FS and the Proposed Plan Fact Sheet is consistent with the Health and Safety Code requirements for a final RAP and the National Contingency Plan requirements for a RI/FS. The RI/FS contains an evaluation of the interim remedial actions, an evaluation of final remedial alternatives, proposed remedial standards, and a recommended final remedial action plan.

19. **Data Quality** Development of the Board's final Remedial Action Plan was based on four criteria: 1) data was collected following an approved sampling and analysis plan, 2) random sample splits were collected by Board staff to confirm the validity of data generated by Honeywell, 3) Honeywell's data was validated by the Department of Health Services and found to be at least qualitatively acceptable, and 4) there has been reasonable repeatability of the data based on three years of quarterly monitoring. Thus the Board finds that there is sufficient acceptable data to make cleanup decisions.

20. **Remediation Alternatives** The Feasibility Study initially screened 23 remedial action technologies. These technologies were screened based on implementability, effectiveness, and cost criteria for 25 years. The remedial technologies that survived the screening were assembled into a group of alternatives as follows:

Remedial Alternative 1

Remedial Alternative 1 is a "no further action" alternative, retained for base-line comparison purposes in accordance with CERCLA/SARA guidance. Remedial technologies are not implemented at Synertek #1 under this alternative. The existing groundwater recovery treatment and discharge operation would cease, as would any groundwater monitoring. The total present worth cost of this alternative is negligible.

Remedial Alternative 2

Remedial Alternative 2 consists of the following:

- Deed restriction
- Groundwater monitoring

Total present worth cost = $217,000

Remedial Alternative 3

Remedial Alternative 3 consists of the following:

- Deed restriction
- Groundwater monitoring
- Onsite groundwater extraction wells

- Offsite groundwater extraction wells
- Air Stripping treatment of extracted groundwater
- Discharge of treated water to surface water under existing NPDES permit and/or reinjection to groundwater pending pilot study

Total present worth cost = $895,000

Remedial Alternative 4

Remedial Alternative 4 consists of the following:

- Deed restriction
- Groundwater monitoring
- Onsite groundwater extraction wells
- Offsite groundwater extraction wells
- Carbon adsorption treatment of extracted groundwater
- Discharge of treated water to surface water under existing NPDES permit and/or reinjection to groundwater pending pilot study

Total present worth cost = $1,053,000

21. **Summary of Evaluation Criteria** This section summarizes the nine evaluation criteria developed by EPA and used to compare the alternatives in the RI/FS. The alternatives were evaluated in detail with respect to the nine criteria in the FS report. A detailed analysis of the alternatives was completed in the FS. A summary of this detailed analysis is shown on Table 1.

a. Overall protection of human health and the environment This criterion addresses whether a remedy provides adequate protection of human health and the environment.

b. Compliance with applicable or relevant and appropriate requirements (ARARs) This criterion addresses whether a remedy will meet all of the ARARs or other Federal and State environmental laws.

c. Long-term effectiveness and permanence This criterion refers to expected residual risk and residual chemical concentrations after cleanup standards have been met and the ability of a remedy to maintain reliable protection of human health and the environment over time.

d. Reduction of toxicity, mobility or volume This criterion refers to the anticipated performance of the treatment technologies a remedy may employ.

e. Short-term effectiveness This criterion addresses the period of time needed to achieve cleanup and any adverse impacts on human health and the environment that may be posed during the construction and implementation period, until cleanup standards are achieved.

f. Implementability This criterion refers to the technical and administrative feasibility of a remedy.

g. Cost This criterion includes estimated capital and operation and maintenance, usually presented in a 30 year present worth format.

h. Support Agency Acceptance This criterion addresses EPA's acceptance of the selected remedy and any other EPA comments.

i. Community Acceptance This criterion summarizes the public's general response to the alternatives.

22. **The Selected Remedy (Final Remedial Action Plan)**

Based on Finding 20 and 21, the selected remedy for the site is Alternative No.3. Honeywell has estimated that the time to achieve groundwater cleanup is 25 years. The 25 year present worth cost is $895,000.

Groundwater cleanup standards are federal or state maximum contaminant levels (MCLs), either adopted or proposed, whichever is more stringent. The final cleanup standards for the suite of chemicals detected in the shallow zone equate to a future use scenario carcinogenic risk level for groundwater ingestion and inhalation of VOCs of 4.6×10^{-5} (see Finding 24).

Based primarily on information submitted by Honeywell in the RI/FS Report, this Order provides for a final RAP that includes:

a. Continued groundwater extraction until drinking water standards are achieved in all Synertek #1 monitoring wells, if technically practicable from an engineering perspective (see Finding 23 and Table 2 for groundwater cleanup standards). If these standards are determined to be technically impracticable from an engineering perspective by the Board, groundwater extraction shall continue as long as significant quantities of chemicals are being removed through groundwater extraction.

b. Submittal of a proposal for conducting a pilot study of groundwater reinfiltration. In theory, reinjecting treated extracted groundwater back into the source aquifer will conserve groundwater and enhance remediation. Synertek #1 is located in an area of Santa Clara that has numerous groundwater pollution plumes. If successful, reinjection could become part of remedial action used to cleanup these other plumes.

c. Maintenance of hydraulic control to prohibit the further vertical and horizontal migration of the groundwater pollution. This requirement shall remain in effect until cleanup standards are achieved.

d. Continued quarterly groundwater monitoring at the site during the cleanup

period. Water samples will continue to be collected to verify that cleanup is proceeding and that there is no migration of VOCs, above cleanup standard levels, beyond current boundaries or into the deeper B1 zone. The frequency of monitoring will be decreased from quarterly to biannually once cleanup standards have been achieved and stabilized for one year. Detailed sampling and reporting requirements for the site are contained in the attached Self-Monitoring Plan for Synertek #1.

e. Continued groundwater extraction at the five existing wells. To increase the efficiency of groundwater extraction, additional extraction wells may be necessary in the future. The need for different and/or additional extraction well locations will be evaluated on an annual basis.

f. Treatment of extracted groundwater with an existing air stripping system meeting BAAQMD and EPA requirements. The treated groundwater will continue to be discharged to San Tomas Aquino Creek, under existing NPDES Permit No. CA0029211. Board staff believes that the beneficial use of San Tomas Aquino Creek will not be affected by continuing this discharge.

g. A deed restriction. The dischargers shall be required to file a deed restriction prohibiting use of on-site shallow groundwater for drinking water and controlling other subsurface activities. The deed restriction shall remain in place until safe drinking water standards are achieved.

23. **Groundwater Cleanup Standards** The groundwater cleanup standards for the site are based on Environmental Protection Agency (EPA) MCLs (proposed or adopted), California Department of Health Services (DHS) MCLs (proposed or adopted), DHS Action Levels or EPA's Integrated Risk Information System (IRIS). The BPHE identified 32 chemicals of concern. Cleanup standards have only been assigned to 14 of the 32 chemicals because there are no cleanup criteria for the other 18 chemicals. In addition, these 18 chemicals were all detected infrequently at relatively low concentrations. These cleanup standards are defined in Specification B.4 and Table 2.

