SECTION III.K HAZARDS AND HAZARDOUS MATERIALS

III.K.1 Introduction

This section considers the range and nature of foreseeable hazardous materials and physical hazards impacts resulting from construction and occupancy of the Project. It identifies the primary ways these hazards could expose people and the environment to various health and safety risks associated with those hazards. This section describes the available information about hazardous materials in soil, sediment, surface water, and groundwater at the Project site and evaluates the potential for construction and occupancy of the Project to affect, or be affected by, environmental contamination associated with historic and current land uses within the Project site. It provides basic definitions of terms, and background on physical conditions. Historic and current land uses are summarized in this section, based on reports prepared by the Navy for the HPS Phase II, environmental assessments and documents that describe conditions in Candlestick Point, and a review of regulatory databases. In addition, a description of regulatory requirements that provide for the management of soil or groundwater contamination on the Project site is provided. Due to the unique contamination conditions and remediation efforts at HPS Phase II, portions of the impact analysis are presented separately from the analysis of Candlestick Point.

This section also describes the nature and extent of routine hazardous materials used in existing land uses in the Project site (e.g., production, distribution, and repair [PDR] uses and mixed-use development), and the potential for upset and accident conditions in which hazardous materials could inadvertently be released. The impact analysis identifies how proposed new land uses would introduce additional operational components (e.g., Research & Development [R&D]) that would increase the types and amounts of hazardous materials routinely used, stored, or transported to, from, and within the Project site, and the extent to which existing and future populations could be exposed to hazardous materials.

Other elements of hazardous materials exposure and potential risks to human health and the environment are air emissions. Sources of hazardous or toxic air emissions include, but are not limited to: processes (e.g., laboratory fume hood exhaust in R&D uses); vehicle use (diesel particulate emissions from exhaust); and proximity to existing or relocated sources of diesel or other toxic air emissions such as freeways and railroads and off-site industries and businesses. Impacts related to toxic air contaminants, including the release of diesel particulate matter from construction truck trips and/or delivery truck trips (when the haul routes are located within one-quarter mile of an existing or proposed school) are identified in Section III.H (Air Quality). The Project's proximity to air traffic and the potential for air safety hazards is evaluated in this section, along with an analysis of potential fire hazards and emergency response/access issues associated with the proposed intensification of land uses. Other safety hazards, such as earthquakes, are addressed in Section III.L (Geology and Soils). Flooding and sea level rise are addressed in Section III.M (Hydrology and Water Quality).

The use of hazardous materials in existing development, as well as any proposed future activities involving hazardous materials, along with the generation of hazardous wastes in the land uses, is governed by numerous federal, state, and local laws and regulations, which are summarized in this section. This section identifies both Project level and cumulative environmental impacts, as well as feasible mitigation measures that could reduce or avoid the identified impacts.

Scope of Analysis

Hazardous Materials Contamination Associated with Historic and Current Uses

There are substantial ongoing remediation programs at known hazardous material release sites at portions of the Project site from former Navy operations throughout HPS Phase II. These are the only known hazardous material release sites requiring remediation at the Project site; there are no known hazardous material release sites requiring remediation at Candlestick Point, or at locations where off-site improvements are proposed, based on the results of investigations to date and a review of government agency databases. For Candlestick Point and off-site locations, however, the analysis recognizes the potential for previously unknown contamination to be encountered, and recommends mitigation measures to address that potential.

The remediation program at HPS Phase II is being carried out under the *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA) and through a 1992 Federal Facilities Agreement (FFA) between the Navy and federal and state regulatory agencies. This ongoing remedial program is required to implement all remedial actions necessary to protect human health and the environment from risks associated with hazardous materials released into soil or groundwater, in consideration of the uses contemplated by the Project. As was the case in the Final Environmental Impact Report for HPS dated February 8, 2000,[267] and the Addendum to that FEIR dated November 19, 2003,[268] which supported the approval of the Phase 1 development at HPS, these ongoing remediation activities are not part of the Project. Thus, the goal of this EIR is not to assess the adequacy or impacts of the Navy's remediation actions. The relevant environmental regulatory agencies would require performance of these remedial activities regardless of whether this Project or any other development proposals were proceeding. Potential environmental effects of the remedial activities, i.e., of soil excavation, soil transport, and operation of treatment systems, have been, and will continue to be, evaluated by the Navy and regulatory agencies in conjunction with the approval process for specific remedial actions, and appropriate environmental controls have been, and will continue to be, incorporated into the design and implementation of those remedial actions. Therefore, although this EIR evaluates the potential for construction and occupancy of the Project to affect, or be affected by, hazardous materials release sites, it does not evaluate the potential impacts of the specific remedial activities conducted as part of these ongoing programs. However, this EIR does evaluate the potential impacts of certain limited remedial activities proposed to be conducted in conjunction with development activities, as described below.

[267] San Francisco Redevelopment Agency and Planning Department, *Final Environmental Impact Report, Hunters Point Shipyard Reuse*, February 8, 2000. A copy of this document is on file for public review at the San Francisco Redevelopment Agency, One South Van Ness Avenue, Fifth Floor as part of File No. ER06.05.07, or at the Planning Department, 1650 Mission Street, Fourth Floor, San Francisco, CA, 94103 as part of File No. 2007.0946E.
[268] San Francisco Redevelopment Agency and Planning Department, *Hunters Point Shipyard Phase I Addendum to Final Environmental Impact Report, Hunters Point Shipyard Reuse*, November 19, 2003. A copy of this document is on file for public review at the San Francisco Redevelopment Agency, One South Van Ness Avenue, Fifth Floor as part of File No. ER06.05.07, or at the Planning Department, 1650 Mission Street, Fourth Floor, San Francisco, CA, 94103 as part of File No. 2007.0946E.

