ADDENDUM TO
SITE-SPECIFIC RISK MANAGEMENT PLAN
FOR EMERYSTATION II (EMERYSTATION NORTH)

Former Westinghouse Electric Facility

5815 Peladeau Street

Emeryville, California

SIC 5560

March 17, 2000

Prepared for

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1.0 INTRODUCTION

The Comprehensive Site Closure Report for the former Westinghouse Electric Corporation Facility, dated September 15, 1998, was prepared by SOMA Environmental Engineering, Inc. (SOMA) to ensure that the following elements have been adequately addressed:

1. Has the Site been adequately investigated?
2. Have all contaminant sources been removed or stabilized?
3. Is the groundwater plume stable?
4. Does the Site pose any current or future threats to public health?
5. Does the Site pose any current or future threats to the environment?
6. Does the Site pose any current or future threat to water resources?
7. Is a risk management plan in place?

Section 7.0 of the Comprehensive Site Closure Report presents the overall Site Risk Management Plan, which addresses precautions that will be taken to mitigate risks to human health and the environment from residual soil and groundwater contaminants during Site construction activities. The following Addendum presents the Site-specific Risk Management Plan for all construction activities during Phase II development of EmeryStation, also known as EmeryStation North. Precautions to be taken during construction will include the following:

- Protect construction workers who may directly contact residual contaminants in soil or groundwater (e.g., during Site preparation, grading, foundation construction, or landscape installation) through implementation of the Site Health and Safety Plan and associated Addenda (Attachment 1);
- Implement construction impact mitigation measures, including control of dust generation at the Site, decontamination of equipment, prevention of sediment from leaving the Site in storm water runoff, and management of groundwater extracted from excavations;

- Implement procedures to protect monitoring wells remaining on the Site, if any;
- Implement construction methods that minimize the potential for creating conduits to deeper groundwater zones when driving piles; and
- Establish procedures to characterize and manage Site soil;
- Establish procedure to follow if unusual site conditions should be encountered.

1.2 Description of the EmeryStation II Site Development Plan

EmeryStation North will provide 170,000 square feet of office space in a five-story, Class A office building with associated above ground parking, as depicted in Figure 1. The building foundation will be constructed on production piles capped with steel reinforced concrete blocks (pile caps). Pile locations will be pre-drilled to depths between 8- and 15-feet below the ground surface (bgs) in order to facilitate driving. Excavated soil will be managed according to the procedures presented in Section 6. Each pile is 14 inches in diameter and made of pre-stressed concrete. The piles are designed as "friction piles" that generate their strength through the friction of surrounding soil against the surface of the pile. As Figure-2 shows, over 240 individual piles and 60 pile caps have been installed at the site. The pile driving activities were completed at the end of the first week of January 2000.

2.0 WORKER HEALTH AND SAFETY PLAN

During the early stage of the site development, SOMA was retained by WEBCOR Builders to develop and implement the Health and Safety Plan for the Former Westinghouse Electric Corporation Facility, Emeryville, California, dated April 6, 1998. This health and safety plan addresses all aspects of construction-related activities associated with the development of the former Westinghouse Electric Corporation Facility. Development and associated construction activities will occur in a phased approach. Phase-specific health and safety issues and procedures will be

incorporated into the site-wide health and safety plan through an addendum for each particular phase of construction. For example, during the development of EmeryStation I, two 18,000-gallon underground storage tanks (USTs) were discovered during construction activities and Addendum A (Health and Safety Plan for Underground Storage Tank Activities) was prepared to protect workers during UST removal activities.

Addendum B, Excavation and Construction Activities at 5815 Peladeau Street, was prepared on February 25, 2000 to address all construction-related activities associated with PCB-contaminated soil in the area of EmeryStation North. The Site-wide Health and Safety Plan, Addendum A and Addendum B are included in Attachment 1. The following summarizes relevant worker health and safety issues and precautions for construction activities at EmeryStation North.

2.1 Recommendations for Site Workers

The northern portion of EmeryStation North which contained elevated levels of PCBs, was remediated by CBS in 1996, see Figure-2. The remediation included excavation and removal of PCB-impacted soils up to 6 feet below ground surface. However, in certain areas at deeper depths elevated levels of PCBs (up to 361 ppm) was left behind due to the lack of exposure pathways and recommendations of the human health risk assessment conducted by SOMA (1996). In the area where EmeryStation North activities will occur, current soil investigation by SOMA showed PCB levels ranging from 0.1 mg/kg to 60 mg/kg between the surface and 4-feet bgs. Therefore, in the area from column lines 1 through 11 (Figure 2), residual PCBs in soil may be encountered at depths below 3-feet bgs. Most likely in one specific location (column line 1-J), residual PCBs in excess of 50 mg/kg may be encountered. Consequently, workers should be informed prior to site work of the potential hazards associated with exposure to site-related PCBs in soil. Continuous air monitoring for total suspended particulate and PCBs will establish the level of actual worker exposure to these

compounds during construction/excavation operations. If air monitoring indicates that more stringent personal protective equipment (PPE) is required, all construction/excavation operations will stop until OSHA 40-hour trained workers are available to continue construction activities. This will only occur if engineering controls cannot be feasibly or adequately implemented to the levels presented in Table-1 of the Site Health and Safety Plan. Additional recommendations will be made onsite, as necessary by the site safety officer.

2.2 Duties of the Site Safety Officer

The Site Safety Officer (SSO) has the primary responsibility for on-site implementation of the Health and Safety Plan (HSP). Additional responsibilities include, but are not limited to:

- Verify that contractor/subcontractor personnel are aware of hazardous materials protection procedures and have been instructed in proper work practices and emergency procedures;

- Verify that appropriate PPE is available and is properly used by contractor/subcontractor personnel;

- Monitor contractor/subcontractor activities and ensure that required safe work practices are followed;

- Conduct daily safety meetings prior to commencing operations. Meetings will cover:
    1. Expected Site conditions
    2. Daily activities
    3. Safety deficiencies noted previously
    4. Changes in safety and/or emergency procedures

Mr. Philip Bumala, SOMA's certified industrial hygienist (CIH), will act as the Site Safety Officer (SSO) and will conduct air monitoring during excavation activities. The SSO will conduct a pre-construction health and safety meeting prior to commencing excavation operations, and will work with the on-site staff to implement exposure prevention measures.

2.3 Job Hazard Analysis

The following sections describe the potential hazards associated with construction/excavation activities at the EmeryStation North Area.

2.3.1 Chemical Hazards

Based on the previous site characterization activities, PCBs and VOCs were detected in soil at the north end of the property. Based on the results of the Baseline Human Health Risk Assessment for the Former Westinghouse Electric Corporation (SOMA 1996), VOCs in soil and groundwater were not considered to pose a threat to human health, even under the most conservative exposure scenarios evaluated. Therefore, these compounds will not be discussed further in this section. The following presents a discussion of the potential hazards associated with PCBs and how a worker might come in contact with these contaminants.

Polychlorinated Biphenyls (PCBs)

PCBs are a group of synthetic organic chemicals that contain 209 individual compounds with varying health effects. PCBs were used industrially as coolants and lubricants in transformers, capacitors and other electrical equipment. Based on evidence of their accumulation in the environment and their harmful health effects, PCB manufacture was discontinued in 1977. Studies in the workplace suggest that exposure to

PCBs may cause skin irritation (e.g., acne and rashes), and irritation of the nose and lungs. Lifetime studies in animals resulted in toxicity to the liver, stomach, thyroid gland and liver cancer. Studies on workers who had long-term exposure to PCBs provided no evidence that PCBs cause cancer in humans.

The most likely routes of exposure to PCBs at the Emeryville Facility during construction/excavation activities are through dermal contact with soil and dermal contact with water during dewatering and inhalation of dust. Since these activities will be of a short duration, the most likely potential hazards are irritation of the skin, nose and throat. For those areas where PCB exposures might occur, such as the EmeryStation North, appropriate PPE and air monitoring will be implemented to reduce or eliminate any possible exposures.

2.3.2 Physical Hazards

The potential physical hazards associated with work at the EmeryStation North Area would be those that are common to all construction/excavation projects, including noise hazards, electrical hazards and mechanical hazards. These physical hazards, along with potential hazards associated with fire causing agents, can be reduced or eliminated through implementation of safe working practices.

2.4 Hazard Prevention Procedures

The following summarizes the general procedures to be followed during construction/excavation activities at the EmeryStation North Area in order to minimize or mitigate potential chemical hazards, physical hazards, hypothermia, fire and biological hazards.

2.4.1 Chemical Hazards

Procedures to mitigate potential chemical hazards are listed below.

Dust Control: Dust control measures will be implemented when necessary, through application of water over the areas where excavation, stockpiling, and loading operations are in progress. In addition, soil that will be stockpiled for an extended period of time will be covered with plastic to minimize airborne suspension of dust.

Inhalation: General safe work practices will be employed to minimize contact with potentially contaminated soil. If significant contamination is encountered (e.g., above the permissible exposure limits), the SSO will stop work and will require additional worker protection measures to be implemented.

Dermal Contact: Potential chemical absorption through the skin will be prevented by using Level D protection, as described in Section 6.0 of the Site Health and Safety Plan. If significant contamination is encountered, the SSO will require Level C or greater protection. Skin will be washed as frequently as possible, at a minimum, before eating and before leaving for the day. In the event that dermal exposure occurs, the skin must be decontaminated immediately. Should the conditions warrant, immediate medical attention would be required.

Ingestion: Accidental ingestion will be prevented by prohibiting eating, drinking, smoking or application of cosmetics in established work zones. Work zones will be established as described in more detail in Section 7.0 of the Site Health and Safety Plan. Recommended decontamination procedures will be established as described in more detail in Section 8.0 of the Site Health and Safety Plan.

Injection: Chemical exposure through accidental injection or puncturing of the skin can be prevented by use of protective clothing and gloves as necessary and by observing safe work practices.

2.4.2 Physical Hazards

Procedures to mitigate potential physical hazards are listed below.

Acoustical Hazards: Hearing protection, such as ear muffs and ear plugs, will be worn because of potential noisy activities, such as operation of heavy equipment.

Electrical Hazards: If the work becomes unavoidably close to buried or overhead lines, the power will be turned off with circuit breakers locked and tagged. All electrical equipment must be properly grounded. Workers must not stand in moisture, water or rain when operating electrical equipment. Workers shall be familiar with specific operating instructions for each piece of equipment.

Mechanical Hazards: All surfaces that a person could reasonably contact should be free of splinters, nails or protrusions that might cause injury. All contractor/subcontractor personnel and equipment shall be kept out of traffic lanes and access ways. Workers shall not stand near excavators/loaders, trucks or other earthmoving equipment. Workers/ operators shall verify that all equipment is in good condition. Workers must be mindful of on-Site equipment at all times.