Groundwater extraction will continue until drinking water quality is achieved, if feasible. If the Board determines that these standards are technically impracticable from an engineering perspective, groundwater extraction shall continue as long as significant quantities of chemicals are being removed through groundwater extraction. Achieving drinking water quality is an applicable or relevant and appropriate requirement (ARAR) for this site. If drinking water quality cannot be achieved, the dischargers must demonstrate to the satisfaction of the Board that the conditions for waiving an ARAR are met (e.g., that meeting the ARAR is technically impracticable from an engineering perspective) and that the alternative proposed will be protective of human health and the environment. The Order will then need to be modified by the Board and approved by EPA to allow a less stringent groundwater cleanup standard.

24. **Risk Associated With Cleanup Standards** The selected remedy is protective of human health and the environment -- as required by Section 121 of CERCLA -- in that pollution in groundwater is treated to at least MCLs and falls within EPA's acceptable carcinogenic risk range and noncarcinogenic hazard index. EPA's acceptable carcinogenic risk range for cleanup standards selected for a site is 10^{-4} to 10^{-6} as an acceptable cleanup level (See Finding 17). If the noncarcinogenic hazard index is less than one, EPA considers the combined intake of chemicals unlikely to pose a health risk.

    The carcinogenic risk at the cleanup standards (for all chemical listed on Table 2) associated with the potential future use scenario of groundwater ingestion and inhalation of VOCs from groundwater is 2.7×10^{-5}. In cleaning up TCE to the 5 ppb cleanup standard it is quite likely that the concentrations of other VOCs will be reduced to levels below the 5 ppb range. The carcinogenic risk for TCE alone is 1.5×10^{-6}. These risks were calculated using a potential future use scenario with a 30 year duration exposure per EPA guidance.

    The noncarcinogen hazard index associated with the cleanup standards is 0.72. The method and assumptions used to obtain the carcinogenic risk and the hazard index associated with the cleanup standards are contained in the RI/BPHE and FS/RAP. The cleanup standards for the site are protective of human health, have a carcinogenic risk that falls within a range of 10^{-6} to 10^{-4}, and a hazard index of less than one.

25. **Remedy Selection Rationale and Statutory Determinations** The selected remedies are protective of human health and the environment. Groundwater contamination is treated so that the remaining potential future risks fall within the 10^{-4} to 10^{-6} carcinogenic risk range for acceptable cleanup standards. The remedies comply with ARARs by achieving cleanup to at least Federal and State MCLs (proposed or adopted).

    The selected remedies are effective in the short-term because further plume remigration is controlled by groundwater extraction. The selected remedies are effective in the long-term by virtue of the fact that ARARs are achieved. Groundwater extraction and treatment is a permanent solution and significantly reduces pollutant toxicity, mobility and volume at the site. All of the alternatives are implementable. EPA staff has preliminarily approved the selected remedy. Emissions from air-stripping towers meet local air district requirements.

26. **Uncertainty in Achieving Cleanup Standards** The goal of this remedial action is to restore groundwater to its beneficial uses. Based on information obtained during the RI and on analysis of all remedial alternatives, the Board believes that the selected remedy will achieve this goal. However, studies suggest that groundwater extraction and treatment will not be, in all cases, completely successful in reducing contaminants to health-based levels in the aquifer zones. The Board recognizes that operation of the selected extraction and treatment system may indicate the technical impracticability of reaching health-based groundwater quality standards using this approach. If it becomes apparent, during implementation or operation of the system, that contaminant levels have ceased to decline and are remaining constant at levels higher than the

cleanup standards, that standard and the remedy may be reevaluated. However, any change to the cleanup standards or remedy will require Board and EPA approval.

The selected remedy will include groundwater extraction for a period of approximately 25 years, during which the system's performance will be carefully monitored on a regular basis and adjusted as warranted by the performance data collected during operation. Modifications may include:

a) discontinuing operation of extraction wells in areas where cleanup standards have been attained;

b) alternating pumping at wells to eliminate stagnation points;

c) pulse pumping to allow aquifer equilibration and to encourage adsorbed contaminants to partition into groundwater; and

d) installation of additional extraction wells.

27. **Future Changes to Cleanup Standards** If new information indicates cleanup standards can reasonably be surpassed, the Board will decide if further final cleanup actions, beyond those completed, shall be implemented at this site. If changes in health criteria, administrative requirements, site conditions, or remediation efficiency occur, the dischargers will submit an evaluation of the effects of these changes on cleanup standards as defined in Specification B.4.

The Board recognizes that Honeywell has already performed extensive investigative and remedial work onsite and that the dischargers are being ordered hereby to perform additional remedial tasks. It is in the public interest to have the dischargers undertake such remedial actions promptly and without prolonged litigation or the expenditure of public funds. The Board recognizes that an important element in encouraging the dischargers to invest substantial resources in undertaking such remedial actions is to provide the dischargers with reasonable assurances that the remedial actions called for in this Order will be the final remedial actions required to be undertaken by the dischargers. On the other hand, the Board also recognizes its responsibility to protect water quality, public health, and the environment and that future developments could indicate that some additional remedial actions may be necessary.

The Board has considered and balanced these important considerations, and has determined that the remedial actions ordered herein represent the Board's best, current judgement of the remedial actions to be required of the dischargers. The Board will not require the dischargers to undertake additional remedial actions with respect to the matters previously described herein unless: (1) conditions on the site, previously unknown to the Board, are discovered after adoption of this Order, or (2) new information is received by the Board, in whole or in part after the date of this Order, and these previously unknown conditions or this new information indicates that the remedial actions required in this Order may not be protective of public health and the environment. The Board will also consider technical practicality, cost effectiveness,

State Board Resolution No. 68-16 and other factors evaluated by the Board in issuing this Order in determining whether such additional remedial actions are appropriate and necessary.

28. **Groundwater Conservation** Honeywell has considered the feasibility of reclamation, reuse, or discharge to a publicly owned treatment works (POTW) of extracted groundwater from Synertek #1, as specified in Board Resolution No. 88-160. Onsite industrial or landscaping use of the water is difficult since Honeywell is not currently the property owner or a tenant at Synertek #1. Since the City of Santa Clara does not allow any discharges of treated groundwater into its sewer system on a permanent basis, the Board concurs that treated, extracted groundwater reuse or discharge to a POTW at Synertek #1 is not feasible. However, if Honeywell's groundwater injection test is successful, then a significant quantity of groundwater that is currently extracted and treated at Synertek #1 could be reclaimed and cycled back into the source aquifer.