Proposed Land Uses—Operational Impacts

The Project Description identifies proposed land uses, but the specific businesses or activities that could operate in the Project are not known at this time. The analysis assumes nearly all Project uses would involve the routine use of hazardous materials at varying levels, including uses at existing PDR and mixed-use land uses, and that there is the potential that such use could result in a release of hazardous materials. In each case, the potential hazards and the risks they would pose to people or the environment would depend on what materials would be used, where the materials would be used and stored, how they would be used, and who would use them. Quantification of precise amounts of additional hazardous materials use associated with new proposed uses is not practical at this stage of Project development. Therefore, the analysis qualitatively evaluates broad categories of hazardous materials use, ranging from R&D in which a wide variety of hazardous materials would be used, to facilities such as the proposed stadium, where fuels and maintenance products would comprise the majority of hazardous materials, to smaller-scale users, such as artists' studios and households. For purposes of the analysis, compliance with existing federal, state, and local laws and regulations pertaining to hazardous materials management would be sufficient to minimize health and safety risks, because these laws and regulations have been designed to protect health and safety and are enforced by state and local agencies.

The analysis of air traffic hazards is not addressed in detail in this EIR because the Project is not within hazard zones for any airport.

Regulatory Requirements and Mitigation Measures

HPS Phase II

All necessary remedial actions at HPS Phase II required by CERCLA, the FFA, or other applicable law must be completed to the satisfaction of the relevant regulatory agencies, and those agencies must determine that the site is suitable for its intended use, whether those remedial activities take place before or after the Navy transfers ownership of the property. The mitigation measures set forth in this section require the Project to be consistent with any requirements imposed as part of these remediation programs, and the federal, state, and local laws governing those remediation programs. For example, if such laws require institutional controls such as land use covenants that prohibit certain activities or types of land use on portions of the Project site or require the preparation and implementation of a Risk Management Plan (RMP), the mitigation measures set forth below impose the same requirements. Similarly, the mitigation measures require the Project to be implemented consistent with the terms of any property transfer document, e.g., if the Navy transfers ownership or leases portions of HPS Phase II prior to completion of remedial activities, the mitigation measures require the transferee to comply with all applicable activity and use restrictions set forth in the lease or deed.

Candlestick Point

Before permits are issued from the San Francisco Department of Building Inspection for development activities at the portions of Candlestick Point that are bayward of the 1851 high tide line (and, therefore, constructed on "Bay Fill" material), the Project Applicant must prepare a site history and soil sampling work plan, conduct soil sampling and analysis and, if found to be necessary, propose and implement site

mitigation measures[269] under the supervision of the San Francisco Department of Public Health as required by Article 22A of the *San Francisco Health Code* (sometimes called the Maher Ordinance). Mitigation measures identified in this EIR that are consistent with Article 22A (site mitigation measure requirements) are included below. No potentially significant impacts from exposure to hazardous materials release sites have been identified at the portions of Candlestick Point landward of the 1851 high tide line (i.e., in bedrock areas and/or areas containing soil deposited by natural means), based on publicly available information. However, because there is a potential that previously unidentified (or unknown) contaminated sites could be encountered during development activities (either within the Project site or at off-site improvement locations), this EIR identifies mitigation measures consistent with applicable federal and state regulatory requirements to prevent those activities from adversely affecting human health and the environment.

Certain other types of hazardous materials that may be present at the site (e.g., asbestos and lead-based paint in building materials, or naturally occurring asbestos in bedrock) are not addressed by the remediation programs described above but instead are addressed by mitigation measures requiring actions consistent with applicable regulatory requirements are provided.

Hazardous Materials Use

As a result of the health and safety risks associated with the use of hazardous materials, hazardous materials use, storage, and disposal are subject to numerous laws and regulations at various levels of government. These laws and regulations are identified in this Section. In most cases, the laws and regulations pertaining to hazardous materials management are sufficient to minimize risks to human health and the environment, except where site-specific conditions warrant additional consideration. The impact analysis identifies areas where impacts related to hazardous materials during Project occupancy may, nonetheless, be potentially significant. In these cases, feasible mitigation measures are identified.

Hazardous Materials Basic Concepts and Terms

Some of the key terms used in the management of hazardous materials and the context within which they apply to sites where contaminants have been identified in soil or groundwater are presented below. Additional terminology is provided in the EIR glossary in Chapter VIII (Acronyms/Abbreviations and Glossary).

- A "hazardous material" is any material that, because of its quantity, concentration, or physical, or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. Hazardous materials include, but are not limited to, hazardous substances, hazardous waste, and any material that a handler or the administering agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment (*California Health and Safety Code*, Section 25501).
- A "hazardous materials release site" refers to any area, location, or facility where a hazardous material has been released or threatens to be released to the environment.

[269] The "site mitigation measures" required under Article 22A, Section 1228 are identified separately and independently of the CEQA process.

- "Remedial action" or "remediation" refers to actions required by federal, state, or local laws, ordinances, or regulations necessary to prevent, minimize, or mitigate damage that may result from the release or threatened release of a hazardous material. These actions include site cleanup, monitoring, testing, and analysis of site conditions, site operation and maintenance, and placing conditions or restrictions on the land use of the site upon completion of remedial actions. This section describes those actions and it is assumed that those actions would appropriately prevent, minimize, or mitigate potential environmental impacts.