2.4.3 Hypothermia

When working in cold conditions, workers should:

- Wear layers of clothing made of tightly woven fibers that trap warm air against the body.

- Wear a head covering to prevent body heat from escaping into the cold air.
- Protect other areas of the body, such as fingers, toes, ears and nose.

In the event of hypothermia, warm the body gradually by wrapping in blankets or putting on dry clothing.

2.4.4 Fire

Workers and visitors should refrain from smoking and other fire-causing activities through out the project Site.

2.4.5 Biological Hazards

Workers should refrain from sitting on or near piles of debris and vegetation that might house vermin. Workers and visitors should also refrain from approaching animals that wander onto the project Site.

2.5 Personal Protective Equipment

For construction/excavation activities associated with the EmeryStation North Area, it is anticipated that Level-D protection will be adequate, at this time. Based on air monitoring results, additional worker protection may be required by the SSO. The various levels of personal protection are summarized in detail in Section 6.0 of the Site Health and Safety Plan.

2.6 Work Zones and Site Security

The Site work zones are security measures intended to prevent the transfer of contaminants off-Site by workers, visitors and equipment used in project operations. These measures are also designed to prevent unprotected workers, visitors and the general public from entering contaminated areas. Detailed

information on Site-specific work zones and security is presented in Section 7.0 of the Site Health and Safety Plan.

2.7 Decontamination Procedures

Decontamination procedures are established to prevent transfer of potentially contaminated materials from the exclusion zone, across the contamination reduction zone (CRZ or buffer zone between "clean" and "dirty" areas) into the uncontaminated or "clean" zones. Detailed decontamination procedures can be found in Section 8.0 of the Site Health and Safety Plan.

2.8 Training Requirements

Employees involved in the disturbance of soil known or suspected to contain potentially hazardous chemicals received training covering the following items:

- Site safety plans
- Safe work practices
- Nature of anticipated hazards
- Handling emergencies and self-rescue
- Rules and regulations for vehicle use
- Safe use of field equipment
- Handling, storage and transportation of hazardous materials
- Employee rights and responsibilities
- Use, care and limitations of PPE

2.9 Emergency Response and Contingency Plan

On-Site emergencies will be indicated by a horn blast. Upon hearing this emergency signal, all workers will stop work and proceed to a designated point (established by the SSO).

In the event of an unpredicted occurrence or accident while Site personnel or visitors are on-Site, SOMA and subcontractor personnel will evaluate the incident and Site response capabilities and proceed with the appropriate emergency response actions. Four types of unpredictable events may occur that would require implementing the emergency action plan:

1. Fire
2. Physical injury
3. Chemical exposure
4. Natural catastrophe

Only in the case of minor injuries or exposures will it be considered suitable to transport the injured persons to a medical clinic or emergency room. In all other cases, an ambulance will be summoned by calling **911.**

2.9.1 Fire

In the event of any fire caused by on-Site activities or in close proximity to Site activities, work will stop immediately and the Site will be evacuated. The fire Department will be summoned by calling **911.**

2.9.2 Physical Injuries

For physical injuries, emergency medical assistance will be summoned by calling **911.**

2.9.3 Chemical Exposure

Should unexpected chemicals be encountered that result in chemical exposure, the following procedures will be followed:

- Precautions should be taken to avoid unnecessary exposure of other individuals.

- If necessary, the victim should be transported to the nearest hospital or medical center by ambulance.
- All chemical exposure incidents must be reported to the SSO.
- The following steps will be taken to determine the identity and extent of the unknown chemical:
    1. A sample of the chemical will be taken in an air-tight bottle to a forensic testing laboratory for identification;
    2. After chemical identification, appropriate on-Site screening will be used to quickly ascertain the extent of contamination;
    3. Confirmatory samples will be collected to ensure that the spatial extent of contamination has been adequately defined;
    4. Workers will not be allowed to re-enter the area until the substance has been identified and appropriate health and safety procedures adopted.

2.9.4 Summary of Emergency Resources

Nearby emergency resources and their telephone numbers are summarized in Table-2.

3.0 CONSTRUCTION IMPACT MITIGATION MEASURES

This section presents the general measures that will be implemented to mitigate potential impacts to human health and the environment during construction activities. Specifically, mitigation of the following potential impacts will be discussed:

- Dust generation associated with excavation and loading activities, construction or transportation equipment and wind suspension of stockpiled soil;

- Tracking of soil off-Site with construction or transportation equipment;
- Transport of Site-sediments in surface water runoff; and
- Management of groundwater extracted during construction activities (dewatering activities).

3.1 Dust Control

As discussed in detail in the Site Health and Safety Plan, the generation of dust will be controlled in order to minimize 1) potential exposures of on-Site construction workers; and 2) the migration of airborne particulate off-Site. Worker exposures to PCBs adsorbed to particulates will be monitored using workspace air sampling and potential off-Site exposures to PCBs/particulates will be monitored using downwind fenceline sampling. Dust control measures will include but will not be limited to:

- use of water spray or mist during excavation and vehicle loading;
- limit maximum vehicle speed on-Site to 5 miles per hour;
- minimize drop heights during transportation vehicle loading; and
- cover stockpiled soil with plastic sheeting or tarps to prevent wind erosion.

3.2 Decontamination

Construction equipment and transportation vehicles that contact Site soils containing residual contamination will be decontaminated prior to leaving the Site in order to minimize the potential for off-Site migration. Prior to loading stockpiled soil for off-Site disposal, the tractor-trailer will be driven onto a large sheet of plastic. Following loading, dirt will be removed from the vehicle exterior and wheels and captured by the plastic sheeting.

During soil and groundwater sampling on-Site, decontamination of sampling equipment will be conducted according to the Site Health and Safety Plan decontamination procedures (Section 8.0). Wash water or rinsate will be collected and managed in accordance with all applicable local and state laws and regulations.

3.3 Storm Water Pollution Controls

In the event of rainfall during construction activities, storm water pollution controls will be implemented to minimize storm water runoff. Even though most construction activities will take place below grade, thereby eliminating the potential for runoff, on-Site sediment and erosion protection controls will be implemented, including:

- construction of berms or silt fences at entrances to the Site;
- placing straw bale barriers around storm drains and catch basins; and
- during heavy rainfall, covering stockpiled soil with plastic sheeting or tarps.

3.4 Dewatering

As discussed previously, much of the construction will take place below grade necessitating the removal of pooled groundwater. All groundwater encountered during construction (e.g., driving piles) will be collected and stored on-Site in a Baker Tank for appropriate disposal at an off-Site facility.

4.0 PROTECTION OF MONITORING WELLS

Six monitoring well locations are listed in the former service yard of the Westinghouse Facility, as shown in Figure 3. In the northeast corner of the property, monitoring wells S-6 and D-6 no longer exist. Apparently, these two wells were destroyed during previous construction activities. The exact location of these destroyed wells are unknown. Monitoring wells S-5 and D-5 are located

in the northwestern portion of the property. Monitoring Wells S-4 and D-4 are located at southeast of slurry wall. During construction of the EmeryStation North building and associated parking lot, monitoring wells S-4, S-5,D4, and D-5 will be protected. Monitoring wells S-5 and D-5 are located just outside the slurry wall at the north east corner of slurry wall, while, S-4 and D-4 are located at the south east of slurry wall see Figure 3.These wells will remain part of the long term groundwater monitoring program overseen by EPA Region IX to evaluate the effectiveness of the slurry wall.

5.0 GROUNDWATER PROTECTION

As discussed previously, the building foundation will be constructed on production piles capped with steel reinforced concrete blocks (pile caps). Soil samples previously collected in this area between the surface and 4-feet bgs., showed levels of PCBs up to 60 mg/kg. The pile driving in EmeryStation North was initiated on November 5, 1999 and completed in the first week of January 2000. During this period over 240 piles were driven to an approximate depth of 80 feet bgs. In order to minimize or reduce the potential impact of PCB contamination in the shallow soils and groundwater on the deeper groundwater, the following precautionary measures were used:

Pile locations were pre-drilled to depths ranging between 8- and 15-feet bgs in order to facilitate driving and minimize the potential for contamination of deeper zones by PCBs. After driving the piles into the bottom of the pre-drilled holes, the excavated soils were returned into the holes. In order to mark the pile locations, a concrete cap was placed at the top of each hole. The remaining soils were collected and stockpiled at the site. The stockpiled soils will be profiled and disposed of at TSCA or non-TSCA facilities following the soil characterization process.

The piles were 14 inches in diameter and made of pre-stressed concrete. The piles are designed as "friction piles" that generate their strength through the friction of

surrounding soil against the surface of the pile. The friction of soil against the surface of the pile creates a seal to prevent the potential vertical leakage of impacted groundwater to the deeper layers. Otherwise, If groundwater could migrate vertically along the pile, the pile would fail as a bearing foundation.

The piles were driven to an approximate depth of 80 feet. As Figure-2 shows, the construction area was divided into grided sub-areas using 18 columns (column 1 through 18, see top of Figure-2) and 12 rows (row A through row N). A cluster of piles (ranging between 2 and nine piles) arranged in squared or rectangular shaped colonies, were installed in certain areas at the intersection of rows and columns. By definition, each cluster of piles is also called pile cap.

According to the Geomatrix report (30 March 1998) entitled "Conceptual Groundwater Model, Emeryville Brownfields Pilot Project, Emeryville, California" groundwater occurs at shallow and deeper sediments in Emeryville. Shallow groundwater occurs at less than 60 feet while, the deeper groundwater occurs at 200-300 feet below ground surface. According to the Geomatrix report, although the deeper groundwater may have a better quality, both water-bearing zones, due to the quality and quantity constraints cannot be used as a source of source drinking water (SOMA, 1996). Therefore, it appears that pile driving activities may not have a significant impact on the water quality condition of shallow water bearing zone beneath the site.

6.0 FURTHER SITE CHARACTERIZATION

lin order to evaluate the vertical extent of PCB impacted soils beyond 3-4 feet depth, six soil borings will be drilled each with a total depth of 20 feet. Figure-2 shows the location of the soil borings. The soil borings will be drilled using a hollow stem auger. At each boring location, four soil samples at 5, 10, 15 and 20 feet depths will be collected using a brass tube. The samples will be placed in an ice chest and delivered to Curtis Thompson, a state certified laboratory.

