CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. R2-2007-0005

FINAL SITE CLEANUP REQUIREMENTS AND RESCISSION OF ORDER NOS. 98-108 AND R2-2005-0004

FOR:

HONEYWELL INTERNATIONAL INC.
for the property located at

8333 ENTERPRISE DRIVE
NEWARK, ALAMEDA COUNTY

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

1. **Site Location**: The Site is located at 8333 Enterprise Drive in Newark, California. The Site covers an area of about 2.4 acres and is bounded by a Southern Pacific Railroad right-of-way to the north, residential subdivisions immediately north and east of the Site, an industrial complex to the south, and a vacant property to the west. The nearest surface water bodies are the Newark Slough approximately 2,000 feet to the northwest and Plummer Creek approximately 3,500 feet to the southwest of the Site. A stormwater retention basin is approximately 800 feet west of the Site.

   Site History: During late 1972 through early 1973, the Site was developed by Purex Corporation for Baron Blakeslee, Inc. (BBI), a division of the company. Operations at the Site included storage and distribution of virgin chemical products and recovery of chlorinated and fluorinated solvents from waste liquids. In 1993, BBI ceased its solvent recovery operation at the Site and proceeded to close its hazardous waste management units (HWMUs) in accordance with its Resource Conservation and Recovery Act (RCRA) Part B operating permits requirements. The HWMUs were cleaned and closed according to DTSC requirements.

   On June 30, 1970, BBI merged with Purex Corporation and became a division of Purex Corporation. In 1978 Purex Industries, Inc. was incorporated in Delaware and acquired all of the stock of Purex Corporation. In 1982, the assets and liabilities for the Baron Blakeslee Division (of Purex Corporation) were transferred to Baron Blakeslee, Inc., a Delaware Corporation (Baron Blakeslee/Del). Baron Blakeslee/Del then executed an agreement assuming all liabilities relating to the former Baron Blakeslee Division. Purex Industries, Inc. became the parent company of both Baron Blakeslee/Del and Purex Corporation. In 1985, Purex Industries, Inc. sold Baron Blakeslee/Del to Allied Corporation, which later became

AlliedSignal, Inc. (AlliedSignal). AlliedSignal, Inc. subsequently merged with Honeywell Inc., and the combined company assumed the name of Honeywell International Inc. (Honeywell). Honeywell retains liability for environmental pollution from historical operations at the Site. Gallade Enterprises LLC (Gallade) is the current property owner. Gallade Chemical Inc. currently operates a virgin-chemical-product storage and distribution facility at the Site.

2. **Named Dischargers**: Honeywell is named as a discharger because of substantial evidence that its predecessor companies discharged pollutants to soil and groundwater at the Site, including their waste solvent recycling operations and the presence of these same pollutants in soil and groundwater.

   Gallade, the current property owner, is not named as a discharger in this order for the following reasons: Honeywell has adequate funding resources to comply with this order, Honeywell has complied with the prior order, and Honeywell and Gallade have requested that Gallade not be named in this order. However, Gallade may be named in the future if these circumstances change.

   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 Water Board will consider adding those parties' names to this order.

3. **Regulatory Status**: The Site was subject to the following Water Board Orders:

   Orders No. 98-108, Site Cleanup Requirements, and R2-2005-0004, Amendment to Site Cleanup Requirements.

4. **Site Hydrogeology**: The Site is located within the Niles Groundwater Subarea which underlies the Site and is reported to be the largest groundwater subarea within the Fremont groundwater area. The Subarea consists of a series of flat-lying aquifers separated by extensive clay aquitards. The Newark Aquitard, the uppermost mapped unit within the Niles Subarea, covers nearly all of the Niles Subarea and consists of clay and silt, with discrete sand units. The Newark Aquitard is further underlain by three aquifers: the Newark Aquifer, Centerville Aquifer, and Fremont Aquifer. The deepest water-bearing units, referred to collectively as the Deep Aquifers, are present at approximately 400 and 500 feet below grade surface (bgs) and possibly deeper, and are separated from the overlying Fremont Aquifer by a competent regional aquitard. The Newark Aquifer is the uppermost aquifer within the Niles Subarea, with depths ranging from approximately 50 to 140 feet bgs. Within the Site-specific area, the Newark Aquifer consists of sands, silty sands, and lenses of gravel. At the Site, the thickness of the Newark Aquifer varies from 20 to 30 feet.

   Based on available data, the shallow stratigraphy at the Site consists of fill material from the surface to approximately 2 to 4 feet bgs (in areas under existing buildings only), underlain by silty clay to a depth of 11 or 12 feet bgs. Saturated, primarily silty sand is present from 11 or 12 feet bgs down to 18 to 30 feet bgs. This unit is a relatively high-permeability, semi-confined unit and is referred to as the shallow groundwater zone (SGZ). Silty clay is present

from approximately 18 to 30 feet bgs to 43 to 49 feet bgs. This unit is called the Newark Aquitard. Saturated sands, silty sands, and silts of the Newark Aquifer are first encountered at 43 to 49 feet bgs.

Within the project area, the upper silty clay unit forms a semi-confining layer above the SGZ. Although mostly saturated above (due to capillary forces) and below the static water table, there is no free-flowing groundwater present in the upper silty clay layer; water present in this layer is the pore water that is held within the pore space of the silt and clay particles. During the summer months, when evaporation rates are high and precipitation is low, the upper few feet of the silty clay layer dries and becomes unsaturated. A vadose zone develops in the unsaturated depths. During the winter months, when precipitation is high and evaporation is low, the silty clay layer becomes saturated with precipitation and runoff, and the vadose zone disappears in some areas. This condition is most apparent in the low lying areas to the west of the Site, where standing water from surface runoff is present for several months each winter.

The SGZ is the uppermost permeable water bearing zone where groundwater can flow freely by gravity, and water is typically encountered at approximately 11 to 12 feet bgs. Groundwater in the SGZ is semi-confined and the static water level is typically encountered at approximately 5 feet bgs in wells screened within the SGZ. The Newark Aquifer is also semi-confined to confined, and the piezometric surface of the Newark Aquifer is typically slightly higher than the piezometric surface of the SGZ. Free-flowing groundwater in the Newark Aquifer is typically encountered at approximately 43 to 49 feet bgs.

Groundwater in the SGZ flows west/northwesterly towards the stormwater retention basin located approximately 800 feet west of the Site. Similar to that of the SGZ, groundwater flow direction in the Newark Aquifer is west/southwest towards the San Francisco Bay. The horizontal hydraulic gradient in both the SGZ and the Newark Aquifer is approximately 0.001 feet per foot (ft/ft). Based on numerical model calibration, the average horizontal hydraulic conductivity of the SGZ and Newark Aquifer in the plume area is on the order of 30 and 130 feet per day, respectively. Under the natural flow gradient and an effective porosity of 0.25, the average horizontal groundwater flow velocity for SGZ and Newark Aquifer in the study area will be on the order of 40 and 200 feet per year, respectively.

5. **Remedial Investigation**: Since 1993, several phases of environmental characterization have been conducted at the Site. Previous investigations have indicated that soil and groundwater at the Site and groundwater downgradient (westward) from the Site have been impacted by VOCs. Chemicals of potential concern (COPCs) include trichloroethene (TCE), tetrachloroethene (PCE), cis-1,2-dichloroethene (cis-1,2-DCE), 1,1,1-trichloroethane (1,1,1-TCA), 1,1-dichloroethene (1,1-DCE), methylene chloride, and Freon-113. Based on the frequency of detection, the concentrations detected, and the toxicity, PCE and TCE are considered the primary COPCs in soil, and TCE is considered the primary COPC in groundwater.

   a. **Soil:** The nature and extent of soil impacts at the Site has been adequately characterized through a number of environmental investigations. The first investigation was conducted

during the initial HWMU closure activities in 1993 and consisted of sampling of subsurface soils beneath the HWMUs. An additional investigation was performed in early 1994 to delineate the areal extent of impacted vadose zone soils in the vicinity of the Process Building and spur track area. An extensive soil characterization of the Site was conducted in 1997. Additional soil investigations were conducted in 2003 and 2004 to assess potential vapor intrusion concerns due to the volatilization of VOCs from soil and groundwater. Additional soil samples were collected in 2005 as part of a source area and data gaps remedial investigation.