The risk to human health and the environment is determined by the probability of exposure to hazardous material(s) and the severity of harm such exposure would pose. That is to say, the likelihood and means of exposure, in addition to the inherent toxicity of a material, are used to determine the degree of risk to human health or the ecological environment. For example, a high probability of exposure to a low toxicity chemical would not necessarily pose an unacceptable human health or ecological risk, whereas a low probability of exposure to a very high toxicity chemical might. Methodologies have been established by the US Environmental Protection Agency (US EPA), which are also used at the state level, to quantify that risk. The quantified risk levels are one of several elements used in the decision-making process to determine how that risk should be managed.

III.K.2 Setting

This Setting describes the nature and extent of hazardous materials release sites within the Candlestick Point and HPS Phase II sites, along with the current status of investigation and cleanup efforts in those sites. It also identifies Project-wide hazards and hazardous materials conditions such as naturally occurring asbestos, hazardous materials use, and conditions at off-site improvement locations.

Current Conditions at Candlestick Point

As described below, there are no known hazardous materials release sites requiring remediation at Candlestick Point.

Historic Uses at Candlestick Point

Nearly all the land that presently encompasses Candlestick Point was originally submerged beneath the waters of the Bay. The only non-submerged land was Candlestick Point, which rose steeply from the South Basin and was part of the northeastern slope of Bayview Hill.

Historic uses in Candlestick Point were open space with some limited industrial activities. The stadium was constructed in the late 1950s. Candlestick Point State Recreation Area (CPSRA) was established in 1974 to construct a 154-acre park along the eastern shoreline.[270]

Areas of the San Francisco Bay shoreline that border Candlestick Point (as well as HPS Phase II) historically consisted of marshland with tidal sloughs. Beginning in the 1850s, the shallow margins of the Bay were filled to extend the shoreline, and the fill activities have altered the natural shoreline. The

[270] Department of Parks and Recreation, *Candlestick Point State Recreation Area General Plan* (State Park and Recreation Commission Approval, November 1978, amended May 1987), March 1988.

majority of the shoreline was filled between 1906 and 1940, with the Yosemite Slough area and portions between Islais Creek and HPS Phase II filled in the 1930s to 1950s.

As with many other locations along the Bay shoreline in the City, the fill materials were primarily obtained from dune sands, quarried rock from local hillsides, industrial refuse, and building debris following the 1906 earthquake. Hazardous materials used both as standard materials of construction and in the industries that were destroyed during the 1906 fire and earthquake were commonly incorporated into the earthquake debris, which was then used as general fill and subsequently built upon during reconstruction. Because of this historical practice, the 1906 earthquake fill commonly contains hydrocarbons, heavy metals, oil and grease, and semi-volatile organic compounds. Asbestos in fireproofing materials and lead from paints may also be present. The type of fill so far identified within Candlestick Point consists primarily of clays, with some sand and gravel, except in an area south of Yosemite Slough where there is less clay and more sand, gravel and silts. The investigation discussed below indicates that debris found in the fill at Candlestick Point includes crushed concrete, red brick, foam, plastic, ceramic tiles, copper wire, porcelain, glass, and wood fragments.[271]

Alice Griffith Public Housing

The area now occupied by the Alice Griffith public housing site was first developed in 1863 as a horseracing track known as Bay View Park. By the 1880s, the site had been reclaimed by the Bay, and remained undeveloped marshland until World War II. Prior to the construction of the Alice Griffith public housing, the site was occupied by the Double Rock War Dwellings, constructed in the 1940s to house workers at the Shipyard. The site was filled and graded in the early 1960s to construct the Alice Griffith public housing. The source of the fill is unknown, but may have come from the adjacent hillside. The current Alice Griffith public housing site consists of a community of 256 units ranging in size from one to five bedrooms, paved parking, and landscaped areas that were constructed beginning in 1962.

Results of Environmental Investigations at Candlestick Point

In 1998, Geomatrix Consultants, Inc, (Geomatrix) conducted an investigation of the current site of Candlestick Park and associated parking areas, CPSRA and maintenance area, an area north of Yosemite Slough, an area southeast of Harney Way, and Hunters Point Expressway, comprising a total land area of approximately 196 acres, for the then-proposed new stadium and retail mall.[272] The investigation report noted both the presence of fill materials described above and that there were a number of documented underground storage tanks (USTs) throughout Candlestick Point, some of which have been removed along with associated soil remediation, but, as the report concluded, there may still be unknown USTs within Candlestick Point.

To determine if potential releases of hazardous materials associated with fill materials, USTs, or other unidentified sources may present an unacceptable risk to human health or the environment, Geomatrix performed an extensive soil and groundwater sampling program to collect chemical data from areas

---

[271] Geomatrix, *Reference Report Summarizing Environmental Conditions Bayview Hunters Point Brownfields Pilot Project, San Francisco, California*, April 1998. Areas SE14, SE11, NE08. This document is on file for public review at the San Francisco Redevelopment Agency, One South Van Ness Avenue, Fifth Floor as part of File No. ER06.05.07, or at the Planning Department, 1650 Mission Street, Fourth Floor, San Francisco, CA, 94103 as part of File No. 2007.0946E.
[272] Ibid.

where underground and above-ground storage tanks were known to previously exist, and to evaluate chemical types and concentrations in fill at depths of up to 15 feet, the depth at which excavation could occur during the previously planned redevelopment activities. Seventy-eight soil borings were advanced and 26 temporary shallow groundwater monitoring wells installed to investigate the fill areas. Two hundred and twenty soil samples were analyzed for metals, 50 soil samples were analyzed for volatile organic compounds (VOC),[273] 90 soil samples were analyzed for polycyclic aromatic hydrocarbons known as petroleum hydrocarbon constituents (PAHs), and 124 samples were analyzed for pesticides, herbicides, polychlorinated biphenyls (PCBs), and asbestos. Groundwater samples were analyzed for VOCs, total extractable petroleum hydrocarbons as diesel (TEPHd), PAHs, PCBs, pesticides, metals, and total dissolved solids.