29. **Community Involvement** An aggressive Community Relations program has been ongoing for all Santa Clara Valley Superfund sites, including Synertek #1. The Board published a notice in the Santa Clara Valley Weekly on January 9, 1991 and January 16, 1991, announcing the proposed final RAP and opportunity for public comment at the Board Hearing of January 16, 1991 in Oakland, and announcing the opportunity for public comment at an evening public meeting to be held at the Bracher Elementary School in the City of Santa Clara on January 17, 1991. A presentation of the proposed final cleanup plan was made at the January 16, 1991 Board Hearing and the January 17, 1991 evening public meeting. The 30 day comment period was from January 16, 1991 to February 18, 1991.

    Fact Sheets were mailed to interested residents, local government officials, and media representatives. Fact Sheet 1, mailed in January 1990, summarized the pollution problem, the results of investigations to date, and the interim remedial actions. Fact Sheet 2, mailed in January 1991, described the cleanup alternatives evaluated, explained the proposed final RAP, announced opportunities for public comment at the Board Hearing of January 16, 1991 in Oakland and the Public Meeting of January 17, 1991 in Santa Clara and described the availability of further information at the Information Repository at the City of Santa Clara Public Library. The Responsiveness Summary summarizes responses to significant comments received during the public comment period. Fact Sheet 3, to be mailed in April 1991, will explain the final adopted cleanup plan contained in this Order.

30. **State Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality Waters in California"** On October 28, 1968, the State Water Resources Control Board adopted Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality Waters in California". This policy calls for maintaining the existing high quality of State waters unless it is demonstrated that any change would be consistent with the maximum public benefit and not unreasonably affect beneficial uses. The original discharge of waste to the groundwater at these sites was in violation of this policy; therefore, the groundwater quality needs to be restored to its original quality to the extent reasonable. For the purpose of establishing cleanup

objectives, the shallow groundwater at the site is designated a potential source of drinking water. The FS evaluated cleanup to background or non-detect levels. Cleanup of groundwater to below the MCL for TCE and vinyl chloride may be unachievable due to the technical difficulties in restoring aquifers to concentrations below 0.5 to 5 ppb for any VOC. This is due to the slow desorption of VOCs adsorbed to the inner pore spaces of soil particles which make up the aquifer material and VOCs adsorbed to clays and organic matter in the aquitard. For this reason, MCLs were accepted as concentrations that meet the intent of Resolution No. 68-16.

The proposed remedial water quality standards meet current applicable health criteria and restore the quality of the groundwater to the extent reasonable given technical and economic constraints. These constraints include the high additional incremental costs for removal of small amounts of additional chemicals and the need to minimize the removal of groundwater to achieve acceptable remedial standards.

31. **Administrative Record** The Administrative Record has been prepared in accordance with EPA Guidance, has been made available for public review, and provides the backup documentation for the recommendations of staff and decisions by the Board.

32. The selected remedial action plan for Synertek #1 was chosen in accordance with the Health and Safety Code Section 25356.1, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA), the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), California Water Code Section 13304, and pursuant to the South Bay Multi-Site Cooperative Agreement. This decision is based on the administrative record for the site.

33. The dischargers have caused or permitted, and threaten to cause or permit 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.

34. This action is an order to enforce the laws and regulations administered by the Board. This action is categorically exempt from the provisions of the CEQA pursuant to Section 15321 of the Resources Agency Guidelines.

35. This Order supersedes and rescinds Site Cleanup Order No. 89-113 issued to the dischargers.

36. Containment and cleanup measures need to be implemented to alleviate the threat to the environment posed by the continued migration of the groundwater plume of organic solvents.

37. The Board has notified the dischargers and 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 the opportunity for a public hearing and an opportunity to submit their written views and recommendations.

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

IT IS HEREBY ORDERED, pursuant to Section 13304 of the California Water Code and Section 25356.1 of the California Health and Safety Code, that the dischargers 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 the 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 soil or groundwater containing pollutants shall not create a nuisance as defined in Section 13050(m) of the California Water Code.

2. The dischargers shall conduct monitoring activities as determined by the Board's Executive Officer to define the current local hydrogeologic conditions, and the lateral and vertical extent of soil and groundwater pollution. Should monitoring results show evidence of plume migration, additional characterization of the pollutant plume may be required.

3. All Synertek #1 wells shall be used to determine if cleanup standards have been met.

4. Final cleanup standards for all onsite and offsite wells shall not be greater than the levels as provided in Finding 23. The numerical final cleanup standards, therefore, shall not exceed the levels shown on Table 2 in any well during the one year stability period as set forth in the Self-Monitoring Plan for Synertek #1.

5. The dischargers shall implement the final cleanup plan described in Finding 22.

C. PROVISIONS

1. The dischargers shall submit to the Board acceptable monitoring program reports containing results of work performed according to the attached self-monitoring program prescribed by the Board's Executive Officer.

2. The dischargers shall comply with this Order immediately upon adoption. The dischargers shall comply with the PROHIBITIONS and SPECIFICATIONS described above, in accordance with the following tasks and compliance time schedules:

a. GROUNDWATER INJECTION TEST

1) COMPLETION DATE: July 1, 1991

TASK 1: RESULTS OF GROUNDWATER INJECTION TEST - EVALUATION AND RECOMMENDATIONS FOR FURTHER ACTIONS. Submit a technical report acceptable to the Executive Officer which includes the results of the Groundwater Injection Test. If the report shows that injection is feasible, then a plan and a schedule for full scale implementation should be included. This report shall address all comments made by Board staff in its December 27, 1990 letter on the October 1990 Groundwater Injection Test Workplan. If this report shows that injection into the B aquifer zone is infeasible, then this report shall propose installing new B zone extraction wells as discussed in Finding 16.

2) COMPLETION DATE: 120 days after approval of the proposal submitted for Task 1.

TASK 2: COMPLETION OF IMPLEMENTATION OF FULL SCALE GROUNDWATER INJECTION . Submit a technical report acceptable to the Executive Officer documenting completion of the necessary tasks identified in the technical report submitted for TASK 1. This report shall document full scale startup of the groundwater injection system.

b. WELL SEARCH

1) COMPLETION DATE: March 22, 1991

TASK 3: RESULTS OF PHASE 3 WELL SEARCH. Submit a technical report acceptable to the Executive Officer containing the results of the well search as discussed in Finding 14 and in the September 28, 1990 RI report. If any wells are located in the

well search then this report shall include a proposal and a schedule for destroying those wells.

c. UPDATING ADMINISTRATIVE RECORD

1) COMPLETION DATE: May 1, 1991

TASK 4: PROPOSED UPDATE. Submit a technical report acceptable to the Executive Officer containing an updated index for the Administrative Record for the period December 1, 1990 to April 15, 1991.