In general, soil impacts are confined to five onsite areas listed below. These shallow soil hot spots are defined as areas with total VOC concentrations exceeding 100 milligrams per kilogram (mg/kg).

- Area A (the Former Flammable and Non-flammable Liquid Tank Farms)
- Area B (Spur Track Area)
- Area C (Former Gasoline Fill Station)
- Area D (the Former Process Building [Building D])
- MW-13 area

The highest impacts are present in the vicinity of the Former Process Building (Area D), the Former Flammable Liquid Tank Farm (Area A), and the MW-13 Area. In these areas, elevated levels (up to 210 mg/kg) of VOCs are generally present from grade to at least 7 feet bgs. Based on conductivity logs collected during installation of membrane interface probe (MIP) borings during the 2005 remedial investigation, slightly elevated VOC concentrations are present at the top of the Newark Aquitard, with concentrations decreasing with depth until the bottom of the Newark Aquitard, where an increase in concentrations was observed.

Based on the available data, it is likely that VOCs have migrated through the Newark Aquitard in a localized area beneath the Former Flammable Liquid Tank Farm. Some shallow soil impact appears to have extended slightly offsite along the western/central portion of the Site. This area is downgradient of the MW-13 Area and the Former Flammable Liquid Tank Farm.

b. **Shallow Groundwater Zone:** The nature and extent of impacts within the shallow groundwater zone (SGZ) have been adequately characterized. The VOCs in the shallow groundwater zone extend primarily to the west, consistent with the westerly hydraulic gradient. Based on the results of the October 2005 monitoring event, the plume core with VOC concentrations in excess of 1,000 micrograms per liter (µg/L) extends approximately 700 feet to the west of the Site. Lateral downgradient migration of VOCs has been partially contained by the stormwater retention basin located on the Prologis property. Monitoring data has shown that only trace levels of the Site VOC daughter products have been occasionally detected in the basin surface water. A concentration of 4 µg/L total VOCs was detected in monitoring well MW-OS12 located approximately 2,000 feet to the west of the Site and 400 feet north of the retention basin; individual concentrations of COPCs at this location are below their respective Maximum

Contaminant Levels (MCLs). The shallow groundwater plume core (>1,000 µg/L) is approximately 425 feet wide.

Based on the results of the October 2005 groundwater monitoring event, and several previous grab groundwater sampling events, the highest VOC concentrations in the SGZ are located onsite in the vicinities of the soil hot spots. During the October 2005 monitoring event, the highest total VOC concentration (approximately 137,000 µg/L) was detected at MW-12 located near hot spot Area C, the Former Gasoline Fill Station. The total VOC concentration at MW-13, located on the downgradient Site boundary, was approximately 52,100 µg/L. The total VOC concentration at MW-OS19, a newly constructed offsite well located downgradient of the Site on the FMC Parcel F property, was approximately 10,240 µg/L.

c. **Newark Aquifer:** A dissolved VOC plume of lower concentration is present in the Newark Aquifer. The plume with VOC concentrations in excess of 5 µg/L extends approximately 1,200 feet to the west of the Site. The Newark Aquifer wells MW-NEW1 through MW-NEW4 are located onsite and were installed in 1996. Since that time, total VOC concentrations at MW-NEW1, MW-NEW3, and MW-NEW4 have typically been less than 2 µg/L. Total VOC concentrations at MW-NEW2 have ranged between 2 µg/L and 100 µg/L since 1996. The highest total VOC concentration detected in a Newark Aquifer well during the October 2005 sampling event was 162 µg/L at downgradient well MW-NEW7. Based on the confirmation soil and groundwater sampling from MIP borings MIP-44 and MIP-47, the source of VOCs in the Newark Aquifer appears to have originated from the onsite area in the vicinity of the Former Flammable Liquid Tank Farm.

6. **Adjacent Sites**: Four neighboring sites are currently conducting groundwater cleanup under Water Board Order. The sites are FMC, Jones-Hamilton, Ashland Chemical and Former Foster Chemical (Romic). All four sites are cross gradient of this facility.

7. **Interim Remedial Measures:**

a. **Soil:** An interim remedial action was conducted between mid-1999 and May 2002 to address soil impacts at four shallow soil hot spots at the Site. The IRA consisted of installation and operation of a dual-phase extraction system. More than 2,800 pounds of VOCs were removed before mass removal rates began to decline. The dual-phase extraction system was discontinued in May 2002.

b. **Groundwater:** In early 2000, a small source zone near monitoring well MW-13 was discovered. An in situ chemical oxidation (ISCO) pilot test using Fenton's Reagent (hydrogen peroxide and sulfuric acid) was implemented for this source zone and for a separate localized shallow soil hot spot in Area C between November 2000 and January 2001. During this pilot test, Fenton's Reagent was injected through temporary injection borings to treat an area of approximately 25 feet by 30 feet. The performance of this test was evaluated by pre-treatment and post-treatment soil and groundwater sampling from temporary borings and downgradient monitoring wells. Within the treatment area,

concentrations of VOCs in soil decreased by 95 percent and concentrations of VOCs in groundwater decreased by 70 percent. An estimated 190 pounds of VOCs were oxidized. Post-treatment sampling indicated that the ISCO treatment resulted in a significant reduction in dissolved-phase concentrations in the monitoring well located immediately downgradient.

8. **Risk Assessment**:

   a. **Methods:** An updated human health risk assessment (HHRA) was conducted for the Site as part of the Feasibility Study / Remedial Action Plan. The study area included both onsite and offsite areas. The offsite areas include residential properties on Aleppo Drive, Juniper Street, and Chestnut Street, and vacant commercial/industrial properties downgradient of the Site (the Trumark parcel and FMC Parcels F and G). These areas were evaluated for potential risks to human receptors under potential future land uses, including residential and commercial uses. The receptors included adult and child residents, outdoor commercial/industrial workers, indoor office workers, and construction workers. The pathways that were evaluated for residents and indoor workers included:

      - Direct contact (incidental ingestion and dermal contact),
      - Outdoor inhalation of dusts and vapors from soil, and
      - Indoor inhalation of vapors by the vapor intrusion pathway from soil, groundwater and soil vapor.

      In addition, direct contact with and outdoor inhalation of vapors from free-flowing groundwater in the sandy stratum (the SGZ) were evaluated for construction and excavation workers, should future excavation activities extend deeper than 10 feet bgs.

      Excess lifetime cancer risks (ELCR) and a non-cancer hazard index (HI) were estimated individually for each sampling location in soil, soil vapor, and groundwater. The results of the risk characterization process were used to identify specific locations having excess risk. Locations with site-specific ELCR less than 1×10^{-6} or HI less than 1.0 were characterized as not posing a threat to human health for the evaluated receptors and pathways.