The main chemicals detected in soils were PAH and metals (chromium, copper, lead, mercury, nickel, and zinc). PCBs and trace concentrations of chlorinated pesticides were also detected in soil. The organic compounds and metals in soil were found at various and widely disparate depths and locations. This indicated the chemicals were very likely associated with fill materials. Shallow groundwater beneath the site was found to contain low levels of a few organic compounds. A human health risk evaluation concluded that the presence of the detected chemicals in soil and shallow groundwater did not pose a significant carcinogenic or non-carcinogenic risk to future workers or visitors, nearby residents or workers, or recreational users of areas adjacent to the Bay. Compounds of potential ecologic concern (metals and pesticides) were determined to not pose a significant risk to aquatic organisms.[274]

In June 2006, MACTEC conducted a Phase I Environmental Site Assessment (ESA) for Candlestick Point; in March 2009, MACTEC updated the assessment to include the proposed Candlestick Point Center, Alice Griffith housing development, the Jamestown Avenue parcels, and the CPSRA. No releases or areas of recognized environmental conditions were observed or noted during these Phase I assessments. The 2009 Phase I ESA did note that these areas, including the Alice Griffith public housing site, were built on fill materials, so the general statements about fill materials in this section also apply to those portions of Candlestick Point.

In preparing the ESA, MACTEC conducted a site visit of the Alice Griffith site. General maintenance chemicals including paints and cleaners were observed in storage areas. No other petroleum products or hazardous materials were observed, nor was there any indication of past releases of hazardous materials. The ESA did note the potential presence of lead-based paint and the potential for asbestos-containing materials, given the age of the buildings within the Alice Griffith site.

From February 2009 through July 2009, the California Department of Parks and Recreation (DPR) conducted a trail restoration, waste, and rubble removal project at CPSRA. The project was funded by the California Integrated Waste Management Board (CIWMB) through a grant from its Solid Waste

[273] A volatile organic compound (VOC) is an organic chemical that readily evaporates at temperatures normally found at the ground surface and at shallow depths.

[274] Geomatrix Consultants, *Site Investigation and Risk Evaluation Report for the Proposed San Francisco 49ers Stadium and Mall Site*, January 12, 1998; and Geomatrix Consultants, *Addendum 1 to the Site Investigation and Risk Evaluation Report for the Proposed San Francisco 49ers Stadium and Mall Site*, January 12, 1998. This document is on file for public review at the San Francisco Redevelopment Agency, One South Van Ness Avenue, Fifth Floor as part of File No. ER06.05.07, or at the Planning Department, 1650 Mission Street, Fourth Floor, San Francisco, CA, 94103 as part of File No. 2007.0946E.

Cleanup Program. CIWMB determined that CPSRA was eligible for the program because of the damage caused by a series of fires in the early 1980s in an area of Bay Fill called the Last Rubble Disposal Area.

In the context of approving a recent request to conduct geotechnical test drilling in the CPSRA, DPR staff indicated in September 2009 that, decades ago, individuals may have disposed of household hazardous waste on portions of the CPSRA. DPR does not have any files indicating that a state-regulated landfill was on-site. CIWMB staff responded to DPR staff's inquiry about the proposed test drilling by confirming that the activity was "not of regulatory significance."[275]

The scope of work at CPSRA centered around three tasks: the identification and removal of solid waste, rubble, and hazardous materials; the restoration of a few trails and access roads and the re-vegetation of some areas. Areas of CPSRA that were observed to contain hazardous materials or any soil observed to contain burn ash was sampled and tested for organic constituents. Any materials that were deemed to be hazardous were removed and disposed of in compliance with applicable law. During the rubble removal, the contractor and DPR segregated rocks that were suitable for shoreline hardening repairs and preserved all of the granite stones.

According to the California Department of Toxic Substances Control (DTSC) EnviroStor and State Water Resources Control Board (SWRCB) Geotracker online databases, there are currently no known, unremediated, or active hazardous materials release sites at Candlestick Point.[276,277]

Current Conditions at Hunters Point Shipyard

As described below, the historic uses at HPS by both the Navy and its tenants resulted in a number of hazardous materials release sites that are presently undergoing remediation by the Navy under federal law under the supervision of federal and state environmental agencies and in accordance with CERCLA. The Navy and regulatory agencies have determined that none of the areas that are accessible to tenants and visitors is a hazard to current tenants and visitors, as determined in the 2008 Finding of Suitability to Lease (FOSL) issued by the Navy.

Historic Uses at Hunters Point Shipyard

HPS is on a peninsula that extends east into the Bay. The entire HPS covers 936 acres: 496 on land and 440 under water. Maritime activities at HPS began in the nineteenth century when the first drydock was built in 1868. In 1903, a second dry-dock was built and operated by Bethlehem Steel Company. The Navy purchased HPS in 1939 and took over full operations in 1941. Significant construction began in 1941 after American entry into World War II, when the Navy began excavation of the hills surrounding the shipyard, using the resulting spoils to expand the shoreline into the Bay. Expanding the size of the shipyard through filling the Bay with soil, waste, and debris continued through the 1970s. HPS's primary mission was the repair and maintenance of ships and submarines.