The results of laboratory analysis on soil samples collected from different depths will assist SOMA to identify the maximum depth of PCB impacted soils and hot spots during segregation of excavated soils from pile caps for disposal purposes. In the area of column lines 1 through 11 (Figure 2), residual PCBs in soil may be encountered at depths below 3-feet bgs. At the column line location 1-J, it is anticipated that residual PCBs in excess of 50 mg/kg will be encountered. Therefore, two of the six soil borings will be installed in location 1-J and 3-J in order to verify the presence of hot spots at this location. Another soil boring will be installed at the former cistern area (8-F), where elevated levels of PCB (up to 72 ppm was reported at 7 foot depth) have been reported. Borings number 4 (14-M), 5(15-G) and 6 (10-E) will be installed in areas where no information at the deeper depth is available. All samples collected from the area of column lines 12 through 18 have shown low levels of soil contaminants. Therefore, separate soil management procedures have been developed for column lines 1 through 11 and 12 through 18.

6.1 Excavated Soil Management for Column Lines 1 through 11

As part of the WEBCOR construction plan, soils will be excavated to an average depth of 11-feet bgs from each pile cap area (see Figure 2). The excavated soils from each location will be individually stockpiled on-Site. Composite soil samples will be collected from each pile and analyzed using a field PCB test kit. Depending upon the results of test kit, the piles containing less than 50 ppm PCB will be combined into a bigger pile and kept separately from the other stockpiles containing greater than 50 ppm PCB concentrations. It is our estimation that each pile cap will generate approximately 20 cubic yards of waste soil. The soils containing less than 50 ppm PCB concentration (per test kit results) from every five pile cap will be mixed and stockpiled together at 100-yard piles. A composite soil sample will be collected from each 100-yard pile soil for profiling purposes. Soil with PCB concentrations below the 50 mg/kg will be transported to Altamont

Landfill for disposal. Prior to leaving the Site, decontamination of the truck will follow the procedures specified in Section 3.2.

Any soil with PCB concentrations greater than 50 mg/kg will be separately stockpiled on-Site. A composite soil sample will be collected from this pile and analyzed by a certified off-Site laboratory. Soil piles confirmed to have PCB concentrations greater than 50 mg/kg will be transported to an approved TSCA Landfill for disposal.

Soils with a concentration less than 50 ppm (based on analytical results) can be used on site at the base of pile caps. Based on the WEBCOR construction plan, after using the non-TSCA soils (soils less than 50 ppm PCB levels) they will be covered by 8 to 12 inch thick concrete slab. It is anticipated that approximately 1500 cubic yards of PCB-contaminated soil will be generated by this excavation activity. Groundwater encountered during the pile excavations will be removed to a Baker tank for testing and disposal, consistent with local, State and Federal laws.

6.2 Schedule of Soil Excavation Activities

The schedule for completion of excavation activities per WEBCOR is as follows:

Characterization of Stockpiled Soils	week of March 13, 2000
Drilling Permit Acquisition from Alameda County	week of March 13, 2000
Drilling exploratory soil borings	week of March 13, 2000
Soil characterization	week of March 20, 2000
Excavation of pile caps	week of March 20, 2000

Excavation and disposal activities will continue for the next 6-8 weeks.
The Final Report is due to Alameda County June 15, 2000.

7.0 POST CONSTRUCTION RISK MANAGEMENT

The post-construction part of the risk management plan outlines precautions that should be undertaken to mitigate any long-term potential threats to human health or the environment from residual contaminants in soil and groundwater following the development of the Site.

7.1 Summary of Human Health Risks

From the results of the Baseline Human Health Risk Assessment (HHRA) for the Former Westinghouse Electric Corporation Facility (SOMA 1996), carcinogenic risk and noncarcinogenic health hazards were unacceptable for the hypothetical on-Site resident, hypothetical outdoor worker and construction worker scenarios. For the construction worker, potential exposures to Site-related contaminants were minimized or eliminated through implementation of the Site Health and Safety Plan. Carcinogenic risk and noncarcinogenic hazards were almost entirely attributable to PCBs in soil, which were localized in the northeast portion of the Site, with most of the Site having non-detected levels of PCBs.

This "hot-spot" portion of the Site was excavated to meet the cleanup levels established in the HHRA. Specifically, the cleanup was accomplished within the subject area by excavation and off-Site disposal of soils having PCB concentrations greater than the residential cleanup level of 0.5 mg/kg within the top 2 feet, and greater than the utility worker cleanup level of 59 mg/kg within the depths of 2 to 4 feet, as documented in the Site Completion Report (ALTA, 1997). This is health protective, as no residential development is planned for this Site and the assumed utility worker is considered the most appropriate scenario in the future. Therefore, based on the planned commercial development of the Site, there would be no long-term risks to human health.

7.2 Use of Site Groundwater

Both VOCs and low concentrations of PCBs have been reported in shallow groundwater beneath the Site. Based on the results of the HHRA, VOC emissions from groundwater do not pose a threat to human health under any exposure scenario evaluated. Further, the results of the groundwater flow modeling (SOMA 1996) indicate that groundwater beneath the Site would not support significant withdrawal rates (less than 200 gallons a day). This is largely due to the low hydraulic conductivity of the saturated sediments and the presence of the slurry wall surrounding a portion of the Site. For these reasons, the water-bearing zone beneath the Site was not considered to be a potential source of drinking water. Therefore, shallow groundwater beneath the Site will not be used as a drinking water source or for any other purpose without approval from the RWQCB and the ACDEH. Groundwater encountered during construction/excavation activities will be addressed through the Site Health and Safety Plan.

7.3 Future Construction Activities

Based on the results of the HHRA, residual contamination in soil and groundwater does not pose an unacceptable risk for the intended commercial development of the Site. However, any future construction-related activities must follow the procedures defined in the Site Health and Safety Plan and Risk Management Plan.

7.4 Long-Term Compliance

The Site Risk Management Plan, including any addenda, will be on file with the RWQCB and ACDEH. As part of standard due diligence, the owner(s) of the Site

will be required to disclose the risk management plan to potential buyers during future property transactions.

Procedures will be developed by the Site owner(s) and tenants in order to inform workers and contractors about the risk management plan, as needed and to maintain compliance with the risk management plan.

The planned Site land use is commercial. Land use at the Site will not change significantly (e.g., the Site will not be developed for single family housing) without approval from the RWQCB and ACDEH.

TABLES

Table-1

Recommended Air Concentrations of Soil Contaminants

SOIL CONTAMINANT OF CONCERN	OSHA PERMISSIBLE EXPOSURE LIMIT (TWA) (mg/m^3)	ACGIH TLV FOR OCCUPATIONAL EXPOSURE (mg/m^3)	NIOSH RECOMMENDED OCCUPATIONAL EXPOSURE LIMIT (mg/m^3)
PCB's	0.5		0.001

Table -2

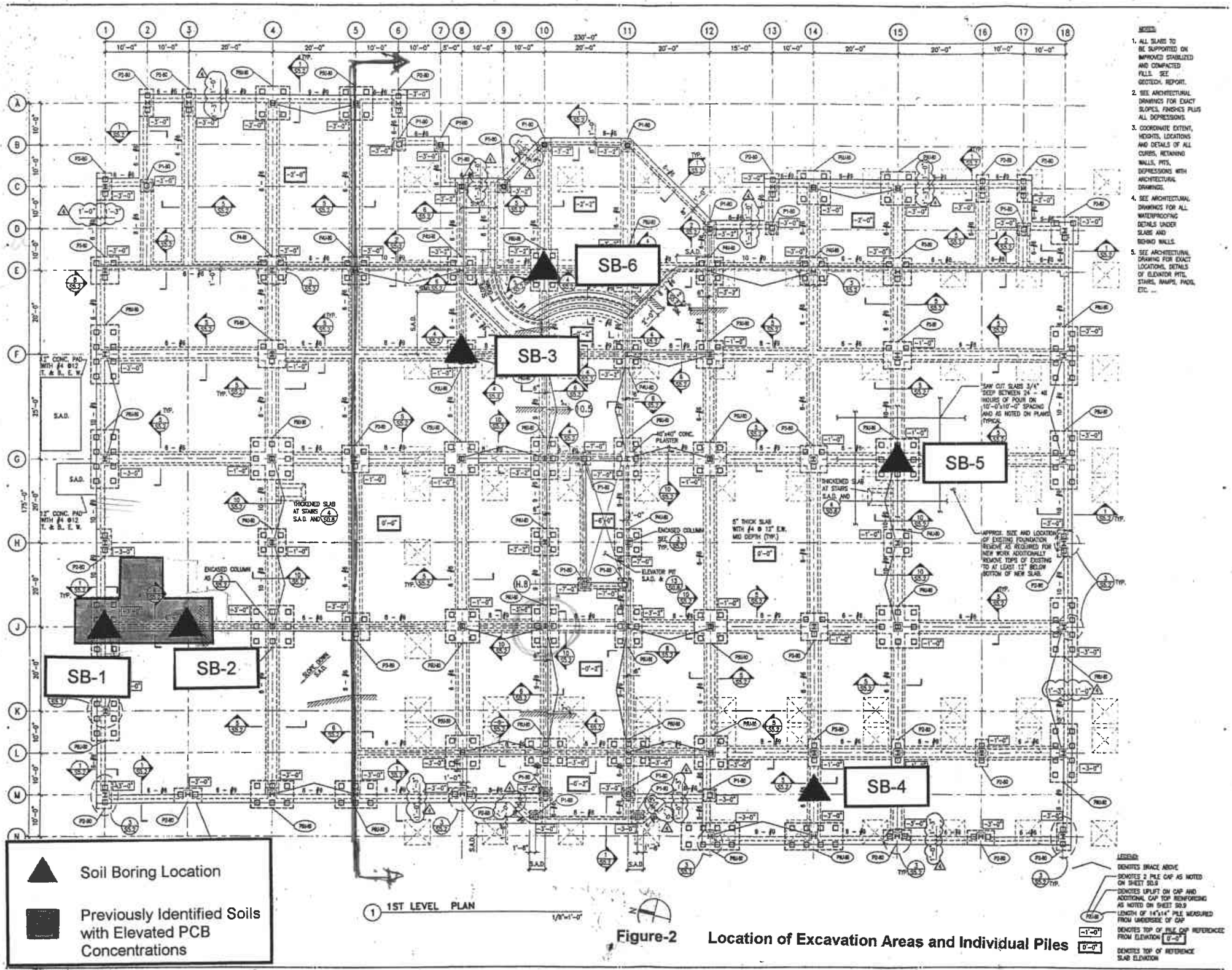
Emergency Resources and Telephone Numbers

RESOURCES/DEPARTMENTS	EMERGENCY TELEPHONE NUMBERS
Fire Department/Police Department	911
Ambulance or Lifeline	911
Alta Bates Hospital[1]	(510) 204-4444
Cal OSHA	(415) 557-1677
SOMA Environmental	(925) 244-6600
National Response Center	(800) 424-8802
TSCA Hotline	(800) 424-9065
Poison Control Center	(800) 962-1253

[1] Directions to Alta Bates: Proceed north on Hollis Street, about 3 miles; turn right onto Ashby Avenue (east), about 4 miles. The hospital is located on the south side of Ashby Avenue.