      For comparison, the Water Board considers a cumulative excess cancer risk of $1x10^{-6}$ to $1x10^{-4}$ or less for carcinogens and a target Hazard Index of 1.0 or less for noncarcinogens to be acceptable for human health concerns at remediation sites.

   b. **Soil Assessment:** For soils within 0 to 10 feet bgs, locations falling within or exceeding target risk management ranges for residential and commercial use were noted primarily on the former BBI property, with PCE and TCE as the major risk-contributing chemicals for both residents and outdoor workers. The locations with elevated risks in the range of 1×10^{-4} are in the vicinity of known hotspot areas A, B, C, D, and the MW-13 area. Offsite areas did not exhibit unacceptable risks or hazards related to direct contact for either residential or for commercial/ industrial use. For vapor intrusion concerns (for residential use), areas representing risks above the target risk levels were noted at numerous

locations in the onsite area, primarily in the vicinity of the Former Process Building (hotspot Area D), the former tank farm area (hotspot areas A, B, and C), and the MW-13 area. Three locations in the downgradient plume area exceeded target risk levels for vapor intrusion for residential use.

c. **Soil Vapor Assessment:** For soil vapor, locations within or exceeding target risk management ranges for the vapor intrusion pathway under future residential or commercial use were noted in onsite areas, primarily in the vicinity of the Former Process Building and the Former Tank Farm areas, and to a much lesser degree along two segments of the eastern plume margin, where vadose zone sources of VOCs are also present. Some of these buildings are currently in use as storage facilities with occasional use by onsite workers. Therefore, the elevated risk and hazard levels estimated for the onsite workers represent a "worst-case" scenario and are not necessarily representative of current exposures and risk levels. PCE, TCE and vinyl chloride were the major risk contributing chemicals in soil vapor under residential and commercial use scenarios. These results are based on the observed maximum soil vapor concentrations from multiple rounds of monitoring, the assumptions of homogeneity of current low-permeability soil types (silty loam and clay), and the absence of preferential pathways.

d. **Groundwater Assessment:** Shallow groundwater at the site is heavily impacted with VOCs (refer to Finding 6). The assessment concludes that vapor emissions from impacted groundwater pose a potential threat to indoor-air quality. The screening-level evaluation of groundwater data for vapor intrusion concerns indicated that concentrations of TCE, PCE and several other VOCs in shallow zone groundwater exceeded the vapor intrusion-based Environmental Screening Levels (ESLs) at many locations within the onsite and offsite plume under both residential and commercial use scenarios. However, soil vapor concentrations for these chemicals at the offsite locations were below an ELCR of 1×10^{-6} or a HI of 1.0 for residential and commercial use. Therefore, it appears that there is low potential for transport of VOCs from groundwater to soil vapor in the offsite areas. Reported concentrations of contaminants are also well above both drinking water standards and surface water standards for the protection of aquatic life. Although the SGZ groundwater is not currently used as a source for drinking water, it directly overlies the Newark Aquifer, an important regional aquifer that is used for drinking water.

e. **Conclusions:** Due to the aforementioned risks, remedial action for soil, soil vapor and groundwater is warranted. Due to excessive risk that will be present at the Site pending full remediation, institutional constraints are appropriate to limit on-site exposure to acceptable levels. Institutional constraints include a deed restriction that notifies future owners of sub-surface contamination and prohibits the use of shallow groundwater beneath the Site as a source of drinking water and prohibits residential use until cleanup standards are met.

9. **Feasibility Study**: Technology screening was conducted in the Revised Feasibility Study and Remedial Action Plan in accordance with the technology screening guidance described in USEPA guidance. Potential remedial technologies for soil and groundwater cleanup were

screened according to technical effectiveness, implementability, and cost. To facilitate the screening of remedial technologies, the Site was conceptually divided into six treatment zones:

- Shallow soil in the former tank farm area that is currently accessible
- Shallow soil in the vicinity of the Former Process Building (Area D) and the Former Mixing Room that is not currently accessible
- Shallow groundwater plume core in the Tank Farm area
- Shallow groundwater plume core in other areas
- Dilute groundwater plume in SGZ
- Newark Aquitard and Newark Aquifer

Based on the technology screening process, the following remedial technologies were retained for further consideration as components of remedial alternatives: capping, excavation, in situ thermal treatment with soil vapor extraction (thermal), in situ chemical oxidation (ISCO), zero-valent iron injection, and monitored natural attenuation (MNA). These technologies were combined to develop six remedial alternatives for the Site. The proposed remedial alternatives for the Site are shown in the table below.

Alternative No.	Shallow Soil		Groundwater Plume Core in SGZ		Dilute Groundwater Plume	
	Tank Farm Area	Beneath Buildings	Tank Farm Area	Other Areas	Shallow Groundwater Zone	Newark Aquifer/ Aquitard
1	MNA	MNA	MNA	MNA	MNA	MNA
2	Cap	Cap	ISCO	MNA	MNA	MNA
3	Excavation	Excavation	ISCO	MNA	MNA	MNA
4	Excavation	Excavation	ISCO	ISCO	MNA	MNA
5	Thermal	Excavation	ISCO	ISCO	MNA	MNA
6	Thermal	Excavation	Thermal	ISCO	MNA	MNA

MNA – Monitored natural attenuation
ISCO – In situ chemical oxidation
SGZ – Shallow Groundwater Zone

10. **Remedial Action Plan**: Honeywell submitted the Revised Feasibility Study/Remedial Action Plan (RAP) on January 31, 2006. Based on the evaluation process, remedial Alternative 6 was selected as the preferred remedial alternative. This alternative includes the following components:

    - In situ thermal treatment for onsite shallow soil and shallow groundwater in the former tank farm area
    - Excavation of impacted shallow soil in the vicinity of the Former Process Building and the Former Mixing Room at such time as the Site is redeveloped

- In situ chemical oxidation (ISCO) to treat the shallow groundwater plume core onsite and offsite
- Monitored natural attenuation for the Newark Aquitard
- Monitored natural attenuation for the Newark Aquifer

Due to the inherent hydrogeological and geochemical heterogeneities over the project area, and the innovative nature of both ISCO and in situ thermal treatment technologies, successful pilot demonstrations of both technologies are required prior to full-scale implementation. All pilot-scale and full-scale activities will be performed in accordance with technology-specific work plans which will be submitted to the Water Board for review and approval prior to field implementation.

11. **Groundwater Management**: Alameda County Water District (ACWD) provides potable water to a population of approximately 324,000 in the Cities of Fremont, Newark, and Union City. ACWD currently has three primary sources of water supply: (1) the State Water Project (SWP), (2) San Francisco's Regional Water System and (3) local supplies. Local supplies include fresh groundwater from the Niles Cone Groundwater Basin, desalinated brackish groundwater from portions of the groundwater basin previously impacted by seawater intrusion, and surface water from the Del Valle Reservoir. The primary source of recharge for the Niles Cone Groundwater Basin is from percolation of runoff from the Alameda Creek watershed. To a lesser degree, a portion of ACWD's SWP supplies are also used for local groundwater percolation.

    The water quality in the groundwater system is characterized by fresh groundwater in the eastern portion of the Niles Cone Groundwater Basin transitioning into brackish groundwater in the western portion of the basin. The brackish groundwater is a result of historical seawater intrusion from the adjacent San Francisco Bay. Since the 1960's ACWD has managed the groundwater basin to prevent any additional seawater intrusion.