---

[275] Personal communication between Stephen Bachman, California Department of Parks and Recreation, and Jeff Austin, Lennar Bay Area Urban, September 28, 2009.
[276] California Department of Toxic Substances Control EnviroStor website. http://www.envirostor.dtsc.ca.gov/public/> (accessed June 26, 2009).
[277] State Water Resources Control Board Geotracker website. http://geotracker.swrcb.ca.gov (accessed June 26, 2009).

After the 1946 atomic tests at Bikini Atoll in the South Pacific, contaminated target and support ships were brought to HPS for decontamination and study. In response to the new need to understand radiological issues, the Naval Radiological Defense Laboratory (NRDL) was established in 1948 at Hunters Point and operated until 1969. Historic radiological operations also included the following: repair, use, and disposal of radioluminescent commodity items (dials, gauges, and deck markers); gamma radiography for testing of metal and welds; and laboratory calibration operations for ensuring radiation survey instrument accuracy. Additionally, Mare Island Naval Shipyard used berthing and dry-dock facilities at HPS between 1985 and 1989 for work on nuclear-powered ships. The primary radionuclides involved with these operations were tritium (hydrogen-3 [H-3]), cesium-137, radium-226, strontium-90, thorium-232, plutonium-239, americium-241, and uranium-235.

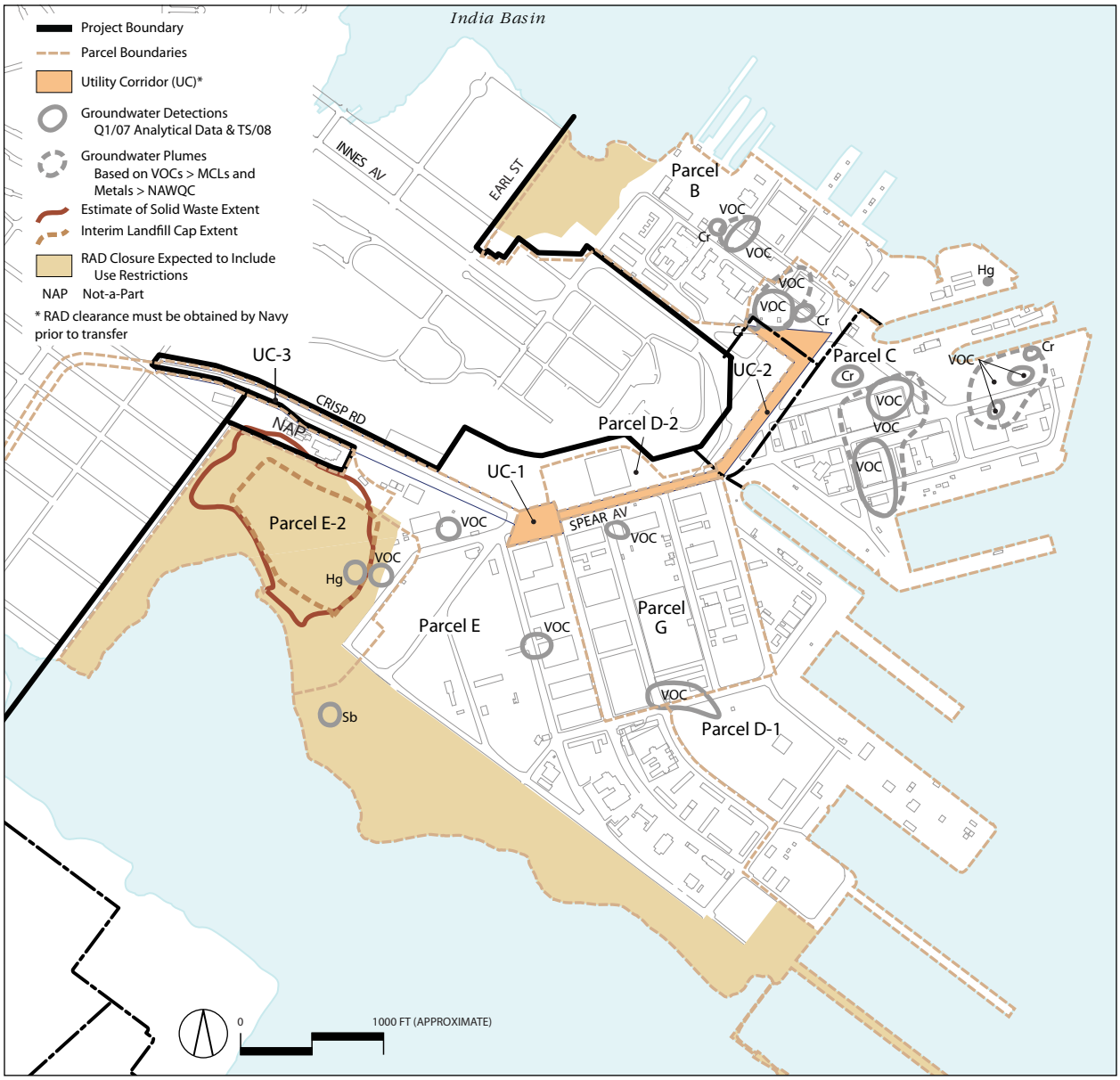
HPS was decommissioned in 1974. In 1976, the Navy leased the site to Triple A Machine Shop (Triple A), which was subsequently indicted and convicted for illegal disposal of hazardous substances at Hunters Point. In 1986, Triple A's 10-year lease expired and was not renewed. The Navy is responsible for addressing hazardous material releases resulting from Triple A's activities. Between 1986 and 1990, the Navy used Hunters Point to repair several naval vessels. In 1991, HPS was placed on the Navy's Base Realignment and Closure (BRAC) list, and its mission as a Navy shipyard ended on April 1, 1994.