FIGURES

Figure 1 – Emery Station North Area



NOTES:

1. ALL SLABS TO BE SUPPORTED ON IMPROVED STABILIZED AND COMPACTED FILLS. SEE GEOTECH. REPORT.
2. SEE ARCHITECTURAL DRAWINGS FOR EXACT SLOPES, FINISHES PLUS ALL DEPRESSIONS.
3. COORDINATE EXTENT, HEIGHTS, LOCATIONS AND DETAILS OF ALL CURBS, RETAINING WALLS, PITS, DEPRESSIONS WITH ARCHITECTURAL DRAWINGS.
4. SEE ARCHITECTURAL DRAWINGS FOR ALL WATERPROOFING DETAILS UNDER SLABS AND BEHIND WALLS.
5. SEE ARCHITECTURAL DRAWING FOR EXACT LOCATIONS, DETAILS OF ELEVATOR PITS, STAIRS, RAMPS, PADS, ETC. ...

Figure-2 Location of Excavation Areas and Individual Piles

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HK◻A

HMATCH KOUYOUMDJIAN & ASSOCIAT
CONSULTING ENGINEERS
221 MAIN STREET, SUITE 760
SAN FRANCISCO, CALIFORNIA 9410
PHONE (415) 227-0702

NO.	REVISION	DATE
4	REVISION	12/09/9
3	PLAN CHECK	11/25/9
2	REVISION	11/4/9
1	REVISION	10/22/9
	FOUNDATION	10/1/9
-	PILES ONLY	9/24/9

WAREHAM DEVELOPMEI GROUP

EMERYSTATION PLAZA
EMERYSTATION NO. 2

EMERYVILLE, CA

Sheet Title:
1ST LEVEL PLAN

Scale:	1/8"=1'-0"
Project Number:	9705407
Designed By:	GP
Drawn By:	PT
Checked By:	GP
Date:	10/1/99

Sheet Number
S1.1
Of Sheets

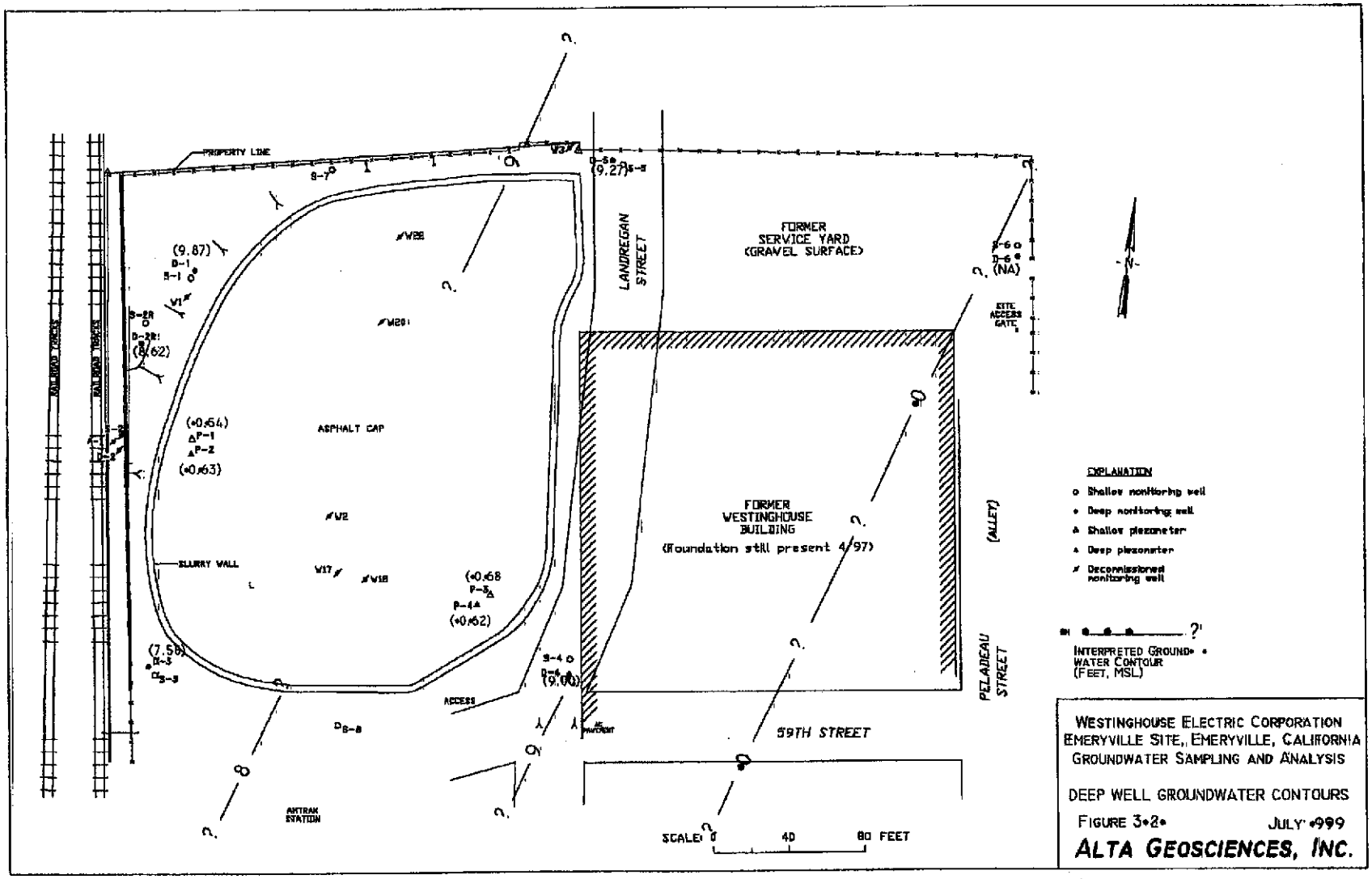

Figure 3 - Monitoring Wells in the Emery Station North Area

ATTACHMENT

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Health and Safety Plan
For
The Former Westinghouse Electric Corporation Facility
Emeryville, California

April 6, 1998

Prepared for

WEBCOR BUILDERS
2755 Campus Drive, Suite 175
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Prepared by

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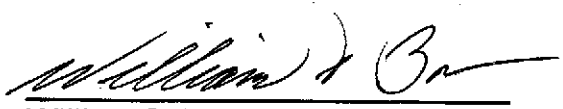
San Ramon, California 94583

CERTIFICATION AND LIMITATIONS

This Health and Safety Plan has been prepared by SOMA Environmental Engineering, Inc. (SOMA) for the exclusive use of WEBCOR Builders (WEBCOR) for their construction and excavation activities at the former Westinghouse Electric Corporation Facility, located in Emeryville, California. SOMA has provided its professional services using the degree of care and skill ordinarily exercised by other scientists and engineers practicing in this field. No other warranty, express or implied, is made as to the conclusions and professional opinions and recommendations contained in this document.



William S. Bosan, Ph.D.
Principal Toxicologist

Philip A. Bumala, CIH
Industrial Hygienist

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HEALTH AND SAFETY PLAN
FOR
THE FORMER WESTINGHOUSE ELECTRIC CORPORATION FACILITY

1.0 Introduction

This health and safety plan addresses all aspects of construction-related activities associated with the development of the former Westinghouse Electric Corporation Facility located in Emeryville, California (Emeryville Facility). Development and associated construction activities will occur in a phased approach. Phase-specific health and safety issues and procedures will be incorporated into the site-wide health and safety plan through an addendum for each particular phase of construction. As shown in Figure 1, the Emeryville has been subdivided into four sites for the purpose of future construction activities. Construction activities are presently planned for Site1, designated as "Proposed Building #1" in Figure 1. This proposed construction site is bounded: 1) to the north by 59th Street; 2) to the east by Peladeau Street; 3) to the south by Powell Street; and 4) to the west by Landregan Street.

2.0 History and Background

The Emeryville Facility is located at 5899 Peladeau Street in Emeryville, California (Figure 1). The Emeryville Facility was used in the past for a variety of purposes, including repair and limited manufacturing of transformers and other electrical apparatus. Since 1981, a number of environmental investigations have been performed to assess soil and groundwater contamination, particularly with respect to polychlorinated biphenyls (PCBs). Soil and groundwater in the northwest portion of the Emeryville Facility was found to contain significant levels of PCBs, which resulted in the construction of a slurry wall and engineered cap in 1985 in order to minimize the potential migration of PCBs (depicted as Site 4 in Figure 1). Operations at the Emeryville Facility were discontinued in 1992 and all structures were removed in 1993.