    Potable water production occurs at the Mowry and Peralta-Tyson Well Fields. In 1974, the District initiated its Aquifer Reclamation Program (ARP) to restore water quality in the groundwater basin by removing the saline water trapped in the aquifer system. Nine wells are utilized for reclamation pumping: three in the Newark Aquifer, five in the Centerville-Fremont Aquifer, and one in the Deep Aquifer. Historically, these wells were used to pump brackish water to San Francisco Bay via flood control channels. Approximately 9,400 acre-feet was pumped from all ARP wells during fiscal year 2004-2005. Since November 2003, much of the water pumped from the ARP wells is treated at the Newark Desalination Facility. This facility treats up to 5 million gallons per day utilizing reverse osmosis to remove salts and other impurities from the brackish groundwater. Treated water is blended with untreated local water and provided as a supply for the water distribution system. The quality of groundwater in the basin is improved as recharge water replaces the pumped brackish groundwater. ARP pumping also prevents the plume of brackish water in the Centerville-Fremont and Deep Aquifers from further migrating toward the Mowry Wellfield. Five other wells that were Salinity Barrier Project (SBP) wells are now considered part of the ARP.

Currently, the Site is situated between the locations of two former SBP wells: Site C is located approximately 4,500 feet northwest of the Site, and Site B is located approximately 1.3 miles east of the Site. In March 2005, ACWD completed a one-year pilot test of its pumping facility at Site B and is currently conducting a one-year pilot test of its pumping facility at Site A to determine if either or both wells can be used as a source for phase 2 of ACWD's Newark Desalination Facility (expands the capacity of the facility from 5 to 10 million gallons per day). Additional modifications/ adjustments to SBP well operations may be made after ACWD's assessment of the pilot test program. Full operation of one or more of the SBP wells or a new extraction well could begin in as soon as two years.

In the current mode of operation, the ACWD ARP wells do not affect water levels or the groundwater gradient at the Site. However, operation of the proposed SBP wells or installation of new production wells in the vicinity of the Site could affect the groundwater gradient at the Site. It is possible that groundwater extraction at ACWD facilities in the vicinity of the Site could lower the potentiometric surface in the Newark Aquifer, causing a downward hydraulic gradient from the SGZ. This change could accelerate the migration of VOCs in shallow groundwater, both laterally and vertically. If significant VOC concentrations migrate to the SBP wells, then ACWD may be required to treat SBP well pumpage prior to discharging it to surface waters or using it for beneficial use.

As ACWD plans relative to the SBP wells are currently being developed, assessment of risk to the SBP wells is not warranted at this time. A risk evaluation will be needed immediately after such time as ACWD decides to proceed with operation of SBP well Site A, Site B, or Site C, or any future ACWD water well screened in the Newark Aquifer and located less than 2 miles from the Site. Honeywell must not wait for commencement of operation but must initiate the risk evaluation immediately after ACWD decides to operate one or more of the wells noted above. In evaluating this risk, Honeywell will need to consider all chemicals of concern of the Site that could interfere with the ACWD ability to use (e.g., as a supply to a desalinization plant) or dispose of the extracted groundwater, as applicable.

12. **Basis for Cleanup Standards**

a. **General**: State 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. Cleanup levels other than background 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. The previously-cited cleanup plan confirms the Board's initial conclusion that background levels of water quality cannot be restored. This order and its requirements are consistent with Resolution No. 68-16.

State 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.

Potential impact to human health due to exposure to contaminants in soil and groundwater has been the primary concern for the Site and has therefore been considered in selecting soil and groundwater cleanup standards, in addition to protection of groundwater resources.

b. **Beneficial Uses**: 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 Title 23, California Code of Regulations, Section 3912. The Basin Plan defines beneficial uses and water quality objectives for waters of the State, including surface waters and groundwaters.

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. Groundwater underlying and adjacent to the Site qualifies as a potential source of drinking water.

The Basin Plan designates the following potential beneficial uses of groundwater underlying and adjacent to the site:

i. Municipal and domestic water supply
ii. Industrial process water supply
iii. Industrial service water supply
iv. Agricultural water supply
v. Freshwater replenishment to surface waters

The existing and potential beneficial uses of the Plummer Creek, a tidal tributary of South San Francisco Bay, include:

i. Water contact and non-contact recreation
ii. Wildlife habitat
iii. Cold freshwater and warm freshwater habitat
iv. Fish migration and spawning
v. Estuarine habitat

The stormwater retention basin located to the west of the Site collects stormwater runoff from the Prologis property. The existing or potential beneficial uses of the basin include: groundwater recharge and wildlife habitat.

c. **Basis for Groundwater Cleanup Standards**: The groundwater cleanup standards for the Newark Aquifer are based on applicable water quality objectives which are the State

of California maximum contaminant levels (MCLs) or federal MCLs for contaminants with no California MCL. The most stringent drinking water standard is used for chemicals with multiple drinking water standards (i.e. Primary MCL, Secondary MCL, California MCL, Federal MCL, etc.). For the SGZ, the first phase of active remediation will be conducted to reduce the contaminant levels sitewide to below a set of remediation action levels that are based on the Water Board's vapor intrusion ESLs for high permeability soil to ensure protection of human health.

d. **Basis for Soil Cleanup Standards**: Soil cleanup standards for the site are intended to address both potential human health impact from vapor intrusion or direct contact pathways and potential leaching of chemicals from the unsaturated zone and subsequent impact on groundwater. For the purposes of this order, the unsaturated zone is defined as the zone above the water table's lowest historical or seasonal levels, as documented or anticipated. Soil cleanup standards were calculated using a human health risk assessment and groundwater flow and transport model, and compared to the ESLs for direct contact, vapor intrusion, and soil leaching. TCE and PCE are the primary soil contaminants at the Site based on frequency of detection, concentration levels, and toxicity. The soil cleanup standards for TCE and PCE are based on the ESL for soil leaching or a site-specific risk assessment; whichever concentration was the most stringent was used as the final cleanup standard. Specifically, for PCE, the result of the site-specific risk assessment was used as the final cleanup standard, and for TCE, the ESL considering soil leaching to groundwater was considered. Because all contaminants are co-located, achieving cleanup goals for TCE and PCE will also achieve cleanup requirements for other constituents. Cleanup to the soil cleanup standards will protect beneficial uses of groundwater and will result in an acceptable risk to humans.

13. **Future Changes to Cleanup Standards**: The goal of this remedial action is to restore the beneficial uses of groundwater underlying and adjacent to the Site. Results from other sites suggest that full restoration of beneficial uses to groundwater as a result of active remediation at this Site may not be possible. If full restoration of beneficial uses is not technologically or economically achievable within a reasonable period of time, then the discharger may request modification to the cleanup standards or establishment of a containment zone, a limited groundwater pollution zone where water quality objectives are exceeded. Conversely, if new technical information obtained from pilot studies or full-scale remediation at the Site indicates that remediation action levels or cleanup standards can be surpassed, the Board may decide that further cleanup actions should be taken.

14. **Reuse or Disposal of Extracted Groundwater**: Board Resolution No. 88-160 allows discharges of extracted, treated groundwater from site cleanups to surface waters only if it has been demonstrated that neither reclamation nor discharge to the sanitary sewer is technically and economically feasible.

15. **Basis for 13304 Order**: The discharger has 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.

16. **Cost Recovery**: Pursuant to California Water Code Section 13304, the discharger is 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.

17. **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.

18. **Notification**: The Board has notified the discharger and all interested agencies and persons of its intent under California Water Code Section 13304 to prescribe site cleanup requirements for the discharge, and has provided them with an opportunity to submit their written comments.

19. **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 discharger (or its agents, successors, or assigns) shall clean up 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. CLEANUP PLAN, CLEANUP STANDARDS, AND REMEDIATION ACTION LEVELS

1. **Implement Cleanup Plan**: The discharger shall implement the cleanup plan described in finding 11.

2. **Soil and Groundwater Cleanup Standards**: The following soil cleanup standards shall be met throughout the unsaturated zone at the Site. For the

purposes of this Order, the unsaturated zone is defined as the zone above the water table's lowest historical or seasonal levels, as documented or anticipated. The cleanup levels shall be confirmed with confirmatory soil samples prior to curtailment of the plans described in Finding 11 (Remedial Action Plan).