Status of Environmental Investigations and Cleanup Activities

The historic operations at HPS Phase II described above are the sources of chemical and radiological contamination that resulted in the need for extensive investigation and development of remedial measures. Beginning in 1984, the Navy has undertaken a comprehensive program to address hazardous materials release sites at HPS. This program is called the "Installation Restoration Program." The property was added to the National Priorities List (NPL) in 1989 as a Superfund site pursuant to CERCLA. HPS is included on the list of hazardous materials sites compiled pursuant to California *Government Code* Section 65962.5 (the "Cortese" list).

In 1992, the Navy, the US EPA Region 9, the DTSC, and the San Francisco Bay Regional Water Quality Control Board (RWQCB) (collectively referred to as the FFA Signatories) entered into a FFA. The FFA establishes a procedural framework and schedule for the remediation of HPS. Environmental investigation and restoration activities at HPS are coordinated as prescribed in the FFA among the Navy, US EPA, and the State of California (including DTSC and RWQCB). The FFA divided the HPS facility into five contiguous geographic parcels (Parcels A, B, C, D, and E) to organize and expedite the cleanup process. A sixth parcel, the offshore area (Parcel F), was added in 1996, and another separate parcel (Parcel E-2) was created in 2004. In 2008, the Navy divided Parcel D into four parcels: D-1, D-2, UC-1, and G. Parcel UC-2 was carved out of Parcel C. Parcels UC-1 and UC-2 will serve as streets and utility corridors.[278] Figure III.K-1 (Hunters Point Shipyard Phase II Hazardous Materials Conditions) shows the locations of the Navy parcels in HPS Phase II. Table III.K-1 (Hunters Point Shipyard Navy Parcels' Relationship to Proposed Districts) shows how the HPS facility cleanup parcel designations generally correspond to the proposed district nomenclature. However, for purposes of this section, the Navy's facility parcel designations are used to describe locations.

[278] As shown in recent Navy fact sheets and report figures, it is anticipated that the Navy will carve an additional street and utility corridor, Parcel UC-3, out of Parcel E in the future.



SOURCE: Treadwell & Rollo, 2009.

PBS&J 10.31.09 08068 | JCS | 09

Candlestick Point — Hunters Point Shipyard Phase II EIR

FIGURE III.K-1

HUNTERS POINT SHIPYARD PHASE II
HAZARDOUS MATERIALS CONDITIONS

Table III.K-1 (Hunters Point Shipyard Navy Parcels' Relationship to Proposed Districts) shows how the HPS facility cleanup parcel designations generally correspond to the proposed district nomenclature. However, for purposes of this section, the Navy's facility parcel designations are used to describe locations.

Table III.K-1 Hunters Point Shipyard Navy Parcels' Relationship to Proposed Districts

Hunters Point Shipyard Parcel Designation	*Proposed HPS Phase II Districts*
A and B	HPS Village Center
C and UC-2	HPS Village Center and R&D
A and D (includes D-1, D-2, and UC-1)	Stadium and R&D/Parking
E	Sports Fields/Parking
E-2	Open Space
F (off-shore)	Marina
G (a portion of Parcel D)	49ers Stadium (or No Stadium option)

SOURCE: Lennar Urban, 2009; Navy documents

The status of the Navy's environmental investigations and cleanup activities at each of the parcels at HPS Phase II is discussed in separate subsections below. To understand the status at each parcel, it is helpful to first have a general understanding of the process followed by the Navy pursuant to the FFA for investigating and cleaning up HPS Phase II.

Overview of the Environmental Investigation and Cleanup Process

The cleanup process under the FFA involves the preparation of an iterative series of reports documenting various investigation and remedial activities, and securing the approval of those reports from the other FFA Signatories (US EPA, DTSC, and RWQCB). Early in its implementation of the Installation Restoration Program, the Navy conducted a Preliminary Assessment and Site Identification (PA/SI) process to identify the locations at HPS requiring additional investigation and perhaps remediation. These locations were identified as "Installation Restoration Sites" (IR sites) and were designated by numbers, IR 1 through IR 78.

After the site identification process, the next step under the Navy's program is the preparation of Remedial Investigation (RI) reports for all the IR sites and other locations of concern in each parcel. An RI report addresses the nature and extent of contamination at each IR site in the parcel. A Human Health Risk Assessment (HHRA) is prepared in conjunction with the RI. The HHRA identifies the contaminants that could pose a health risk under different exposure scenarios, and identifies potential numeric remediation goals. At certain sites, an Ecological Risk Assessment (ERA) is also conducted.

The next step is the preparation of a Feasibility Study (FS) for all of the IR sites requiring further action and other locations of concern in a parcel. The FS evaluates the effectiveness and cost of various remedial technologies that can be used to reduce site risk to acceptable levels. Those two steps are often combined through the preparation of a single RI/FS document. The Navy has completed the RI/FS

process at all parcels except Parcels E and E-2.[279] A draft FS has been completed for Parcel E, and a draft final RI/FS has been completed for Parcel E-2. A The Navy often does not wait for the RI/FS process to be complete before commencing physical cleanup activities. The Navy has completed numerous "time critical" (and "non-time critical") "removal actions" and "treatability pilot studies" in conjunction with its physical investigations and evaluation of alternatives for remediating the identified IR sites.