2) COMPLETION DATE: July 15, 1991

TASK 5: UPDATE ADMINISTRATIVE RECORD. Submit a technical report acceptable to the Executive Officer containing the updated Administrative Record for the period December 1, 1990 to April 15, 1991.

d. INSTITUTIONAL CONSTRAINTS

1) COMPLETION DATE: March 22, 1991

TASK 6: PROPOSED CONSTRAINTS. Submit a technical report acceptable to the Executive Officer documenting procedures to be implemented by the dischargers, including a deed restriction prohibiting the use of the A and B zone groundwater as a source of drinking water, and for controlling onsite activities that could endanger the public health or the environment due to exposure to VOCs. Constraints shall remain in effect until groundwater cleanup standards have been achieved and pollutant levels have stabilized in onsite aquifers.

2) COMPLETION DATE: June 28, 1991

TASK 7: CONSTRAINTS IMPLEMENTED. Submit a technical report acceptable to the Executive Officer documenting that the proposed and approved constraints have been implemented.

e. **EXTRACTION SYSTEM AND MONITORING WELL SYSTEM**

1) COMPLETION DATE: 90 days prior to modifying the existing extraction system or monitoring well system

TASK 8: MODIFYING EXISTING EXTRACTION SYSTEM OR MONITORING WELL SYSTEM. Submit a technical report acceptable to the Executive Officer which documents a proposal and schedule to modify, workover or replace any existing extraction well, or install one or more new extraction wells or pits associated with cleanup activities at this site; or a proposal and schedule to modify the monitoring well system by making major well-construction changes, abandoning an existing well(s) or installing a new well(s).

This report is required only if a change in the extraction system and/or monitoring system is proposed, and for all such changes that are proposed.

2) COMPLETION DATE: 30 days following implementation by the dischargers

TASK 9: IMPLEMENTATION OF CHANGE. Submit a technical report acceptable to the Executive Officer which documents any change made in the extraction system and/or monitoring well system.

f. **CURTAILING GROUNDWATER EXTRACTION**

1) COMPLETION DATE: 90 days prior to proposed implementation of groundwater extraction curtailment

TASK 10: WELL PUMPING CURTAILMENT CRITERIA AND PROPOSAL. Submit a technical report acceptable to the Executive Officer containing a proposal and schedule for curtailing pumping from onsite groundwater extraction well(s) and pit(s) and the criteria used to justify such curtailment. This report shall include data to show that groundwater cleanup standards for all VOCs have been achieved and pollutant levels have stabilized or are stabilizing, and that the potential for pollutant levels rising above cleanup standards is minimal. This report shall also include an evaluation of the potential for pollutants to migrate downwards to the deeper aquifers.

If the dischargers determine that it is not feasible to achieve

cleanup standards, the report shall evaluate the alternate standards that can be achieved.

2) COMPLETION DATE: 30 days after the Board approves onsite curtailment

TASK 11: IMPLEMENTATION OF ONSITE CURTAILMENT. Submit a technical report acceptable to the Executive Officer documenting completion of the necessary tasks identified in the technical report submitted for Task 10.

g. STATUS REPORT

1) COMPLETION DATE: January 31, 1996

TASK 12: FIVE-YEAR STATUS REPORT AND EFFECTIVENESS EVALUATION. Submit a technical report acceptable to the Executive Officer containing the results of any additional investigation including results from the reinjection study; an evaluation of the effectiveness of installed final cleanup measures and cleanup costs; additional recommended measures to achieve final cleanup standards, if necessary; a comparison of previous expected costs with the costs incurred and projected costs necessary to achieve cleanup standards; and the tasks and time schedule necessary to implement any additional final cleanup measures. This report shall also describe all reuse of extracted groundwater and evaluate and document the cleanup of polluted groundwater. If cleanup standards have not been achieved and are not expected to be achieved through continued groundwater extraction and/or soil remediation, this report shall also contain an evaluation addressing whether it is technically feasible to achieve cleanup standards, and if so, a proposal and schedule for procedures to do so. This report may be contained in the quarterly status report due January 31, 1996.

h. NEW HEALTH CRITERIA

1) COMPLETION DATE: 60 days after request made by the Executive Officer

TASK 13: EVALUATION OF NEW HEALTH CRITERIA. Submit a technical report acceptable to the Executive Officer which contains an evaluation of how the final plan and cleanup standards would be affected, if the concentrations as listed in

Specification B.4. change as a result of promulgation of new or revised drinking water standards, maximum contaminant levels or action levels.

i. **NEW TECHNICAL INFORMATION**

1) COMPLETION DATE: 60 days after request made by the Executive Officer

TASK 14: EVALUATION OF NEW TECHNICAL INFORMATION. Submit a technical report acceptable to the Executive Officer which contains an evaluation of new technical and economic information which indicates that cleanup standards and/or technology in some areas may be considered for revision. Such technical reports shall not be required unless the Executive Officer or the Board determines that such new information indicates a reasonable possibility that the Order may need to be changed under the criteria described in Finding 27.

3. The submittal of technical reports evaluating final remedial measures will include a projection of the cost, effectiveness, benefits, and impact on public health, welfare, and environment of each alternative measure. If any additional remedial investigations and feasibility studies are found to be necessary, they 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 Investigations, 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".

4. If the dischargers are delayed, interrupted or prevented from meeting one or more of the completion dates specified in this Order, the dischargers shall promptly notify the Executive Officer and the Board may consider revisions to this Order.

5. Technical reports summarizing the status of compliance with the Prohibitions, Specifications, and Provisions of this Order shall be submitted on a quarterly basis, according to the schedule below, commencing with the report for the first quarter 1991, due April 30, 1991.

Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Period	Jan.-March	April-June	July-Sept.	Oct.-Dec.
Due Date	April 30	July 31	October 31	January 31

The quarterly reports shall include:

a. a summary of work completed since the previous quarterly report, and work projected to be completed by the time of the next quarterly report,

b. appropriately scaled and labeled maps showing the location of all monitoring wells, extraction wells, and existing structures,

c. cross sections depicting subsurface geologic information and corresponding correlations showing actual boring lithology data if new information has changed interpretations since the previous quarter,

d. updated water table and piezometric surface maps for all affected water bearing zones, and isoconcentration maps for key pollutants in all affected water bearing zones,

e. a cumulative tabulation of all well construction data, groundwater levels and chemical analysis results for site monitoring wells specified in the sampling plan,

f. copies of the original water sample field data sheets showing all field measurements as described in the August 1989 Sampling and Analysis Plan for the site,

g. identification of potential problems which will cause or threaten to cause noncompliance with this Order and what actions are being taken or planned to prevent these obstacles from resulting in noncompliance with this Order, and

h. in the event of noncompliance with the Provisions and Specifications of this Order, the report shall include written justification for noncompliance and proposed actions to achieve compliance.

6. On an annual basis beginning on January 31, 1992 or as required by the Executive Officer, the discharger's January 31 progress reports shall include, but need not be limited to, an evaluation of the progress of cleanup measures and the feasibility of meeting groundwater cleanup standards established in this Order. This report shall include a discussion of the efficiency of the existing groundwater extraction wells at removing groundwater pollution during the previous year. If significant reductions in groundwater pollution levels are not being achieved, then the report shall propose construction of new and/or alternative extraction wells in order to increase the efficiency of the groundwater extraction system. If the dischargers determine that it is not feasible to meet the cleanup standards established by this Order, the report shall also contain an evaluation of maximum cleanup levels that could be achieved.