Constituent [1]	Soil Cleanup Standard (mg/kg)
Tetrachloroethene (PCE)	0.36 [2]
Trichloroethene (TCE)	0.46 [3]

Notes:
[1] TCE and PCE are the primary soil contaminants at the Site, based on frequency of detection, concentration levels, and toxicity. Because all soil contaminants are co-located at the Site, achieving cleanup goals for TCE and PCE will also achieve cleanup goals for other contaminants.
[2] Based on a site-specific risk assessment, (direct contact and vapor intrusion).
[3] Based on soil leaching to groundwater.

The following groundwater cleanup standards shall be met throughout the area of impacted Newark Aquifer groundwater, and in all Newark Aquifer groundwater monitoring wells identified in the Self-Monitoring Program:

Constituent [1]	Newark Aquifer Groundwater Cleanup Standard [2] (µg/l)
1,1-dichloroethane	5
1,1-dichloroethene	6
cis-1,2-dichloroethene	6
Tetrachloroethene (PCE)	5
Trichloroethene (TCE)	5
1,1,2-trichlorotrifluoroethane	1,200
Vinyl chloride	0.5

Notes:
[1] Selected constituents listed above based on frequency of detection, concentration levels and toxicity.
[2] The most stringent drinking water criteria - California Maximum Contaminant Levels (MCLs) - are proposed as the final cleanup standards for all VOCs in the Newark Aquifer.

3. **Shallow Zone Groundwater Remediation Action Levels:** Prior to curtailment of active remediation, the following SGZ groundwater remediation action levels shall be met throughout the area of impacted shallow groundwater, in all shallow zone monitoring wells identified in the Self-Monitoring Program:

Constituent [1]	SGZ Remediation Action Level [2] (µg/l)
1,1-dichloroethane	1,000
1,1-dichloroethene	6,300
cis-1,2-dichloroethene	6,200
Tetrachloroethene (PCE)	120
Trichloroethene (TCE)	530
Vinyl chloride	4

Notes:
[1] Selected constituents listed above based on frequency of detection, concentration levels and toxicity.
[2] Criteria based on residential vapor intrusion ESLs for high permeability soils.

C. TASKS

1. IN SITU CHEMICAL OXIDATION

a. WORKPLAN FOR IMPLEMENTATION OF IN SITU CHEMICAL OXIDATION PILOT TEST

COMPLIANCE DATE: February 15, 2007

Submit a workplan acceptable to the Executive Officer for the implementation of an in situ chemical oxidation pilot test in the offsite plume area. The workplan shall describe all significant steps and provide an implementation schedule.

b. COMPLETION OF IN SITU CHEMICAL OXIDATION PILOT TEST AND SUBMITTAL OF WORKPLAN FOR FULL SCALE REMEDIAL ACTION TO CLEAN UP SHALLOW GROUNDWATER

COMPLIANCE DATE: January 18, 2008

Submit a technical report acceptable to the Executive Officer presenting the results of the pilot plume treatment and documenting completion of necessary tasks identified in the Task 1a. The report shall include a workplan for full-scale remediation of the shallow zone groundwater at the Site with the exception of the source areas included as part of the source zone treatment under Task 2.

c. **IMPLEMENTATION AND ASSESSMENT OF FULL SCALE REMEDIAL MEASURES TO CLEAN UP CONTAMINATION IN SHALLOW GROUNDWATER ZONE**

COMPLIANCE DATE: June 19, 2009

Submit a technical report acceptable to the Executive Officer documenting completion of the implemented steps identified in the Task 1b report, including: the results of the full-scale remediation for the SGZ at the Site; any modifications to the approved full-scale remediation plan; and an assessment on the effectiveness of the remediation action to meet the SGZ remediation action levels and cleanup standards. At a minimum, the report shall (1) evaluate the effectiveness of the implemented in situ chemical oxidation following one year of active remediation, and (2) propose supplemental action, if required, to meet the action levels and cleanup standards. Conversely, if the results of the full-scale remediation indicate that the remediation action levels for the SGZ have been met, present an assessment of conducting additional remediation to further reduce contaminant concentrations in the SGZ, and propose revised remediation action levels, as appropriate.

2. **IN SITU THERMAL TREATMENT**

a. **WORKPLAN FOR IMPLEMENTATION OF IN SITU THERMAL TREATMENT PILOT TEST**

COMPLIANCE DATE: August 31, 2007

Submit a workplan acceptable to the Executive Officer for the implementation of an in situ thermal treatment pilot test for cleaning up of the source zone in the Former Tank Farm Area that is presently accessible. The workplan shall describe all significant steps and provide an implementation schedule.

b. **COMPLETION OF IN SITU THERMAL TREATMENT PILOT TEST AND SUBMITTAL OF WORKPLAN FOR FULL SCALE REMEDIAL ACTION TO CLEAN UP SOURCE ZONE SOIL AND GROUNDWATER IN VICINITY OF FORMER TANK FARM AREA**

COMPLIANCE DATE: September 26, 2008

Submit a technical report acceptable to the Executive Officer documenting completion of necessary tasks identified in the Task 2a workplan. The report shall present the results of the pilot source treatment and a work plan for full-scale remediation of the source zone soil and groundwater in the vicinity of the Former Tank Farm Area of the Site.

c. **IMPLEMENTATION AND ASSESSMENT OF FULL SCALE REMEDIAL MEASURES TO CLEANUP SOURCE ZONE CONTAMINATION IN SOIL AND GROUNDWATER**

COMPLIANCE DATE: March 25, 2011

Submit a technical report acceptable to the Executive Officer documenting completion of the implemented steps identified in the Task 2b report, including: the results of the full-scale remediation for the source zone in the vicinity of the Former Tank Farm area at the Site; any modifications to the approved full-scale remediation plan; and an assessment on the effectiveness of the remediation action to meet the SGZ remediation action levels and cleanup standards. At a minimum, the report shall (1) evaluate the effectiveness of the implemented in situ thermal treatment following one year of active remediation, and (2) propose supplemental action, if required, to meet the action levels and cleanup standards. Conversely, if the results of the full-scale remediation indicate that the remediation action levels have been met, present an assessment of conducting additional remediation to further reduce contaminant concentrations, and propose revised remediation action levels, as appropriate.

3. **PROPOSED INSTITUTIONAL CONSTRAINTS**

COMPLIANCE DATE: June 15, 2007

Submit a technical report acceptable to the Executive Officer documenting procedures to be used by the discharger, and future owners and associated occupants of the Site, to prevent or minimize human exposure to soil and groundwater contamination prior to meeting cleanup standards, and after meeting cleanup standards, if cleanup will not attain unrestricted use levels. Such procedures shall include a deed restriction prohibiting (1) the excavation of soils, (2) the use of shallow zone groundwater and Newark Aquifer groundwater as a source of drinking water, and (3) residential land uses.

4. **IMPLEMENTATION OF INSTITUTIONAL CONSTRAINTS**

COMPLIANCE DATE: 120 days after Executive Officer approval of Task 3

Submit a technical report acceptable to the Executive Officer documenting that the proposed institutional constraints have been implemented.

5. **WORKPLAN FOR REMEDIATION VIA EXCAVATION OF SHALLOW SOIL IN THE VICINITY OF FORMER PROCESS BUILDING AND FORMER MIXING ROOM**

COMPLIANCE DATE: Prior to site redevelopment

Submit a workplan acceptable to the Executive Officer for excavation of impacted shallow soil in the vicinity of the Former Process Building and the Former Mixing Room at such time as the Site is redeveloped.