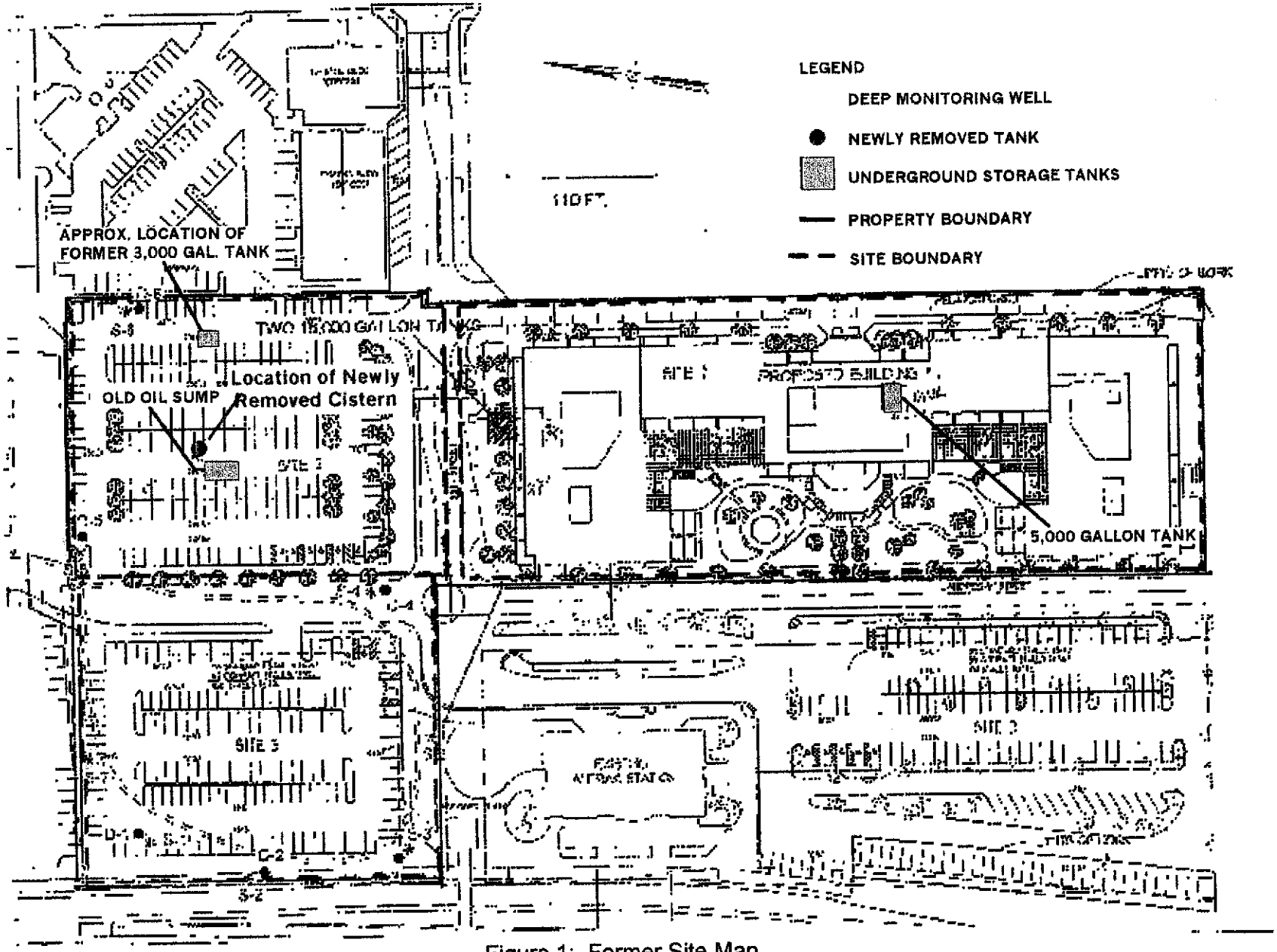

Figure 1: Former Site Map

2.1 Project Staffing

SOMA industrial hygienist Philip Bumala, CIH, will act as the Site Safety Officer and will conduct air monitoring during excavation activities. The SSO will conduct a pre-construction health and safety meeting prior to commencing excavation operations, and will work with onsite staff to implement exposure prevention measures.

Since the workers conducting the excavation in the area designated "Proposed Building #1" (Figure 1) are not trained to handle hazardous waste (e.g., OSHA 40-Hour Hazardous Waste Operations and Emergency Response Certified), the SSO will most likely not require workers to wear respirators. If air monitoring indicates that Level-C or higher personal protective equipment (PPE) is necessary, construction/excavation activities will be suspended until OSHA 40hour trained workers can be obtained to continue site activities. This will occur only if engineering controls cannot be feasibly or adequately implemented to reduce air concentrations of PCBs, arsenic, beryllium, total chromium and lead below the levels specified in Table 1.

Table 1

Recommended Air Concentrations of Soil Contaminants

SOIL CONTAMINANT OF CONCERN	OSHA PERMISSIBLE EXPOSURE LIMIT (TWA) (mg/m^3)	ACGIH TLV FOR OCCUPATIONAL EXPOSURE (mg/m^3)	NIOSH RECOMMENDED OCCUPATIONAL EXPOSURE LIMIT (mg/m^3)
PCBs	0.5		0.001
Arsenic	0.5	0.2	0.002 (15 min. ceiling)
Beryllium	0.002	0.002	0.0005
Chromium, total	1.0 (total Cr) 0.5 (Cr^{+3})	0.5 (Cr^{+3})	0.5 (Cr^{+3})
Lead	0.05	0.15	0.1

2.2 Site Characterization

The upper 2- to 4-feet of soil is comprised of "artificial fill" material of a sandy clay nature. Below the fill material layer is a 3to 6-foot layer of black, soft, highly compressible, silty clay known locally as "Recent Bay Mud." The nature and extent of contamination at the Emeryville Facility has been well characterized, especially for PCBs. In addition to PCBs, low levels of total petroleum hydrocarbons (TPH), volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and metals have been reported in soil samples.

Based on previous site investigations, groundwater is encountered at depths between 2 and 4-feet below ground surface (bgs). Groundwater generally flows west toward the San Pablo Bay. PCBs, VOCs and SVOCs were the major classes of contaminants detected in groundwater.

2.3 Human Health Risk Assessment

In March 1996, SOMA Environmental Engineering, Inc. (SOMA) conducted a quantitative human health risk assessment (HHRA) to evaluate potential impacts which might result from exposure to chemical contaminants in soil and groundwater at the Emeryville Facility. The following exposure scenarios were evaluated quantitatively:

- Current on-site, outdoor worker
- Current off-site, outdoor worker
- Current off-site, nearest downwind resident
- Future on-site, indoor and outdoor workers
- Future on-site, resident and apartment dweller (adult and child)
- Future construction worker
- Future on-site, utility worker

The potential exposure routes evaluated in the HHRA were ingestion, inhalation and dermal contact. All exposure scenarios were defined to estimate the highest exposure that is reasonably expected to occur at the site. Almost all of the

estimated risk was attributable to PCBs in soil (greater than 99 percent of the risk). VOCs, SVOCs, metals and TPH in soil and groundwater were not considered to pose a threat to human health under any of the exposure scenarios evaluated.

2.4 Remediation of PCBs in Soil

Based on the results of the HHRA, PCB soil cleanup levels of 0.5, 2.9 and 59 mg/kg were established for residential use, industrial use and a utility worker, respectively.

In 1996, 0.5 acres in the northeast corner of the Emeryville Facility was remediated for PCB contamination. Cleanup was accomplished by excavation and disposal of: 1) soils having PCB concentrations greater then 0.5 mg/kg within the top 2-feet and 2) soils having PCB concentrations greater than 50 mg/kg between the top 2- to 4-feet of soil. Because of the absence of a credible, long-term exposure pathway for soils deeper than 4-feet, cleanup goals excluded excavation below this depth.

2.5 Site Work Recommendations

Workers should be informed prior to site work of the potential hazards associated with exposure to site-related contaminants, especially PCBs in soil. Continuous air monitoring for total suspended particulate, metals and PCBs will establish the level of actual worker exposure to these compounds during construction/excavation operations. If air monitoring indicates that more stringent PPE is required, all construction/excavation operations will stop until OSHA 40-hour trained workers are available to continue construction activities. This will only occur if engineering controls can not be feasibly or adequately implemented to the levels presented in Table 1. Additional recommendations will be made onsite, as necessary by the SSO.

3.0 Site Safety Authority

Site Name:	Former Westinghouse Electric Corporation Facility 5899 Peladeau Street Emeryville, California
Owner:	CBS, Formerly Westinghouse Electric Corporation Gordon Taylor (412) 642-3957
Prime Contractor:	WEBCOR Builders Phil Barlow, Project Manager (415) 349-2727
Environmental Contractor:	SOMA Environmental Engineering, Inc. (925) 244-6600
Site Safety Officer:	Philip Bumala (925) 244-6600 Pager: (925) 677-7971

3.1 Duties of the Site Safety Officer

The Site Safety Officer (SSO) has the primary responsibility for on-site implementation of the Health and Safety Plan (HSP). Additional responsibilities include, but are not limited to:

- Verify that contractor/subcontractor personnel are aware of hazardous materials protection procedures and have been instructed in proper work practices and emergency procedures

- Verify that appropriate PPE is available and is properly used by contractor/subcontractor personnel

- Monitor contractor/subcontractor activities and ensure that required safe work practices are followed

- Conduct daily safety meetings prior to commencing operations. Meetings will cover:
    1. Expected site conditions
    2. Daily activities
    3. Safety deficiencies noted previously
    4. Changes in safety and/or emergency procedures

4.0 Job Hazard Analysis

The following sections describe the potential hazards associated with construction/excavation activities at the Emeryville Facility. For these identified hazards, procedures to mitigate these hazards are presented in Section 5.

4.1 Chemical Hazards

Based on the site characterization summary presented in Section 2.2, PCBs, metals, VOCs and SVOCs were detected in soil and groundwater at the Emeryville Facility. Based on the HHRA (Section 2.3), VOCs, SVOCs, metals and TPH in soil and groundwater were not considered to pose a threat to human health, even under the most conservative exposure scenarios evaluated. Therefore, these compounds will not be discussed further in this section. The following presents a discussion of the potential hazards associated with PCBs and metals and how a worker might come into contact with these contaminants.

Polychlorinated Biphenyls (PCBs)

PCBs are a group of synthetic organic chemicals that contain 209 individual compounds with varying health effects. PCBs were used industrially as coolants and lubricants in transformers, capacitors and other electrical equipment. Based on evidence of their accumulation in the environment and their harmful health effects, PCB manufacture was discontinued in 1977. Studies in the workplace suggest that exposure to PCBs may cause skin irritation (e.g., acne and rashes), and irritation of the nose and lungs. Lifetime

studies in animals resulted in toxicity to the liver, stomach, thyroid gland and liver cancer. Studies of workers who had long-term exposure to PCBs provided no evidence that PCBs cause cancer in humans.

The most likely routes of exposure to PCBs at the Emeryville Facility during construction/excavation activities are through dermal contact with soil, dermal contact with water during dewatering and inhalation of dust. Since these activities will be of a short duration, the most likely potential hazards are irritation of the skin, nose and throat. For those areas where PCB exposures might occur, such as Site 2 (Figure 1), appropriate PPE and air monitoring will be implemented to reduce or eliminate any possible exposures.

Metals

Arsenic, beryllium, chromium and lead are naturally occurring elements found in rocks, soil, plants and food. These particular metals were evaluated in the HHRA because the levels detected in soil were relatively high. However, these levels are consistent with levels measured in other industrial areas close by.

Direct skin contact with inorganic arsenic will result in irritation with some redness and swelling. Inhalation of inorganic arsenic may cause irritation of the throat and lungs. Long-term exposure may increase the risk of cancer in the lung, liver, bladder and kidney. Potential exposures during construction/excavation activities at the Emeryville Facility would most likely be through inhalation of dust and dermal contact. Based on the short duration of exposure, the potential hazards would be irritation of the skin, throat and lungs. Exposures below the PEL would not be expected to produce any adverse effects.

Long term exposure to beryllium through inhalation can produce lung damage resembling pneumonia. Potential exposures during construction/excavation activities at the Emeryville Facility would most likely be through inhalation of dust and dermal contact. Based on the short duration of exposure, no adverse health effects would be expected.