7. 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.

8. All samples shall be analyzed by State certified laboratories or laboratories accepted by the Board using approved EPA methods, where available, for the type of analysis to be performed. All laboratories shall maintain quality assurance/quality control records for Board review.

9. 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.

10. 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. U. S. Environmental Protection Agency, Region IX (H-6-3)
    d. City of Santa Clara

    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.

11. The dischargers 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 consistent with the site Health and Safety Plan, 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 dischargers.

12. The RREEF Funds shall file a report with the Board prior to any changes in site occupancy and ownership associated with its facilities described in this Order.

13. If any hazardous substance, as defined pursuant to Section 25140 of the California Health and Safety Code, 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 dischargers shall report such discharge to this 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 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 effect, corrective measures that have been taken or planned, and a schedule of these activities, and persons/agencies notified.

14. The Board will review this Order periodically and may revise the requirements when necessary.

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 March 20, 1991.

for

Steven R. Ritchie
Executive Officer

Attachments: Figure 1 Location Map
Figure 2 Site Map
Table 1 Remedial Alternatives Summary
Table 2 Final Cleanup Standards
Self-Monitoring Program

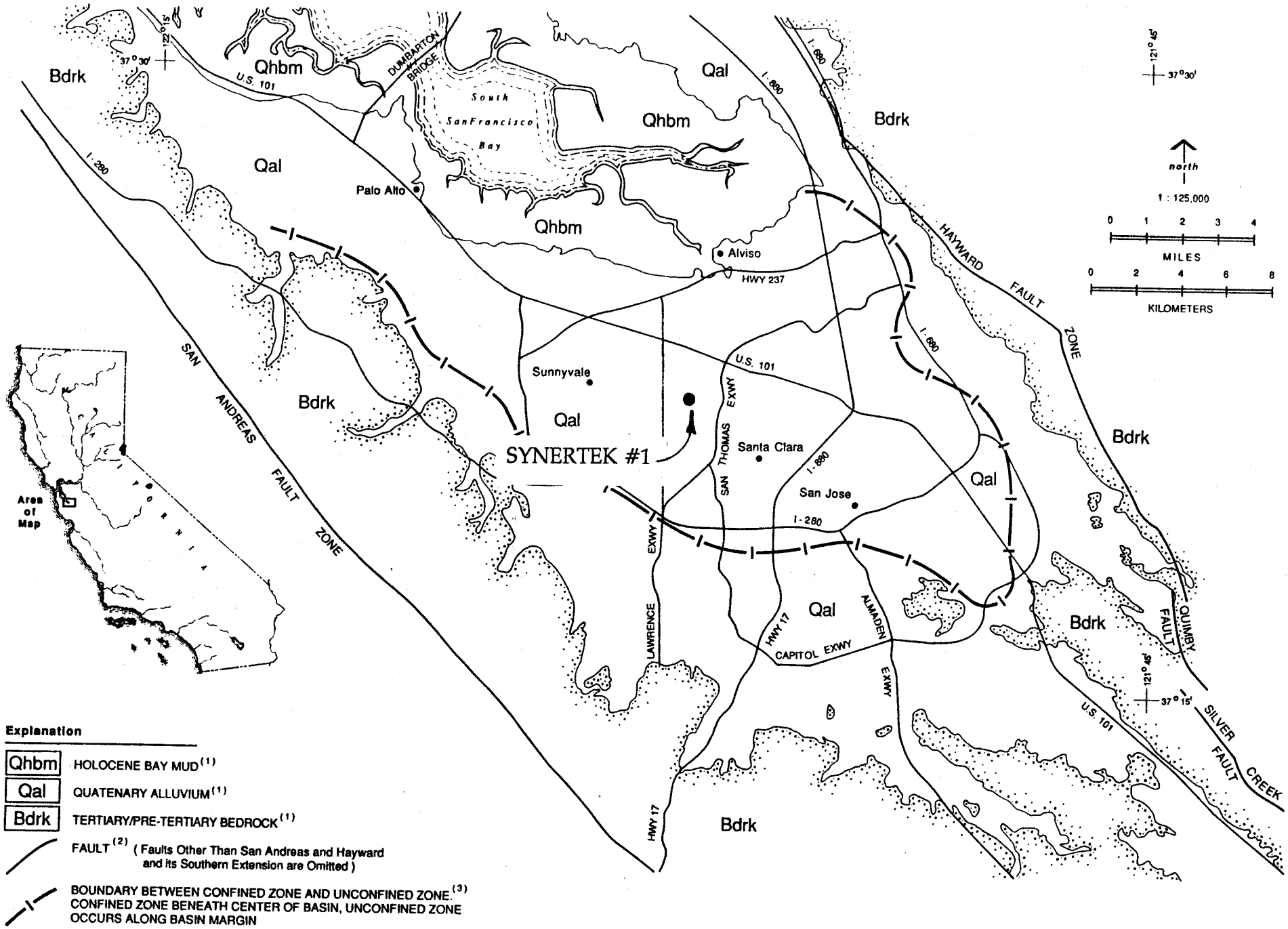


Figure 1. Synertek #1 Locality Map

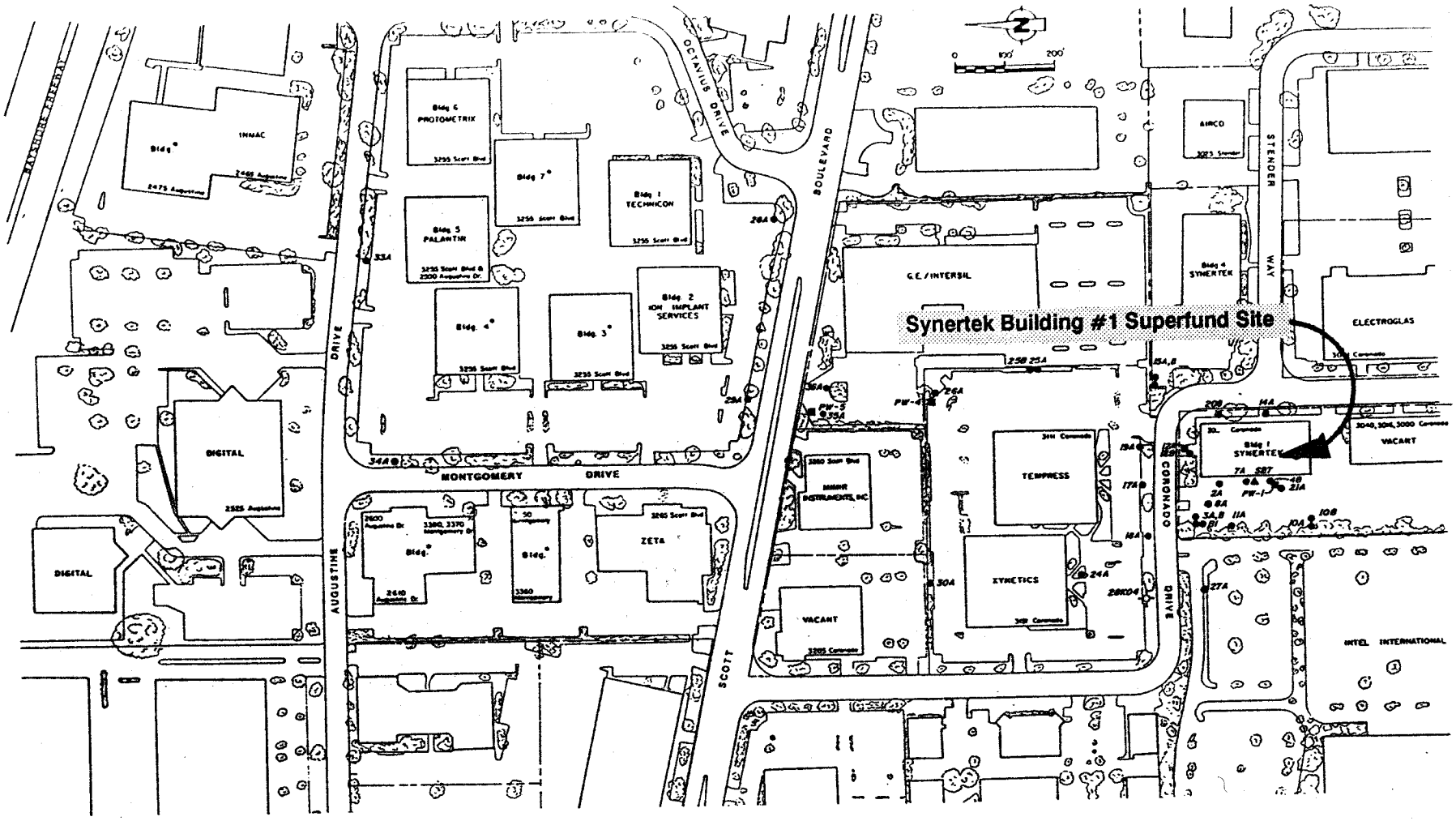


Figure 2. Synertek #1 Site Map

TABLE 1

SUMMARY OF ALTERNATIVES ANALYSES

		Alternative 1 No Action	Alternative 2 Institutional Controls and Groundwater Monitoring	Alternative 3 Maintain the IRM with Air Stripping	Alternative 4 Maintain the IRM, Replace Air Stripping with GAC Treatment
1.	Short Term Effectiveness	No additional current risks to community.	Reduces future risk of groundwater ingestion in the unlikely event that shallow groundwater be used as a drinking water source.	No additional risks to community. Provides immediate hydraulic containment of plume.	No additional risks to community. Provides immediate hydraulic containment of plume.
2.	Long Term Effectiveness and Permanence	Does not provide permanent remedy.	Does not provide a permanent remedy.	Provides a permanent remedy. At least 25 years required to remediate Site.	Provides a permanent remedy. At least 25 years required to remediate Site.
3.	Reduction of Toxicity, Mobility and Volume through Treatment	Does not reduce TMV.	Does not reduce TMV.	Permanently reduces TMV.	Permanently reduces TMV.
4.	Implementability	Not applicable.	Readily implementable.	Currently implemented except for institutional controls.	Readily implementable.
5.	Cost (Present Worth, 5% Discount Rate)	$ 0	$ 217,000	$ 895,000	$ 1,053,000