6. **EXCAVATION OF SHALLOW SOIL IN THE VICINITY OF FORMER PROCESS BUILDING AND FORMER MIXING ROOM**

COMPLIANCE DATE: 60 days following completion of excavation

Submit a technical report acceptable to the Executive Officer documenting completion of the steps identified in the Task 5 report. The report shall present an excavation completion report to document the field excavation activities, confirmation sampling results and post excavation risk assessment to demonstrate the effectiveness of the remedial action for the impacted shallow soil in the vicinity of the Former Process Building and the Former Mixing Room.

7. **FIVE-YEAR STATUS REPORT**

COMPLIANCE DATE: January 15, 2012 and every five years thereafter

Submit a technical report acceptable to the Executive Officer evaluating the effectiveness of the approved cleanup plan. The report should include:

a. Summary of effectiveness in controlling contaminant migration and protecting human health and the environment.
b. Comparison of contaminant concentration trends with the corresponding remediation action levels and cleanup standards.
c. Comparison of anticipated versus actual costs of cleanup activities.
d. Performance data (e.g. groundwater volume extracted, chemical mass removed, mass removed per million gallons extracted).
e. Cost effectiveness data (e.g. cost per pound of contaminant removed).
f. Summary of additional investigations (including results) and significant modifications to remediation systems.
g. Additional remedial actions proposed to meet the corresponding remediation action levels and cleanup standards (if applicable) including time schedule. Conversely, if the results of the full-scale remediation indicate that the remediation action levels have been met, present an assessment of conducting additional remediation to further reduce contaminant concentrations, and propose revised remediation action levels, if needed.

If cleanup standards have not been met and are not projected to be met within a reasonable time, the report should assess the technical practicability of meeting cleanup standards and may propose an alternative cleanup strategy.

8. **PROPOSED CURTAILMENT**

COMPLIANCE DATE: 60 Days prior to proposed curtailment

Submit a technical report acceptable to the Executive Officer containing a proposal to curtail remediation. Curtailment includes system closure (e.g. well destruction), system suspension (e.g. cease extraction but well retained), and significant system modification (e.g. major reduction in extraction rates, closure of individual extraction wells within extraction network). The report should include the rationale for curtailment. Proposals for final closure should demonstrate that remediation action levels and cleanup standards have been met, contaminant concentrations are stable, and contaminant migration potential is minimal. If a request for curtailment is made prior to achieving all remedial action goals, the curtailment report must justify why further cleanup is not economically and technically feasible with the currently adopted remedial alternative.

9. **IMPLEMENTATION OF CURTAILMENT**

COMPLIANCE DATE: 60 Days after Executive Officer approval of Task 8 workplan

Submit a technical report acceptable to the Executive Officer documenting completion of the tasks identified in the Task 8 workplan.

10. **WORKPLAN FOR ALTERNATE CLEANUP PLAN**

COMPLIANCE DATE: 90 Days after requested by Executive Officer

Submit a workplan acceptable to the Executive Officer for implementation of an alternate cleanup plan in the event that the remedial activities specified in Tasks 1, 2, or 6 do not achieve cleanup standards.

11. **IMPLEMENTATION OF ALTERNATIVE CLEANUP METHOD**

COMPLIANCE DATE: 180 Days after Executive Officer approval of Task 10 workplan.

Submit a technical report acceptable to the Executive Officer documenting completion of necessary tasks identified in the Task 10 workplan.

12. **EVALUATION OF NEW HEALTH CRITERIA**

COMPLIANCE DATE: 90 days after request by Executive Officer

Submit a technical report acceptable to the Executive Officer evaluating the effect on the approved cleanup plan of revising one or more cleanup standards in response to revision of drinking water standards, maximum contaminant levels, or other health-based criteria.

13. **EVALUATION OF NEW TECHNICAL INFORMATION**

COMPLIANCE DATE: 90 days after request by Executive Officer

Submit a technical report acceptable to the Executive Officer evaluating new technical information bearing on the approved cleanup plan and cleanup standards for this site. In the case of a new cleanup technology, the report should evaluate the technology using the same criteria used in the feasibility study. Such technical reports shall not be requested unless the Executive Officer determines that the new information is reasonably likely to warrant a revision in the approved cleanup plan or cleanup standards.

14. **REVISED RISK ASSESSMENT**

COMPLIANCE DATE: 90 days after request by Executive Officer

Submit a revised risk assessment acceptable to the Executive Officer in the event that ACWD decides to proceed with operation of any water well screened in the Newark Aquifer and located less than 2 miles from the Honeywell Site, including but not limited to the SBP well Site A, Site B, or Site C, as detailed in Finding 12, Groundwater Management.

15. **DELAYED COMPLIANCE**

If the discharger is delayed, interrupted, or prevented from meeting one or more of the completion dates specified for the above tasks, the discharger shall promptly notify the Executive Officer and the Water Board may consider revision to this Order.

D. **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 Operation & Maintenance**: The discharger shall maintain in good working order and operate as efficiently as possible any facility or control system installed to achieve compliance with the requirements of this Order.

3. **Cost Recovery**: The discharger shall be liable, pursuant to California Water Code Section 13304, to the Water Board for all reasonable costs actually incurred

by the Water 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 discharger 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 discharger shall permit the Water 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 discharger 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 technical documents 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 Water Board using approved EPA methods and appropriate laboratory detection limits for the type of analysis to be performed. All laboratories shall maintain quality assurance/quality control (QA/QC) records for Water 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 Newark Fire Department (Hazardous Materials Division)
   b. Alameda County Water District (Groundwater Resources Division)
   c. Department of Toxic Substances Control (Corrective Action Branch)

The Executive Officer may modify this distribution list as needed.

9. **Reporting of Changed Owner or Operator**: The discharger 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 discharger shall report such discharge to the Water Board by calling (510) 622-2300 during regular office hours (Monday through Friday, 8:00 to 5:00). A written report shall be filed with the Water 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 supercedes and rescinds Orders No. 98-108 and R2-2005-0004.

12. **Periodic SCR Review**: The Water Board will review this Order periodically and may revise it when necessary.

I, Bruce H. Wolfe, 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 January 23, 2007.

Bruce H. Wolfe
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 13268 OR 13350, OR REFERRAL TO THE ATTORNEY GENERAL FOR INJUNCTIVE RELIEF OR CIVIL OR CRIMINAL LIABILITY

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Attachments: Self-Monitoring Program
Site Location Map (Figure 1)
Site Plan (Figure 2)

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SELF-MONITORING PROGRAM FOR:

HONEYWELL INTERNATIONAL INC.

for the property located at

8333 ENTERPRISE DRIVE
NEWARK, ALAMEDA COUNTY

1. **Authority and Purpose**: The Water 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 Water Board Order No. R2-2007-0005 (Site Cleanup Requirements).

2. **Monitoring**: The discharger shall measure groundwater elevations semi-annually in all monitoring wells, and shall collect and analyze representative groundwater samples according to the Table on the following page.

   The discharger shall sample any new monitoring or extraction wells semi-annually thereafter and analyze groundwater samples for the same constituents as shown in the following table. The discharger may propose changes in the table; any proposed changes are subject to Executive Officer approval.

3. **Semi-Annual Monitoring Reports**: The discharger shall submit semi-annual monitoring reports to the Water Board no later than 30 days following the end of the semi-annual period (e.g. report for **July through December period due January 31 and January through June period due July 31**). The first semi-annual monitoring report shall be due on July 31, 2007. 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 discharger's 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 will be collected semiannually and 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**: Laboratory analytical methods shall use low detection limits (less than or equal to cleanup standards), unless sample dilution is necessary.