The form of chromium at the Emeryville Facility (Cr^{+3}) is an essential human nutrient and has a very low order of toxicity. Long term exposure to high concentrations of chromium may result in skin irritation and sensitization. Based on the low overall toxicity and short duration of exposure, no adverse health effects would be expected during construction/excavation activities.

In adults, long term exposure to high concentrations of lead may result in decreased reaction time and possibly affect memory. These effects have not been observed with low lead exposures. Based on the short duration of exposure at the Emeryville Facility, no adverse health effects would be expected during construction/excavation activities.

4.2 Physical Hazards

The potential physical hazards associated with work at the Emeryville Facility would be those that are common to all construction/excavation projects, including noise hazards, electrical hazards and mechanical hazards. These physical hazards, along with potential hazards associated with fire causing agents, can be reduced or eliminated through implementation of safe working practices.

5.0 Hazard Prevention Procedures

The following summarizes the general procedures to be followed during construction/excavation activities at the Emeryville Facility in order to minimize or mitigate potential chemical hazards, physical hazards, hypothermia, fire and biological hazards.

5.1 Chemical Hazards

Procedures to mitigate potential chemical hazards are listed below.

Dust Control: Dust control measures will be implemented when necessary, through application of water over the areas where excavation, stockpiling, and loading operations are in progress. In addition, soil that will be stockpiled for an extended period of time will be covered with plastic to minimize airborne suspension of dust.

Inhalation: General safe work practices will be employed to minimize contact with potentially contaminated soil. If significant contamination is encountered (e.g., above the permissible exposure limits), the SSO will stop work and will require additional worker protection measures to be implemented.

Dermal Contact: Potential chemical absorption through the skin will be prevented by using Level D protection, as described in Section 6. If significant contamination is encountered, the SSO will require Level C or greater protection. Skin will be washed as frequently as possible, at a minimum, before eating and before leaving for the day. In the event that dermal exposure occurs, the skin must be decontaminated immediately. Should the conditions warrant, immediate medical attention will be required.

Ingestion: Accidental ingestion will be prevented by prohibiting eating, drinking, smoking or application of cosmetics in established work zones. Work zones will be established as described in more detail in Section 7. Recommended decontamination procedures will be established as described in more detail in Section 8.

Injection: Chemical exposure through accidental injection or puncturing of the skin can be prevented by use of protective clothing and gloves as necessary and by observing safe work practices.

5.2 Physical Hazards

Procedures to mitigate potential physical hazards are listed below.

Acoustical Hazards: Hearing protection, such as ear muffs and ear plugs, will be worn because of potential noisy activities, such as operation of heavy equipment.

Electrical Hazards: If the work becomes unavoidably close to buried or overhead lines, the power will be turned off with circuit breakers locked and tagged. All electrical equipment must be properly grounded. Workers must not stand in moisture, water or rain when operating electrical equipment. Workers shall be familiar with specific operating instructions for each piece of equipment.

Mechanical Hazards: All surfaces that a person could reasonably contact should be free of splinters, nails or protrusions that might cause injury. All contractor/subcontractor personnel and equipment shall be kept out of traffic lanes and access ways. Workers shall not stand near excavators/loaders, trucks or other earthmoving equipment. Workers/operators shall verify that all equipment is in good condition. Workers must be mindful of on-site equipment at all times.

5.3 Hypothermia

When working in cold conditions, workers should:

- Wear layers of clothing made of tightly woven fibers that trap warm air against the body.
- Wear a head covering to prevent body heat from escaping into the cold air.
- Protect other areas of the body, such as fingers, toes, ears and nose.

In the event of hypothermia, warm the body gradually by wrapping in blankets or putting on dry clothing.

5.4 Fire

Workers and visitors should refrain from smoking and other fire-causing activities throughout the project site.

5.5 Biological Hazards

Workers should refrain from sitting on or near piles of debris and vegetation that might house vermin. Workers and visitors should also refrain from approaching animals that wander onto the project site.

6.0 Personal Protective Equipment

For construction/excavation activities associated with the first site designated "Proposed Building #1" on Figure 1, there is limited potential for airborne exposures from PCBs, metals, VOCs and SVOCs. Therefore, it is anticipated

that Level D protection will be adequate during this first phase of work. Similarly, for Sites 3 and 4, this level of protection is anticipated to be adequate during these phases of construction. Site 2 (Figure 1) has been previously remediated. However, PCBs were removed only down to 4-feet bgs. Consequently, if construction/excavation or dewatering below 4-feet occurs at Site 2, additional worker protection will be required (e.g., Level C or B PPE). Level C or B PPE will be employed should air monitoring results indicate the presence of PCB, arsenic, beryllium, chromium or lead concentrations in excess of their respective recommended exposure limits (Table 1). The corresponding levels of protection are summarized as follows:

Level-D Protection

- Steel-toed/shanked boots
- Uncoated Tyvek coveralls or work overalls
- Nitrile/Neoprene gloves with latex undergloves (if necessary)
- Hard hats
- Safety glasses/goggles (as necessary)
- Ear plugs

Level-C Protection

- Air-purifying respirator (e.g., half-face) with appropriate cartridges/filters
- Steel-toed/shanked boots with latex overboots or steel-toed rubber boots
- Tyvek coveralls taped over boots (disposable light chemical clothing)
- Neoprene gloves (taped at wrist) with latex undergloves
- Hard hats
- Safety glasses/goggles
- Ear plugs

Level-B Protection

- Self-contained breathing apparatus (SCBA) outside of suit
- Hooded chemical suit
- Inner chemical gloves
- Outer chemical gloves
- Chemical boot with steel toe
- Hard hat
- Two-way radio

7.0 Work Zones and Site Security

The following sections are included in the event contaminated materials are discovered during the excavation operation which have to be stockpiled, loaded, transported and disposed of in a landfill.

The site work zones are security measures intended to prevent the transfer of contaminants off-site by workers, visitors and equipment used in project operations. These measures are also designed to prevent unprotected workers, visitors and the general public from entering contaminated areas. All movement into and out of the work zones will be monitored and controlled by the SSO and project manager.

7.1 Exclusion Zone (Contaminated Zone)

The exclusion zone is based on the amount of area required to perform the intended work safely. This includes all loading operations, open excavations, contaminated soil stockpiles, swing radii for equipment, remediation operations, cleaning operations and loading operations of bulk soils. Within the exclusion zone, Level-D or higher PPE must be worn by all workers and visitors. The appropriate level of protection for each phase of construction will be established by the SSO. The zones will be set at the beginning of the day and changed as

required by activities. The exclusion zone will be marked with warning tape and signs.

7.2 Contamination Reduction Zone

The contamination reduction zone (CRZ) is the buffer zone immediately adjacent to the exclusion zones. The CRZ is between the exclusion zone and uncontaminated areas. The zone thickness will depend on the threat of airborne contamination and will be established by the SSO based on air monitoring results. Personnel and equipment decontamination will occur within the CRZ. This zone will prevent or minimize the transfer of potentially hazardous materials from the exclusion zone. The CRZ will be delineated with warning tape and signs.

7.3 Support Zone

The support zone consists of all uncontaminated and inactive areas of the site where PPE is not required. This zone will be used for staging and storage. The size of the support zone will be established by the SSO and delineated with fencing, signs and/or K-rails.

7.4 Security Measures

Traffic control measures (e.g., signs, barricades, flagmen etc,) required for public protection will be employed as appropriate. Entry into the work site will be controlled as required, and all site access will be monitored by the SSO.

The only persons authorized to enter the exclusion zone are:

- Representatives of SOMA Environmental Engineering, Inc.
- Authorized WEBCOR representatives and subcontractors
- Authorized visitors

Visitors to the work site, including any inspectors from regulatory agencies, are required to abide by the health and safety requirements set forth in this HSP.

On-site personnel and subcontractors shall require visitors to have the proper training and PPE prior to any activities necessitating entry into the exclusion zone.

No one is permitted in the exclusion zone or contamination reduction zone without clearance from the SSO. Clearance may be revoked at any time by the SSO.

8.0 Decontamination Procedures

Decontamination procedures are established to prevent transfer of potentially contaminated materials across the CRZ into the uncontaminated or "clean" zones.

8.1 Equipment Decontamination

For Level-D work, tools, equipment and safety boots should be scrubbed with long-handled brushes and high-phosphate detergent (e.g., Alconox or TSP). Boots should be rinsed off with water, repeating the rinsing as often as necessary. The rinsate will be disposed of along with the contaminated material.

8.2 Personnel Decontamination

Decontamination and removal of any contaminated PPE will take place at the perimeter of the exclusion zone. The contaminated items and rinsate will be contained in lined drums for proper disposal. All personnel should shower as soon as possible after leaving the site. On-site cleaning equipment will include washbasins, plastic drop cloths, high-phosphate detergent, rinse water, scrub brushes, benches or stools, and towels.

9.0 Training Requirements

All workers and visitors in the exclusion zone or CZR must have received OSHA 40-hour training (as per 29 CFR 1910.120). Operators of heavy equipment,

specialized equipment, and special instruments will also be certified for that particular piece of equipment.

Employees involved in disturbance of soil known or suspected to contain potentially hazardous chemicals shall have received training covering the following items:

- Site safety plans
- Safe work practices
- Nature of anticipated hazards
- Handling emergencies and self-rescue
- Rules and regulations for vehicle use
- Safe use of field equipment
- Handling, storage and transportation of hazardous materials
- Employee rights and responsibilities
- Use, care and limitations of PPE

10.0 Emergency Response and Contingency Plan

On-site emergencies will be indicated by a horn blast. Upon hearing this emergency signal, all workers will stop work and proceed to a designated point (established by the SSO).

In the event of an unpredicted occurrence or accident while site personnel or visitors are on-site, SOMA and subcontractor personnel will evaluate the incident and site response capabilities and proceed with the appropriate emergency response actions. Four types of unpredictable events may occur that would require implementing the emergency action plan:

1. Fire
2. Physical injury
3. Chemical exposure
4. Natural catastrophe

Only in the case of minor injuries or exposures will it be considered suitable to transport the injured persons to a medical clinic or emergency room. In all other cases, an ambulance will be summoned by calling 911

10.1 Fire

In the event of any fire caused by on-site activities or in close proximity to Site activities, work will stop immediately and the site will be evacuated. The fire department will be summoned by calling **911.**

10.2 Physical Injuries

For physical injuries, emergency medical assistance will be summoned by calling **911**.