After the RI/FS process is completed, the Navy prepares a Proposed Plan (PP), which summarizes findings of the RI and proposes a preferred remedial approach for each identified IR site in a parcel based on the options evaluated in the FS. After the PP is presented to regulatory agencies and the public, the final decision selecting the remedy for the parcel is documented in a CERCLA Record of Decision (ROD), which is approved by the FFA Signatories. The CERCLA ROD takes into account public comments and community concerns and includes the Navy's response to these comments. RODs have been completed for Parcels B, D-1, UC-1, UC-2, and G. The RODs for Parcels C and D-2 are scheduled to be complete in the 2009-2010 timeframe. The ROD for Parcel F is not expected until 2012.

After the ROD is finalized, a Remedial Design document is prepared to set forth details of how the remedies identified in the ROD will be carried out. Then, the remedial actions are conducted in accordance with the specifications of the approved remedial design, e.g., groundwater treatment systems and soil vapor extraction systems are installed and operated, soil is excavated, caps are installed, land use restrictions are legally recorded, etc. In many cases, these components of the remedy have already commenced or even been completed before issuance of the ROD -- as removal actions or treatability studies.

The process described above is for activities addressing hazardous substances under CERCLA. Because CERCLA excludes petroleum from its definition of "hazardous substances," the cleanup of petroleum releases from USTs or other sources is regulated under state law by the RWQCB. The petroleum cleanup follows a parcel-by-parcel iterative process similar to the CERCLA cleanup program; i.e., investigation followed by identification of cleanup options, culminating in the approval by the RWQCB of a "corrective action plan" (CAP) for each parcel (if necessary) and implementation of the cleanup actions identified in that plan.

In addition to the parcel-by-parcel reports described above, the Navy has conducted several basewide investigation and remediation programs for specific types of hazardous materials. Radiological investigations have been prepared on a basewide level for all parcels where there was a potential for radioactive contamination to be present. Basewide studies have also been performed for certain materials such as PCBs and asbestos-containing materials in buildings and structures, along with comprehensive evaluations of potentially contaminated steam lines, sewer, and storm drainage systems. These studies are described after the subsections describing the status of each parcel.

---

[279] Engineering /Remediation Resources Group, Inc., *Draft Feasibility Study Report for Parcel E,* July 2009; Engineering/Remediation Resources Group, *Draft Final Revised Remedial Investigation Feasibility Study Report for Parcel E-2,* February 1, 2009. These reports are on file for public review at the San Francisco Redevelopment Agency, One South Van Ness Avenue, Fifth Floor as part of File No. ER06.05.07, or at the Planning Department, 1650 Mission Street, Fourth Floor, San Francisco, CA, 94103 as part of File No. 2007.0946E.

Current Conditions at HPS Parcel A

Parcel A consists of 75 acres, primarily on Hunters Point Hill and was formerly the residential area for the Shipyard. Parcel A contained 74 buildings, and the majority of the structures were former residences. Other buildings included storage, residential accessory structures, and administrative offices. Environmental investigations determined that site conditions posed no threat to human health or the environment. A No Further Action ROD was issued for Parcel A in 1995. Parcel A was deleted from the Superfund list in 1999. In December 2004, a Finding of Suitability to Transfer (FOST) for Parcel A was finalized, resulting in the transfer of Parcel A to the City.[280] The FOST for Parcel A described in detail the potential impact on future residents of Parcel A from the hazardous material release sites where remediation had not been completed on other adjacent parcels, particularly what is now Parcel E-2, and concluded that there would not be significant impacts on Parcel A from Parcel E-2 or other adjacent parcels at HPS.

Development underway on Parcel A is referred to as Phase I. Areas of Parcel A are within HPS Phase II, including portions of HPS Village Center and HPS South Districts.[281]

Current Conditions at HPS Parcel B

HPS Parcel B: Historic Uses

Parcel B was formerly part of the industrial support area and was used for fuel distribution, sandblasting, painting, machining, acid mixing, and metal fabrication, shipping, training, barracks, and offices. Other significant activities at Parcel B included potential disposal of decontamination materials from ships used during nuclear weapons testing in 1946 and 1947. Fill containing a high percentage of construction debris was placed on the northwestern side of Parcel B (an area known as IR Sites 7/18) during the expansion of the shipyard in the 1950s. In 1976, the Navy leased most of HPS, including all of the area now known as Parcel B, to Triple A. From 1945 through 1987, contaminant releases occurred during site operation under the Navy and Triple A; however, specific dates of releases are not known. Since 1986, portions of Parcel B have been leased for such uses as artists' studios, storage, and cabinet making. The 2008 Finding of Suitability to Lease (FOSL) provided for such uses.[282]

As reported in environmental investigation documents (refer to discussion below), about 75 to 80 percent of HPS ground surface is covered by pavement and buildings. There is no permanent surface water on Parcel B. Surface water runoff flows to the Bay via gravel-lined swales and/or percolates

[280] US Department of the Navy Base Realignment and Closure Program Management Office West, Finding of Suitability to Transfer for Parcel A (Revision 3) Final, Hunters Point Shipyard, San Francisco, California, October 14, 2004. This document is on file for public review at the San Francisco Redevelopment Agency, One South Van Ness Avenue, Fifth Floor as part of File No. ER06.05.07, or at the Planning Department, 1650 Mission Street, Fourth Floor, San Francisco, CA, 94103 as part of File No. 2007.0946E.

[281] Environmental requirements that ensure that the development of Parcel A is conducted in a manner that protects public health and safety have been, and will continue to be, guided by deed restrictions and the provisions of Article 31 of the San Francisco Municipal Code and associated plans. The deeds contain certain notice requirements related to motor oil in groundwater, asbestos building materials, and lead paint. Article 31 requires the Project Applicant to prepare dust control, off-site soil disposal, stormwater and erosion control plans and submit them to SFDPH for approval.