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, detection limits obtained for each reported constituent, and a summary of QA/QC data. 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).

Well No.	Water Bearing Zone	Remarks	Sampling Frequency	Analyses by EPA Method
MW-1	Shallow	Area D	Semiannual	VOCs by 8260B
MW-2	Shallow	Southeastern cross-gradient of Area D	Annual	VOCs by 8260B
MW-3	Shallow	Northwestern cross-gradient of Area D	Semiannual	VOCs by 8260B
MW-4	Shallow	Down/cross-gradient of Area D	Annual	VOCs by 8260B
MW-6	Shallow	Area B	Annual	VOCs by 8260B
MW-7	Shallow	Northern cross-gradient of Areas A, B, & C; adjacent to residence	Semiannual	VOCs by 8260B
MW-8	Shallow	Northern cross-gradient of Area B	Annual	VOCs by 8260B
MW-9	Shallow	Downgradient of Area B	Semiannual	VOCs by 8260B, MNA
MW-10	Shallow	Southern cross-gradient of Area A	Annual	VOCs by 8260B
MW-11	Shallow	Immediately upgradient of Area C; adjacent to residence	Semiannual	VOCs by 8260B
MW-12	Shallow	Immediately downgradient of Area C	Semiannual	VOCs by 8260B, MNA
MW-13	Shallow	Downgradient of Area E	Semiannual	VOCs by 8260B, MNA
MW-14	Shallow	Western cross-gradient Area D	Semiannual	VOCs by 8260B
MW-15	Shallow	Southwestern cross-gradient Area D	Annual	VOCs by 8260B
MW-16	Shallow	Cross-gradient of site to the south	Annual	VOCs by 8260B
MW-17	Shallow	Upgradient of Area C; adjacent to residence	Semiannual	VOCs by 8260B
MW-18	Shallow	Upgradient of Area D; adjacent to residence	Semiannual	VOCs by 8260B
MW-19	Shallow	Immediately downgradient of Area C	Annual	VOCs by 8260B
MW-OS1	Shallow	Cross-gradient of site to the north; adjacent to residence	Semiannual	VOCs by 8260B
MW-OS2	Shallow	Cross-gradient plume margin, Juniper Avenue	Semiannual	VOCs by 8260B
MW-OS3	Shallow	Near-field downgradient plume centerline	Semiannual	VOCs by 8260B, MNA
MW-OS4	Shallow	Far-field downgradient plume centerline	Semiannual	VOCs by 8260B
MW-OS5	Shallow	Far-field downgradient plume margin	Semiannual	VOCs by 8260B, MNA
MW-OS6	Shallow	Southern cross-gradient plume margin, Willow Street	Semiannual	VOCs by 8260B
MW-OS7A	Shallow	Northern cross-gradient plume margin, Willow Street	Annual	VOCs by 8260B
MW-OS8	Shallow	Far-field downgradient plume centerline	Semiannual	VOCs by 8260B, MNA
MW-OS9	Shallow	Near-field downgradient plume centerline	Semiannual	VOCs by 8260B
MW-OS10A	Shallow	Near-field downgradient plume centerline	Semiannual	VOCs by 8260B, MNA
MW-OS11A	Shallow	Upgradient plume margin, Aleppo Drive	Semiannual	VOCs by 8260B
MW-OS12	Shallow	Downgradient sentinel well	Semiannual	VOCs by 8260B
MW-OS13	Shallow	Downgradient sentinel well	Semiannual	VOCs by 8260B

Well No.	Water Bearing Zone	Remarks	Sampling Frequency	Analyses by EPA Method
MW-OS14	Shallow	Upgradient background well	Annual	VOCs by 8260B
MW-OS15	Shallow	Cross-gradient plume margin, Chestnut Street; adjacent to residence	Semiannual	VOCs by 8260B
MW-OS16	Shallow	Cross-gradient plume margin, Juniper Avenue	Annual	VOCs by 8260B
MW-OS17	Shallow	Upgradient plume margin, Aleppo Drive	Annual	VOCs by 8260B, MNA
MW-OS18	Shallow	Far-field downgradient plume margin	Semiannual	VOCs by 8260B
MW-OS19	Shallow	Far-field downgradient plume centerline	Semiannual	VOCs by 8260B
MW-NEW1	Newark	North of Area B	Semiannual	VOCs by 8260B
MW-NEW2	Newark	Area C	Semiannual	VOCs by 8260B, MNA
MW-NEW3	Newark	Area D	Semiannual	VOCs by 8260B
MW-NEW4	Newark	Downgradient of Area D	Semiannual	VOCs by 8260B
MW-NEW5	Newark	Upgradient background well, Aleppo Drive	Annual	VOCs by 8260B, MNA
MW-NEW6	Newark	Far-field downgradient plume margin	Annual	VOCs by 8260B
MW-NEW7	Newark	Far-field downgradient plume centerline	Semiannual	VOCs by 8260B, MNA
MW-NEW8	Newark	Downgradient plume margin	Semiannual	VOCs by 8260B
E-126	Newark	ACWD well, near-field downgradient plume centerline	Semiannual	VOCs by 8260B
SW-W	Surface	Western end of Stormwater Retention Basin, Prologis	Annual	VOCs by 8260B
SW-E	Surface	Eastern end of Stormwater Retention Basin, Prologis	Semiannual	VOCs by 8260B
SW-M	Surface	Middle of Stormwater Retention Basin, Prologis	Annual	VOCs by 8260B

Notes:

1) All samples will be analyzed in the field for pH, dissolved oxygen (DO), electrical conductance (EC), temperature, oxidation-reduction potential (ORP), and turbidity.

2) All wells specified for monitored natural attenuation (MNA) analysis will be analyzed annually for the following parameters:
   - Ferrous iron, manganese, carbon dioxide, and sulfide by Hach DR/850
   - Nitrate-nitrite by EPA Method 353.2
   - Sulfate by EPA Method 300.0
   - Alkalinity by EPA Method 310.1
   - Total dissolved solids by EPA Method 160.1
   - Total organic carbon by EPA Method 415.1
   - Methane, ethane, and ethene by RSK SOP 175
   - Field measurement of pH, dissolved oxygen (DO), electrical conductance (EC), temperature, oxidation-reduction potential (ORP), and turbidity for all wells as part of the low-flow sampling.

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 period. 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 period. Historical mass removal results shall be included in the annual report.

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 period.

4. **Violation Reports**: If the discharger violates requirements in the Site Cleanup Requirements, then the discharger shall notify the Water Board office by telephone as soon as practicable once the discharger has knowledge of the violation. Water Board staff may, depending on violation severity, require the discharger to submit a separate technical report on the violation within five working days of telephone notification.

5. **Other Reports**: The discharger shall notify the Water Board in writing 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 discharger or his/her agent shall retain data generated for the above reports, including lab results and QA/QC data, for a minimum of six years after origination and shall make them available to the Water Board upon request.

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 discharger. 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, Bruce H. Wolfe, Executive Officer, hereby certify that this Self-Monitoring Plan was adopted by the Water Board on January 23, 2007.