10.3 Chemical Exposure

Should unexpected chemicals be encountered that result in chemical exposure, the following procedures will be followed:

- Precautions should be taken to avoid unnecessary exposure of other individuals.
- If necessary, the victim should be transported to the nearest hospital or medical center by ambulance.
- All chemical exposure incidents must be reported to the SSO.
- The following steps will be taken to determine the identity and extent of the unknown chemical:
    1. A sample of the chemical will be taken in an air-tight bottle to a forensic testing laboratory for identification;
    2. After chemical identification, appropriate on-site screening will be used to quickly ascertain the extent of contamination;
    3. Confirmatory samples will be collected to ensure that the spatial extent of contamination has been adequately defined;

4. Workers will not be allowed to re-enter the area until the substance has been identified and appropriate health and safety procedures adopted.

10.4 Summary of Emergency Resources

Nearby emergency resources and their telephone numbers are summarized in Table 2.

Table 2

Emergency Resources and Telephone Numbers

RESOURCES/DEPARTMENTS	EMERGENCY TELEPHONE NUMBERS
Fire Department/Police Department	911
Ambulance or Lifeline	911
Alta Bates Hospital[1]	(510) 204-4444
Cal OSHA	(415) 557-1677
SOMA Environmental	(925) 244-6600
National Response Center	(800) 424-8802
TSCA Hotline	(800) 424-9065
Poison Control Center	(800) 962-1253

1 Directions to Alta Bates: Proceed north on Hollis Street, about 3 miles; turn right onto Ashby Avenue (east), about 4 miles. The hospital is located on the south side of Ashby Avenue.

ADDENDUM A

HEALTH AND SAFETY PLAN
FOR
THE FORMER WESTINGHOUSE ELECTRIC CORPORATION FACILITY

UNDERGROUND STORAGE TANK REMOVAL ACTIVITIES

A1.0 Introduction

The site-wide Health and Safety Plan (HSP) was prepared to address all known aspects of construction-related activities associated with the development of the former Westinghouse Electric Corporation Facility located in Emeryville, California (Emeryville Facility). However, during the week of April 27, 1998, two 18,000-gallon underground storage tanks (USTs) were discovered during construction activities. The following addendum to the site-wide HSP addresses tank removal, soil and groundwater sampling and construction activities in the UST area.

A2.0 UST-Specific Activities

The following section describes all aspects of the construction-related activities for the UST area, including 1) characterization of tank contents; 2) UST removal; 3) characterization of soil beneath the tanks; and 4) hazards associated with the UST area.

A2.1 Characterization of the UST Contents

Upon discovery of the two USTs at the Emeryville Facility, one grab sample was collected from each UST and sent to an off-site laboratory for chemical analysis. Based on the history of the site, both UST samples were analyzed for total petroleum hydrocarbons as gasoline (TPH-g), total petroleum hydrocarbons as diesel (TPH-d), total petroleum hydrocarbons as motor oil (TPH-mo) and

polychlorinated biphenyls (PCBs). The analytical results are summarized for UST-1 and UST-2 in Tables A-1 and A-2, respectively.

Table A-1

Analytical Results for the Contents of UST-1

POTENTIAL CONTAMINANT	ANALYTICAL METHOD	CONCENTRATION (µg/L or ppb)	REPORTING LIMIT (µg/L or ppb)
Gasoline (TPH-g)	EPA 8015-Mod	N.D.	50
Diesel (TPH-d)	EPA 8015-Mod	7000	50
Motor Oil (TPH-mo)	EPA 8015-Mod	970	500

Table A-2

Analytical Results for the Contents of UST-2

POTENTIAL CONTAMINANT	ANALYTICAL METHOD	CONCENTRATION (µg/L or ppb)	REPORTING LIMIT (µg/L or ppb)
Gasoline (TPH-g)	EPA 8015-Mod	N.D.	50
Diesel (TPH-d)	EPA 8015-Mod	5300	50
Motor Oil (TPH-mo)	EPA 8015-Mod	1300	500
PCBs	SW846 8080A		
AROCLOR 1016		N.D.	0.50
AROCLOR 1221		N.D.	0.50
AROCLOR 1232		N.D.	0.50
AROCLOR 1242		N.D.	0.50
AROCLOR 1248		N.D.	0.50
AROCLOR 1254		N.D.	0.50
AROCLOR 1260		N.D.	0.50

A2.2 UST Removal

DECON Environmental Services, a qualified, OSHA 40-Hour Hazardous Waste Operations and Emergency Response Certified contractor will be used to dispose of the tank contents and tanks. The liquid inside the tanks will be emptied and disposed off-site according to all applicable local, state and federal regulations. Likewise, the tanks and all supporting piping and concrete will be removed by the UST contractor and disposed off-site according to all applicable local, state and federal regulations.

A2.3 Characterization of Soil and Groundwater at the Former UST Locations

Since the integrity of the USTs is unknown, the USTs could have leaked their contents into the surrounding soil over a number of years. In order to protect construction workers and minimize their potential exposure to hydrocarbon-related soil and groundwater contaminants, both the soil and groundwater beneath the USTs will be characterized. Figure 1 shows the location of USTs.

It is recommended that a minimum of five soil samples and one grab groundwater sample be collected beneath the USTs. Based on the tank content analyses (Tables A-1 and A-2), the soil and groundwater samples will be analyzed for the following constituents:

- Total petroleum hydrocarbons as diesel (EPA Method 8015-modified)
- Total petroleum hydrocarbons as motor oil (EPA Method 8015-modified)
- Benzene, ethylbenzene, toluene and xylenes (BTEX) (EPA Method 8020)

A laboratory turnaround time of 24-hours will be used and the results of the UST characterization will be evaluated by SOMA to determine 1) if additional characterization is required; 2) if soil excavation and off-site disposal is

warranted; and 3) the level of protected equipment and training required for construction workers in the area of the former USTs.

A2.4 Worker Health and Safety for the UST area

The USTs were reported to contain total petroleum hydrocarbons as diesel and motor oil. However, the laboratory analytical reports further qualified these results by stating:

> *Hydrocarbon reported is in the late Diesel Range and does not match our Diesel Standard. Hydrocarbon reported as Motor Oil does not match the pattern of our Motor Oil Standard.*

This suggests that the material present in the USTs is of an oil nature and at the higher hydrocarbon range (i.e, greater that C_{12}). Historical information provided by Westinghouse Corporation (Personal communication, Mr. Gordon Taylor) indicates that the USTs were used to store mineral oil that was used as a transformer oil or dielectric fluid. Mineral oil is primarily comprised of long chain hydrocarbons that are typically less toxic than other lighter constituents in other petroleum products. As discussed previously, the soil and groundwater from beneath the USTs will be characterized in order to minimize potential exposures through inhalation, ingestion and dermal contact and ensure that workers are adequately protected during construction activities at the former UST locations.

SOMA industrial hygienist Philip Bumala, CIH, will act as the Site Safety Officer (SSO) and will conduct air monitoring during excavation activities at the UST area. The SSO will conduct a pre-construction health and safety meeting prior to commencing excavation operations, and will work with on-site staff to implement exposure prevention measures.

If air monitoring indicates that Level-C or higher personal protective equipment (PPE) is necessary, construction/excavation activities will be suspended until OSHA 40-hour trained workers can be obtained to continue site activities. This will occur only if engineering controls cannot be feasibly or adequately implemented to reduce air concentrations of petroleum hydrocarbons and potential BTEX below the levels specified in Table A-3.

Table A-3

Recommended Air Concentrations of Soil Contaminants

SOIL CONTAMINANT OF CONCERN	OSHA PERMISSIBLE EXPOSURE LIMIT (TWA) (mg/m^3)	ACGIH TLV FOR OCCUPATIONAL EXPOSURE (mg/m^3)	NIOSH RECOMMENDED OCCUPATIONAL EXPOSURE LIMIT (mg/m^3)
Petroleum Distillate	1,647 (400 ppm)		350 (85 ppm) 1,800 (15 min. ceiling)
Kerosene (light diesel)	None		100
Oil Mist	5		5
Benzene	3.2 (1 ppm)	32 (10 ppm)	0.3 (0.1 ppm)
Ethylbenzene	435 (100 ppm)	435 (100 ppm)	435 (100 ppm)
Toluene	375 (100 ppm)	375 (100 ppm)	375 (100 ppm)
Xylenes	434 (100 ppm)	434 (100 ppm)	434 (100 ppm)

A2.5 Site Work Recommendations

Workers should be informed prior to UST area work of the potential hazards associated with exposure to site-related contaminants, especially petroleum hydrocarbons and VOCs in soil and groundwater. Continuous air monitoring will establish the level of actual worker exposure to these compounds during construction/excavation activities. If air monitoring indicates that more stringent PPE is required, all construction/excavation operations will stop until OSHA 40-hour trained workers are available to continue construction activities. This will

only occur if engineering controls can not be feasibly or adequately implemented to the levels presented in Table A-3. Additional recommendations will be made onsite, as necessary by the SSO.

A3.0 Site Safety Authority

See Section 3.0 of the Site Health and Safety Plan.

A4.0 Job Hazard Analysis

The following summarizes the potential hazards associated with construction/excavation activities at the UST area of the Emeryville Facility.

A4.1 Chemical Hazards

The following presents a discussion of the potential hazards associated with the mineral oils that were reported to have been stored in the USTs.

Mineral Oil

Mineral oils are highly refined in order to remove any harmful substances. They are typically divided into two primary categories: 1) technical grades, which are used a lubricants and rust preventatives (e.g., for food machinery, among other uses); and, 2) USP grades, which can be used in applications such as food processing, dust control for cereal grains and in plastics production. Mineral oils are also widely used in pharmaceuticals, such as baby oil. Consequently, these oils have a wide range of applications designed for human exposure. The technical grade of mineral oil that was used for transformer fluid has gone through numerous toxicity tests to ensure protection of human health. Therefore, any potential exposure to mineral oil residues in soil during construction/excavation activities would not be expected to cause adverse health effects.

As discussed previously, the tank contents were reported to contain petroleum hydrocarbons consistent with portions of the TPH-d and TPH-mo ranges. In order to ensure adequate protection of workers in the UST areas, the following presents a discussion of the potential hazards associated with petroleum

hydrocarbons and the most toxic constituents that are routinely found with these petroleum compounds, specifically, TPH-d and BTEX.

Total Petroleum Hydrocarbons - as Diesel

Fuel oils are petroleum products that are used in many types of engines, lamps, heaters, furnaces, stoves, and as solvents. Fuel oils come from crude oil and are refined to meet specifications for each use. Fuel oils are mixtures of aliphatic (straight- and branched-chain hydrocarbons) and aromatic (benzene and compounds similar to benzene) petroleum hydrocarbons. In addition, they may contain small amounts of nitrogen, sulfur, and other elements as additives. The most likely way for a worker to be exposed to fuel oils is through contact with the skin or in the air. Some workers may be exposed to fuel oils through their skin if they come into contact with them without adequate protection, such as gloves, boots, coveralls, or other protective clothing.