6.	Compliance with ARARs	ARARs would not be met	ARARs would not be met	ARARs would be met to the extent technically practical	ARARs would be met to the extent technically practical
7.	Overall Protection of Human Health and the Environment	Does not protect against future aquifer use.	Protects against future use of aquifer.	Prohibits further migration of plumes. Protects against future use of aquifer.	Prohibits further migration of plumes. Protects against future use of aquifer.

TABLE 2

TENTATIVE
Final Cleanup Standards

HONEYWELL INC. AND THE RREEF FUNDS
FORMER SYNERTEK #1 FACILITY
3050 CORONADO BLVD.
SANTA CLARA, SANTA CLARA COUNTY

Final cleanup standards for all onsite and offsite wells shall not be greater than the levels as provided in this table. The numerical final cleanup standards, therefore, shall not exceed the below listed levels in any well set forth in the Self-Monitoring Plan:

Chemical	Cleanup Standard (ug/l)	Reference	EPA MCL Goal (ug/l)
acetone	1200	IRIS	NA
benzene	1	CA MCL	0
bis(2-ethylhexyl)phthalate	4	CA MCL	NA
1,1-dichloroethane (1,1-DCA)	5	CA MCL	NA
1,1-dichloroethene (1,1-DCE)	6	CA MCL	7
cis-1,2-dichloroethene (cis-1,2-DCE)	6	CA MCL	70 (proposed)
ethylbenzene	680	CA MCL	700 (proposed)
Freon-113	1200	CA MCL	NA
styrene	5	EPA MCL PR	0 (proposed)
toluene	100	CA AL	2000 (proposed)
1,1,1-trichloroethane (1,1,1-TCA)	200	CA MCL	200
trichloroethene (TCE)	5	CA MCL	0
vinyl chloride	0.5	CA MCL	0
xylenes	175	RISK	10,000

CA MCL - California State Maximum Contaminant Level (MCL) for Drinking Water (adopted).
IRIS - EPA's integrated risk information system
EPA MCL PR - Proposed EPA Maximum Contaminant Level (MCL) for Drinking Water
CA AL - California DHS Action Level
NA - Not Available
RISK - Cleanup standard set below CA MCL of 1750 ug/l to reduce cumulative carcinogenic risk.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

HONEYWELL INC.
AND
THE RREEF FUNDS
FORMER SYNERTEK #1 FACILITY
3050 CORONADO BLVD.
SANTA CLARA, SANTA CLARA COUNTY

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. Violations or Potential Violations of Requirements

a. The discharger shall file a written technical report at least 15 days prior to advertising for bid on any construction project which may potentially adversely effect the dischargers' soil and groundwater cleanup activities. All projects involving subsurface construction shall be reported.

b. In the event the discharger is unable to comply with the conditions of the site cleanup requirements and prohibitions due to:

(1) maintenance work, power failures, or breakdown of waste treatment equipment, or

(2) accidents caused by human error or negligence, or

(3) other causes such as acts of nature, or

(4) poor operation or inadequate system design,

the waste discharger shall promptly accelerate the pertinent portions of the monitoring program to weekly or as required by the Regional Board's Executive Officer for those constituents which have been violated. Such analysis shall continue until such time as the discharger is back in compliance with the conditions and prohibitions of the site cleanup requirements, or until such time as the Executive Officer determines to be appropriate. The results of such monitoring shall be included in the regular Self-Monitoring Report.