Bruce H. Wolfe
Executive Officer

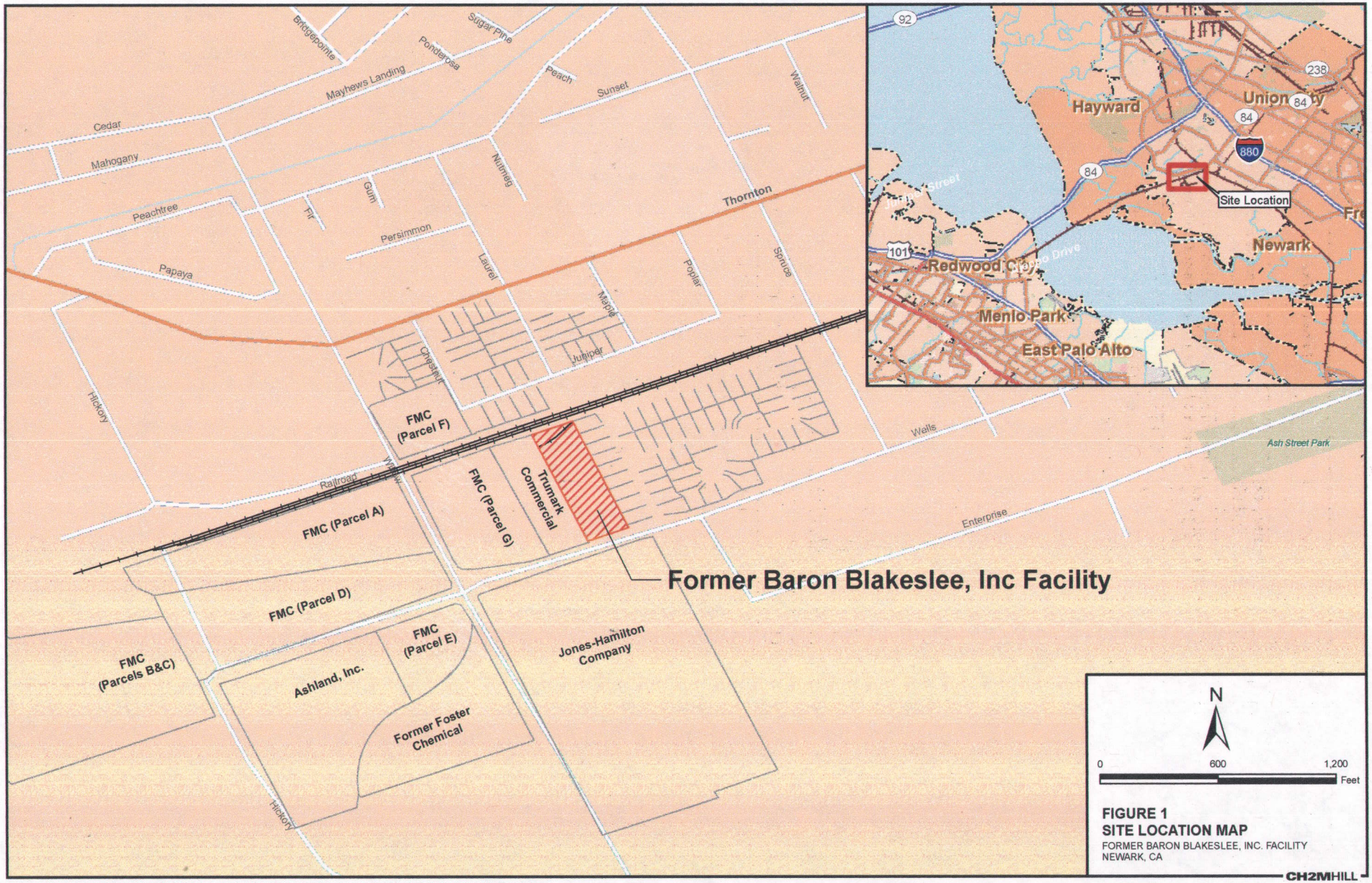

FIGURE 1
SITE LOCATION MAP
FORMER BARON BLAKESLEE, INC. FACILITY
NEWARK, CA

CH2MHILL

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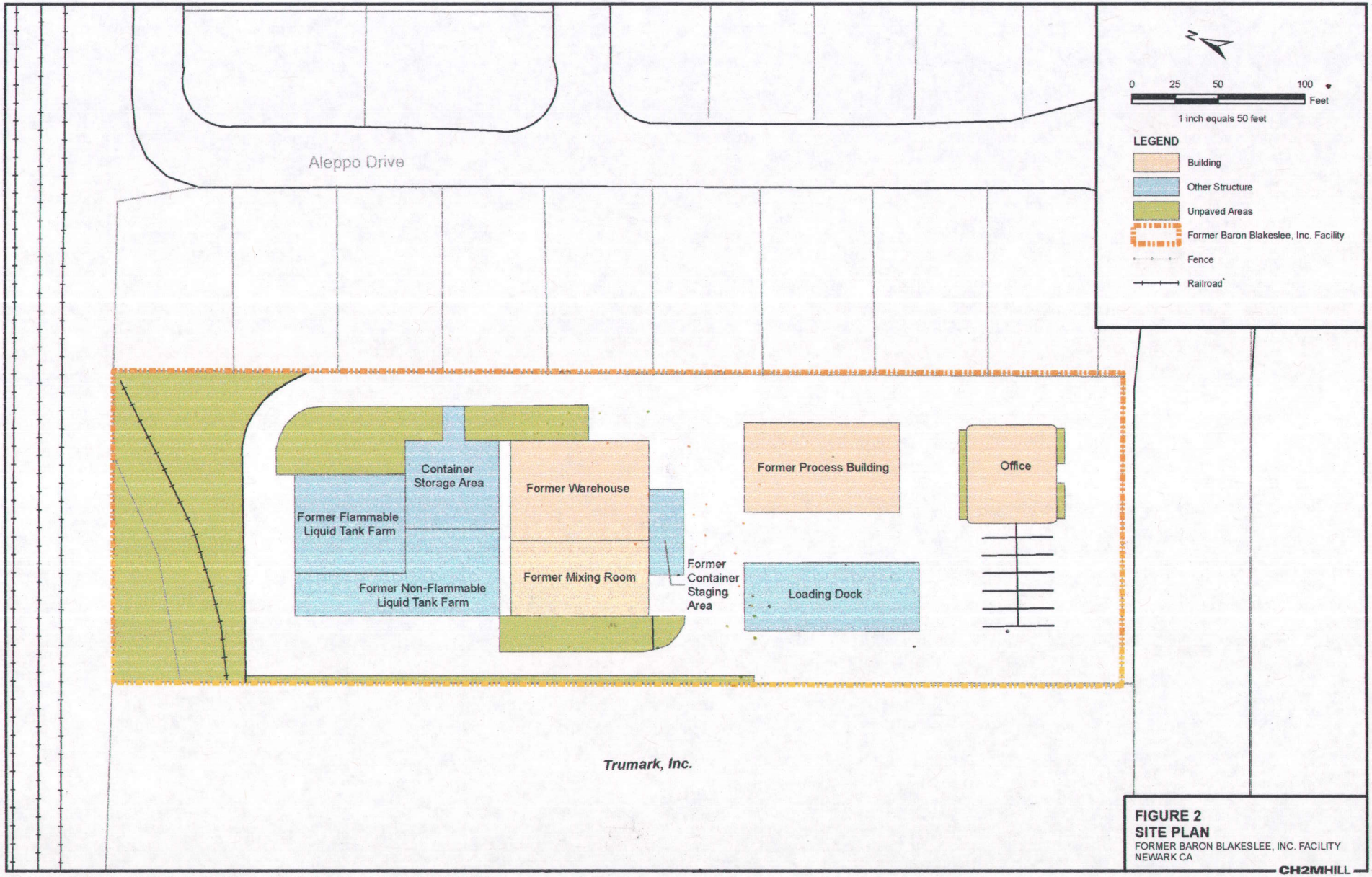

FIGURE 2
SITE PLAN
FORMER BARON BLAKESLEE, INC. FACILITY
NEWARK CA

CH2MHILL

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