Direct contact with skin can result in irritation and dermatitis. Inhalation of fuel oils can result in headache, light-headedness, anorexia (loss of appetite), poor coordination, and difficulty in concentration. Long term exposure of laboratory animals to fuel oils can cause skin cancer in mice and may cause liver cancer in mice. However, there is no evidence that the diesel range hydrocarbons cause cancer in man. Potential exposures during construction/excavation activities at the UST area of the Emeryville Facility would be of short duration and would not be expected to result in any adverse health effects.

Benzene

Benzene is a natural constituent of crude oil, and following petroleum refining, is a volatile component of lighter petroleum products such as gasoline. During construction activities, potential exposure to benzene would be primarily through inhalation and dermal contact with soil. Long-term exposure to relatively high levels of benzene in the air can cause cancer of the blood-forming organs, also known as leukemia. Long-term exposure to benzene has also been linked with damage to chromosomes which are the parts of cells that are responsible for the development of hereditary characteristics. Short term exposures to benzene in the air, as would occur during construction/excavation activities, can cause drowsiness, dizziness, rapid heart rate, headaches, tremors, confusion, and unconsciousness. In most cases, people will stop feeling these effects when they stop being exposed and begin to breathe fresh air. In humans, benzene is a skin irritant. By defatting the keratin layer, it may cause erythema, vesiculation, and dry and scaly dermatitis. Based on the short duration of exposure, no adverse health effects would be expected during construction/excavation activities.

Ethylbenzene

Ethylbenzene occurs naturally in coal tar and petroleum. It is also found in many man-made products, including paints, inks, and insecticides. During construction activities, potential exposure to ethylbenzene would be primarily through inhalation and dermal contact with soil. Exposure to low levels of ethylbenzene in the air for short periods of time may produce eye and throat irritation. Exposure to higher levels in air may result in more severe effects such as decreased movement and dizziness. In most cases, people will stop feeling these effects when they stop being exposed and begin to breathe fresh air. No significant health effects have been documented following dermal exposure to ethylbenzene. Studies in workers and in animals exposed to ethylbenzene indicate that ethylbenzene does not cause cancer. Based on the short duration of exposure, no adverse health effects would be expected during construction/excavation activities.

Toluene

Toluene occurs naturally in crude oil. It is produced in the process of making gasoline and other fuels from crude oil, in making coke from coal, and as a by-product in the manufacture of styrene. Toluene is used in making paints, paint thinners, fingernail polish, lacquers, adhesives, and rubber and in some printing and leather tanning processes. During construction activities, potential exposure to toluene would be through inhalation and dermal contact with soil. Exposure to toluene in the can cause tiredness, confusion, weakness, drunken-type actions, memory loss, nausea, and loss of appetite. These symptoms usually disappear when exposure is stopped. In humans, dermal contact with toluene may cause skin irritation because it removes skin oils (defatting). Studies in workers and in animals exposed to toluene indicate that toluene does not cause cancer. Based on the short duration of exposure, no adverse health effects would be expected during construction/excavation activities.

Xylenes

Toluene occurs naturally in crude oil. It is produced in the process of making gasoline and other fuels from crude oil. Along with other solvents, xylene is also used as a cleaning agent, a thinner for paint, and in varnishes. It is found in small amounts in fuels and petroleum products. Xylene is used as a material in the chemical, plastics, and synthetic fiber industries and as an ingredient in the coating of fabrics and papers. During construction activities, potential exposure to toluene would be through inhalation and dermal contact with soil. Short-term exposure of people to high levels of xylene can cause irritation of the skin, eyes, nose, and throat; difficulty in breathing; impaired

function of the lungs; delayed response to a visual stimulus; impaired memory; stomach discomfort; and possible changes in the liver and kidneys. Both short- and long-term exposure to high concentrations of xylene can also cause a number of effects on the nervous system, such as headaches, lack of muscle coordination, dizziness, confusion, and changes in one's sense of balance. These symptoms usually disappear when exposure is stopped. Studies in workers and in animals exposed to xylenes indicate that xylenes do not cause cancer. Based on the short duration of exposure, no adverse health effects would be expected during construction/excavation activities.

A4.2 Physical Hazards

See Section 4.2 of the Site Health and Safety Plan.

A5.0 Hazard Prevention Procedures

See Section 5.0 of the Site Health and Safety Plan.

A6.0 Personal Protective Equipment

For construction/excavation activities associated with the UST area, there are no indications of significant exposure to mineral oils, VOCs or petroleum hydrocarbons, based on preliminary results from sampling the contents of the tanks. Therefore, it is anticipated that Level-D protection will be adequate, at this time. Following characterization of the soil and groundwater beneath the USTs, additional worker protection may be required. The various levels of personal protection are summarized in detail in Section 6.0 of the Site Health and Safety Plan.

A7.0 Work Zones and Site Security

See Section 7.0 of the Site Health and Safety Plan.

A8.0 Decontamination Procedures

See Section 8.0 of the Site Health and Safety Plan.

A9.0 Training Requirements

See Section 9.0 of the Site Health and Safety Plan.

A10.0 Emergency Response and Contingency Plan

See Section 10.0 of the Site Health and Safety Plan.

ADDENDUM B

HEALTH AND SAFETY PLAN
FOR
THE FORMER WESTINGHOUSE ELECTRIC CORPORATION FACILITY

EXCAVATION AND CONSTRUCTION ACTIVITIES
AT 5815 PELADEAU STREET

B1.0 Introduction

The Site-wide Health and Safety Plan (HSP) was prepared to address all known aspects of construction-related activities associated with the development of the former Westinghouse Electric Corporation Facility located in Emeryville, California (Emeryville Facility). In November 1999, WEBCOR Builder's construction crew discovered an abandoned cistern during pile driving activities within the parking lot at the northern portion of the Site (Figure B-1). The following addendum to the site-wide HSP addresses soil sampling and construction activities for the Cistern Site and surrounding area, located at 5815 Peladeau Street, Emeryville, California.

B2.0 Cistern Site-Specific Activities

The following section describes all aspects of the construction-related activities for the Cistern Area, including 1) characterization of soil; and 2) hazards associated with the Cistern Area.

B2.1 Cistern Excavation Activities

At the time of excavation and removal, the steel cistern was full of sand. The soils at the sides and bottom of the excavation pit were stained and an objectionable odor was present. The bottom of the excavation pit was approximately 4 feet below grade. In order to evaluate the depth of potentially impacted soils, two soil samples were collected at 5- and 7-feet bgs. PCBs, in

the form of AROCLOR 1260, were reported at 32.8 and 71.5 mg/kg at the 5- and 7-feet depths, respectively. No semivolatile organic compounds (SVOCs) were detected at either depth. The only volatile organic compounds (VOCs) detected in soil were chlorobenzene (2.8 mg/kg at 5-feet bgs. And 3.6 mg/kg at 7-feet bgs) and 1,4-dichlorobenzene (0.3 mg/kg at 5-feet bgs. And 0.7 mg/kg at 7-feet bgs.).

B2.2 Characterization of PCB-Impacted Soils In the Cistern Area

In order to evaluate the lateral and vertical extent of PCB contamination in the Cistern Area, 18 soil samples were collected from 9 sampling locations. At each location, two samples were collected between 0 and 4-feet bgs. In near surface soil samples (i.e., between 0 and 2-feet bgs.), PCB concentrations ranged from 0.1 mg/kg to 60 mg/kg. In deeper soil samples (i.e., down to 4-feet bgs), PCB concentrations ranged from 0.6 mg/kg to 38 mg/kg.

B2.3 Worker Health and Safety for the Cistern and Surrounding Area

As discussed previously, the VOCs chlorobenzene and 1,4-dichlorobenzene were detected in near surface soils. Chlorinated benzenes were addressed previously in the Baseline Human Health Risk Assessment for the Former Westinghouse Electric Corporation (SOMA 1996). One of the exposure scenarios evaluated in this risk assessment was a hypothetical construction worker, assumed to be exposed to site contaminants for a 3-month construction period. Based on the results of the risk assessment, the maximum reported concentrations of chlorobenzene (3.6 mg/kg) and 1,4-dichlorobenzene (0.7 mg/kg) would not pose a threat of adverse health effects for construction workers.

PCBs were also detected in Cistern Area soils, with a maximum reported soil concentration of 60 mg/kg. Workers should be informed prior to site work of the potential hazards associated with exposure to site-related contaminants, especially PCBs in soil. Continuous air monitoring for total suspended particulate, metals and PCBs will establish the level of actual worker exposure to

these compounds during construction/excavation operations. If air monitoring indicates that more stringent PPE is required, all construction/excavation operations will stop until OSHA 40-hour trained workers are available to continue construction activities. This will only occur if engineering controls can not be feasibly or adequately implemented to the levels presented in Table 1 of the Site Health and Safety Plan and summarized below in Table B-1. Additional recommendations will be made onsite, as necessary by the SSO.

Table B-1

Recommended Air Concentrations of Soil Contaminants

SOIL CONTAMINANT OF CONCERN	OSHA PERMISSIBLE EXPOSURE LIMIT (TWA) (mg/m^3)	ACGIH TLV FOR OCCUPATIONAL EXPOSURE (mg/m^3)	NIOSH RECOMMENDED OCCUPATIONAL EXPOSURE LIMIT (mg/m^3)
PCB's	0.5		0.001

SOMA industrial hygienist Philip Bumala, CIH, will act as the Site Safety Officer (SSO) and will conduct air monitoring during excavation activities. The SSO will conduct a pre-construction health and safety meeting prior to commencing excavation operations, and will work with on-site staff to implement exposure prevention measures.

B3.0 Site Safety Authority

See Section 3.0 of the Site Health and Safety Plan.

B4.0 Job Hazard Analysis

See Section 4.0 of the Site Health and Safety Plan.

B5.0 Hazard Prevention Procedures

See Section 5.0 of the Site Health and Safety Plan.

B6.0 Personal Protective Equipment

For construction/excavation activities associated with the Cistern Site and surrounding area, it is anticipated that Level-D protection will be adequate, at this time. Based on air monitoring results, additional worker protection may be required by the SSO. The various levels of personal protection are summarized in detail in Section 6.0 of the Site Health and Safety Plan.

B7.0 Work Zones and Site Security

See Section 7.0 of the Site Health and Safety Plan.

B8.0 Decontamination Procedures

See Section 8.0 of the Site Health and Safety Plan.

B9.0 Training Requirements

See Section 9.0 of the Site Health and Safety Plan.

B10.0 Emergency Response and Contingency Plan

See Section 10.0 of the Site Health and Safety Plan.