2. Bypass Reports

Bypass reporting shall be an integral part of the regular monitoring program report. A report on bypassing of treatment units shall be made which will include cause, time and date, duration and estimated volume bypassed, method used in estimating volume, and persons and agencies notified. Notification to the Regional Board shall be made immediately by telephone (415-464-1255), followed by a written account within 15 days.

3. Self-Monitoring Reports

a. Reporting Period:

Written reports shall be filed regularly each quarter within thirty days from the end of the quarter monitored. The first quarterly report is due April 30, 1991.

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 dischargers have 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 regular reports. Results shall also be submitted for any additional analyses performed by the discharger at the specific request of the Regional Board. Quarterly water level data shall also be submitted in the quarterly report.

(2) The quarterly report shall include a discussion of unexpected operational changes which could affect performance of the extraction system, such as flow fluctuations, maintenance shutdown, etc.

(3) The quarterly report shall also identify the analytical procedures used for analyses either directly in the report or by reference to a standard plan accepted by the Regional Board's Executive Officer. Any special methods shall be identified and shall have prior approval of the Executive Officer.

(4) Original lab results shall be retained and shall be made available for inspection for six years after origination or until after all continuing or impending legal or administrative actions are resolved.

(5) Maps shall accompany the quarterly report, showing sampling locations and pollutant plume contours.

(6) The dischargers 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, water surface elevations for each well used to determine water surface elevation contours and water quality data.

(7) The annual report shall be combined with the quarterly report submitted on January 31, of each year and shall include cumulative data for the current year for each parameter of the attached Table SMP-2. The annual report shall also include minimum, maximum, median and average water quality data for the year. Water level data and GC/MS results shall be included in the annual report. The annual report shall also include contour maps for each chemical present above detectable concentrations.

d. Self-Monitoring Program (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 report. The changes shall be implemented no earlier than 45 days after a self-monitoring report is submitted for review or not at all if the proposal is found to be unacceptable by the Regional Board's Executive Officer.

Criteria for SMP revisions:

(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 chemical parameters 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 cleanup strategies).

(4) Add routine analysis for a chemical parameter if the parameter appears as an additional chromatographic peak in three consecutive samples from a particular well.

(5) Add routine chemical parameters for new wells based on the results of initial GC/MS analysis.

(6) Alter sampling frequency based on evaluation of collective data base.

(7) Following a temporary increase in sampling frequency, as described in C.1, the regular sampling frequency will resume after 4 samples show stable or decreasing concentrations provided the sampling indicates compliance with the Site Cleanup Requirements.

D. DESCRIPTION OF GROUNDWATER SAMPLING STATIONS

Stations	Description
Listed in Table SMP-1 and shown in Figure 1	All current and future monitoring and extraction wells.

E. SCHEDULE AND CONDITIONS OF SAMPLING AND ANALYSIS

The schedule and conditions of sampling and analysis shall be as given herein and as shown on Table SMP-3:

1. Once every three months, while cleanup standards are being achieved, representative samples shall be collected for analyses from monitoring wells listed in Table SMP-1 and as shown on Figure 1. All samples of one event shall be collected at approximately the same time.

2. For any new extraction or monitoring well that may be constructed, sampling and analysis shall be conducted on a quarterly schedule for a term to be decided by the Regional Board's Executive Officer but not less than one year. A GC/MS analysis shall be performed on each new well immediately after installation and well development and all peaks identified and reported on each well in the next quarterly report.

3. After cleanup standards have been achieved, samples shall be collected for analyses from all monitoring and extraction wells identified in E.1. above, quarterly (every three months) during the one-year stability period.

4. Following completion of the stability period, samples shall be collected for analyses from all identified wells shown on Table SMP-3 , twice annually during the long-term monitoring period, as long as cleanup standards are not exceeded, or as shall be determined by the Regional Board's Executive Officer. The long term monitoring

period shall not last for less than five years after the end of the one-year stability period. At the end of the long term monitoring period, specific wells will be identified for biannual post closure monitoring. At this time the post closure monitoring period is expected to last approximately twenty-five years after the end of the long term monitoring.

5. If a previously undetected compound or peak is detected in a sample from a well, a second sample shall be taken within a week after the results from the first sample are available. All chromatographic peaks detected in two consecutive samples for purgeable halocarbons and/or volatile organics shall be identified and quantified in the quarterly report.

6. A GC/MS analysis shall be performed annually and all peaks identified and reported for all operating extraction wells and pits.

7. All chemical analyses shall have detection limits below the state action level for water for all constituents analyzed.

8. Groundwater elevations shall be obtained and reported on a quarterly basis from each monitoring and extraction well listed in Table SMP-1. In addition, the depth of the pump in all extraction wells shall be obtained and submitted in the quarterly report with the sampling results.

9. Depths of wells in Table SMP-1 shall be determined on an annual basis and compared to the depth of the well as constructed. The results of this comparison shall be reported in the annual report specified in 3.C.(1).

I, Steven R. Ritchie, Regional Board 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 to determine compliance with Regional Board Order No. 91-051.

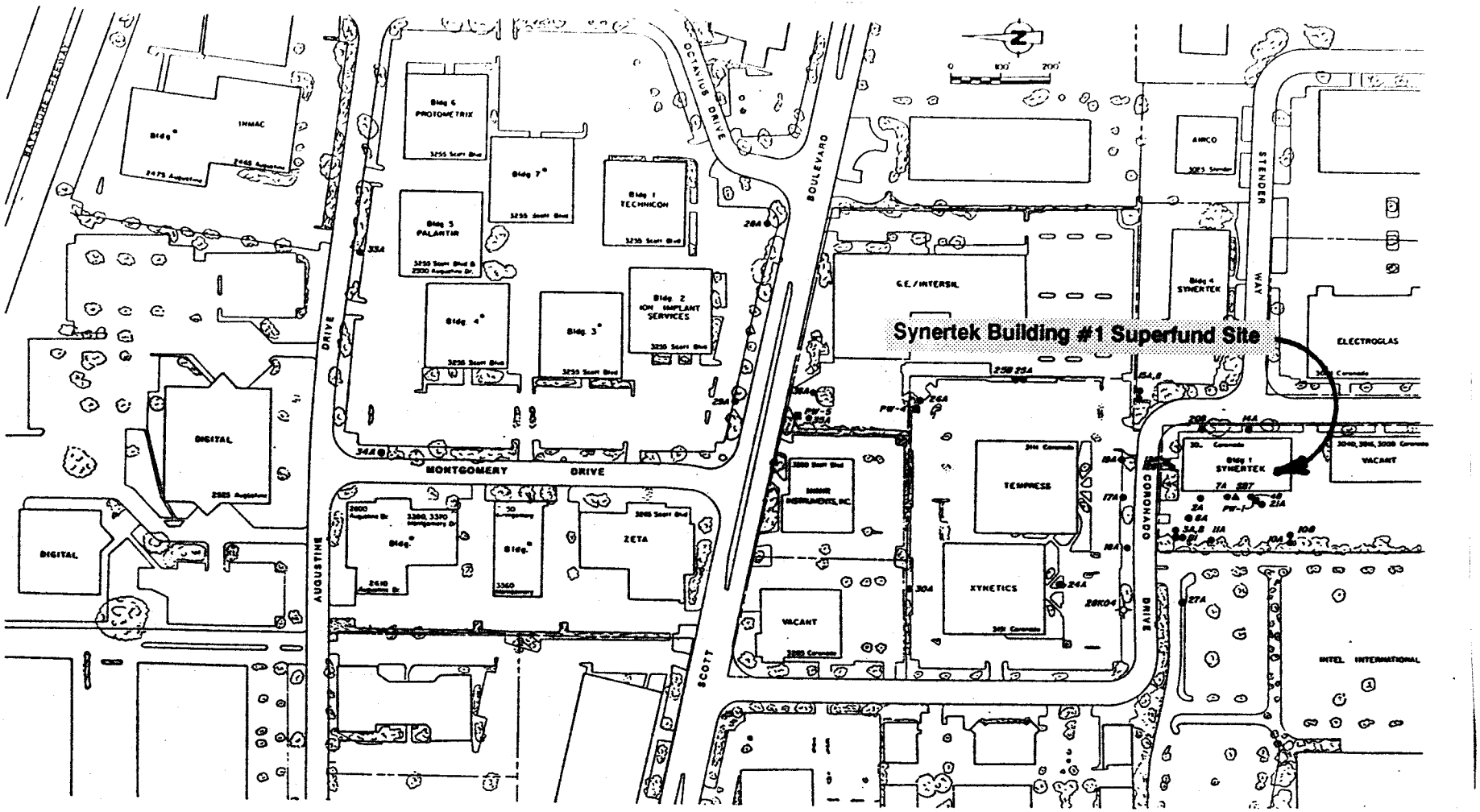
2. Is effective on the date shown below.

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.

Effective Date: March 20, 1991

Lawrence P. Kolb
for
Steven R. Ritchie
Executive Officer

Attachments: Figure 1 - Facility map including well locations
Table SMP-1 - Schedule for Sampling, Measurements, and Analysis
Table SMP-2 - Final Cleanup Standards
Table SMP-3 - Monitoring Frequency



LEGEND

- ● EXISTING MONITORING WELL
- ■ EXISTING EXTRACTION WELL
- ▲ DEEP SOIL BORING
- ✧ FORMER AGRICULTURAL WELL

Figure 1. Synertek #1 Site Map

TABLE SMP-1
SCHEDULE FOR SAMPLING, MEASUREMENTS, AND ANALYSIS

TENTATIVE
GROUNDWATER SELF-MONITORING PROGRAM

HONEYWELL INC. AND THE RREEF FUNDS
FORMER SYNERTEK #1 FACILITY
3050 CORONADO BLVD.
SANTA CLARA, SANTA CLARA COUNTY

Quarter:	**First** (January-March)
Sampling Station:	All existing and future groundwater monitoring wells, extraction wells, and piezometers.
Type of sample:	Grab sample
Type of analysis:	EPA Method 8240
Quarter:	**Second** (April-June)
Sampling Station:	11A, 18A, 26A, 25A, 15A, 4B, 12B, 20B, 33A, and 34A
Type of sample:	Grab sample
Type of analysis:	EPA Method 8010 with additional analysis for Freon 113
Quarter:	**Third** (July - September)
Sampling Station:	All existing and future groundwater monitoring wells, extraction wells, and piezometers.
Type of sample:	grab sample
Type of analysis:	EPA Method 8010 with additional analysis for Freon 113
Quarter:	**Fourth** (October - December)
Sampling Station:	11A, 18A, 26A, 25A, 15A, 4B, 12B, 20B, 33A, and 34A
Type of sample:	grab sample
Type of analysis:	EPA Method 8010 with additional analysis for Freon 113

TABLE SMP-2

TENTATIVE
Final Cleanup Standards

HONEYWELL INC. AND THE RREEF FUNDS
FORMER SYNERTEK #1 FACILITY
3050 CORONADO BLVD.
SANTA CLARA, SANTA CLARA COUNTY

Final cleanup standards for all onsite and offsite wells shall not be greater than the levels as provided in this table. The numerical final cleanup standards, therefore, shall not exceed the below listed levels in any well set forth in the Self-Monitoring Plan:

Chemical	Cleanup Standard (ug/l)	Reference	EPA MCL Goal (ug/l)
acetone	1200	IRIS	NA
benzene	1	CA MCL	0
bis(2-ethylhexyl)phthalate	4	CA MCL	NA
1,1-dichloroethane (1,1-DCA)	5	CA MCL	NA
1,1-dichloroethene (1,1-DCE)	6	CA MCL	7
cis-1,2-dichloroethene (cis-1,2-DCE)	6	CA MCL	70 (proposed)
ethylbenzene	680	CA MCL	700 (proposed)
Freon-113	1200	CA MCL	NA
styrene	5	EPA MCL PR	0 (proposed)
toluene	100	CA AL	2000 (proposed)
1,1,1-trichloroethane (1,1,1-TCA)	200	CA MCL	200
trichloroethene (TCE)	5	CA MCL	0
vinyl chloride	0.5	CA MCL	0
xylenes	175	RISK	10,000

CA MCL - California State Maximum Contaminant Level (MCL) for Drinking Water (adopted).
IRIS - EPA's integrated risk information system
EPA MCL PR - Proposed EPA Maximum Contaminant Level (MCL) for Drinking Water
CA AL - California DHS Action Level
NA - Not Available
RISK - Cleanup standard set below CA MCL of 1750 ug/l to reduce cumulative carcinogenic risk.

TABLE SMP-3

MONITORING FREQUENCY

TENTATIVE
GROUNDWATER SELF-MONITORING PROGRAM

HONEYWELL INC.
AND
THE RREEF FUNDS
FORMER SYNERTEK #1 FACILITY
3050 CORONADO BLVD.
SANTA CLARA, SANTA CLARA COUNTY

Monitoring Phase	Time Length	Monitoring Frequency	Sampling Station
Cleanup Phase (Cleanup Standards not achieved)	Estimated 25 Years	Quarterly	See Table 1
One Year Stability Phase (Cleanup Standards achieved)	One Year	Quarterly	See Table 1
Long Term Phase	Five Years	Twice Annually	4B, 2A, 11A, 12A, 12B, 15A 18A, 20B, 26A, 33A, and 34A
Post Closure Monitoring Phase	Twenty-five Years	Every other year	Same as above