[282] The 2008 FOSL for Parcel B also included one building (Building 606) within Parcel D-1.

through surface soil during storm events. Groundwater at Parcel B consists of the A-Aquifer and the B-Aquifer, which are both shallow. The A-Aquifer is not a source of drinking water. The B-Aquifer has never been used as a source of drinking water and has limited beneficial use. There is an extensive groundwater monitoring well network.

Parcel B: Results of Environmental Investigations

The primary chemicals in Parcel B soils at concentrations above cleanup goals are VOCs, semi-volatile organic compound (SVOCs),[283] PCBs, and metals. VOCs, chromium VI (hexavalent chromium), and mercury are the primary chemicals that have been detected in groundwater. The VOC plume has been the subject of a zero-valent iron (ZVI) injection treatability study and has been monitored for several years. Concentrations within the plume are decreasing as the result of ZVI injection during treatability study testing. Petroleum hydrocarbons have also been detected in Parcel B soil and groundwater. A survey in IR Sites 7/18 found methane present at concentrations that could potentially be explosive if vapors were to accumulate above levels of concern in a structure. The presence of methane may have been related to the construction debris placed there in the 1950s or a function of organic-rich Bay margin sediments, or a combination thereof.[284]

The original HHRA for Parcel B was conducted in 1996, followed by updates in 2003 and 2007 that accounted for ongoing cleanup and additional data gathering and evaluation. The 2007 assessment evaluated exposure scenarios for the individual metals and organic compounds that could present a risk for construction worker, residential, industrial, and recreational land uses. The assessment conservatively assumed these individuals could come into direct contact with soil, ingest it, or inhale dust containing the contaminants. Potential risks from groundwater are based primarily on breathing VOC vapors in indoor air that have migrated from groundwater in the A-aquifer.

The results of a screening-level ecological risk assessment (SLERA) identified potential unacceptable risk to benthic invertebrates, birds, and mammals from exposure to several metals (chromium VI, copper, lead, and mercury), pesticides, and PCBs in sediment along the shoreline.[285]

HPS Parcel B: Cleanup Status

The Navy has been performing basewide removal actions of radiological contamination to substantially eliminate identified pathways of exposure to radioactive contamination for surrounding populations and

---

[283] A semi-volatile organic compound (SVOC) is an organic chemical that readily, but only partially, evaporates or changes from a liquid to gas at temperatures normally found at the ground surface and at shallow depths.

[284] ChaduxTt and Tetra Tech, *Parcel B Technical Memorandum in Support of a Record of Decision Amendment*, Final, December 12, 2007; ChaduxTt and Tetra Tech, Amended *Parcel B Record of Decision Amendment*, January 14, 2009; Jonas and Associates, *Final Second Five-Year Review of Remedial Actions Hunters Point Shipyard*, November 11, 2008. These documents are on file for public review at the San Francisco Redevelopment Agency, One South Van Ness Avenue, Fifth Floor as part of File No. ER06.05.07, or at the Planning Department, 1650 Mission Street, Fourth Floor, San Francisco, CA, 94103 as part of File No. 2007.0946E.

[285] ChaduxTt and Tetra Tech, *Parcel B Technical Memorandum in Support of a Record of Decision Amendment*, Final, December 12, 2007; ChaduxTt and Tetra Tech, Amended *Parcel B Record of Decision Amendment*, January 14, 2009; Jonas and Associates, *Final Second Five-Year Review of Remedial Actions Hunters Point Shipyard*, November 11, 2008. This document is on file for public review at the San Francisco Redevelopment Agency, One South Van Ness Avenue, Fifth Floor as part of File No. ER06.05.07, or at the Planning Department, 1650 Mission Street, Fourth Floor, San Francisco, CA, 94103 as part of File No. 2007.0946E.

nearby ecosystems, such as nearby wetlands and the Bay. At Parcel B, the radiological cleanup activities have targeted radiologically impacted buildings, storm drains, and sanitary sewers. All waste material was disposed at an appropriate off-site facility. In addition, the source of methane in IR Sites 7/18 has been remediated through excavation and groundwater monitoring, and documentation is pending.

In 1997, the Navy selected a remedial action for Parcel B, which was documented in a ROD. After performing detailed technical assessments over the last 10 years, including additional investigations, and a revised risk assessment, the Navy developed a proposed revised remedy. The revised approach takes into account updated information and includes items such as the ubiquitous nature of metals in soil across Parcel B as a function of the imported fill, the presence of methane and mercury, the findings of a SLERA, and findings from removal actions to address radiological contaminants.

The revised remedy was documented in a ROD Amendment, finalized in February 2009.[286] The ROD Amendment describes the reasons why the Navy selected the preferred alternative for cleaning up the soil and groundwater at Parcel B.[287] Some components of the revised remedy have been completed, such as the methane and mercury source removals. Other components are in progress, such as the radiological source removals (including radiologically impacted sewer and storm drain lines).[288]

The major components of the soil remedial actions are: excavating contaminated soil with off-site disposal, and covering with clean soil or other impervious surfaces such as pavement, concrete, or buildings; installing a soil vapor extraction system (SVE) to remove VOCs from soil and a soil vapor sampling program to evaluate the potential for vapor intrusion into buildings; constructing a shoreline revetment to protect ecological receptors along the Bay shoreline and to prevent or minimize wave-generated erosion from breaching the cover or cap; continuing the removal of radiologically contaminated building materials and soils; and implementation of Institutional Controls (ICs) to limit exposure to contaminated soil and groundwater by restricting specified land uses and activities on the parcel.[289] Figure III.K-2 (Parcel B Areas Requiring Institutional Controls) illustrates the Parcel B ICs.

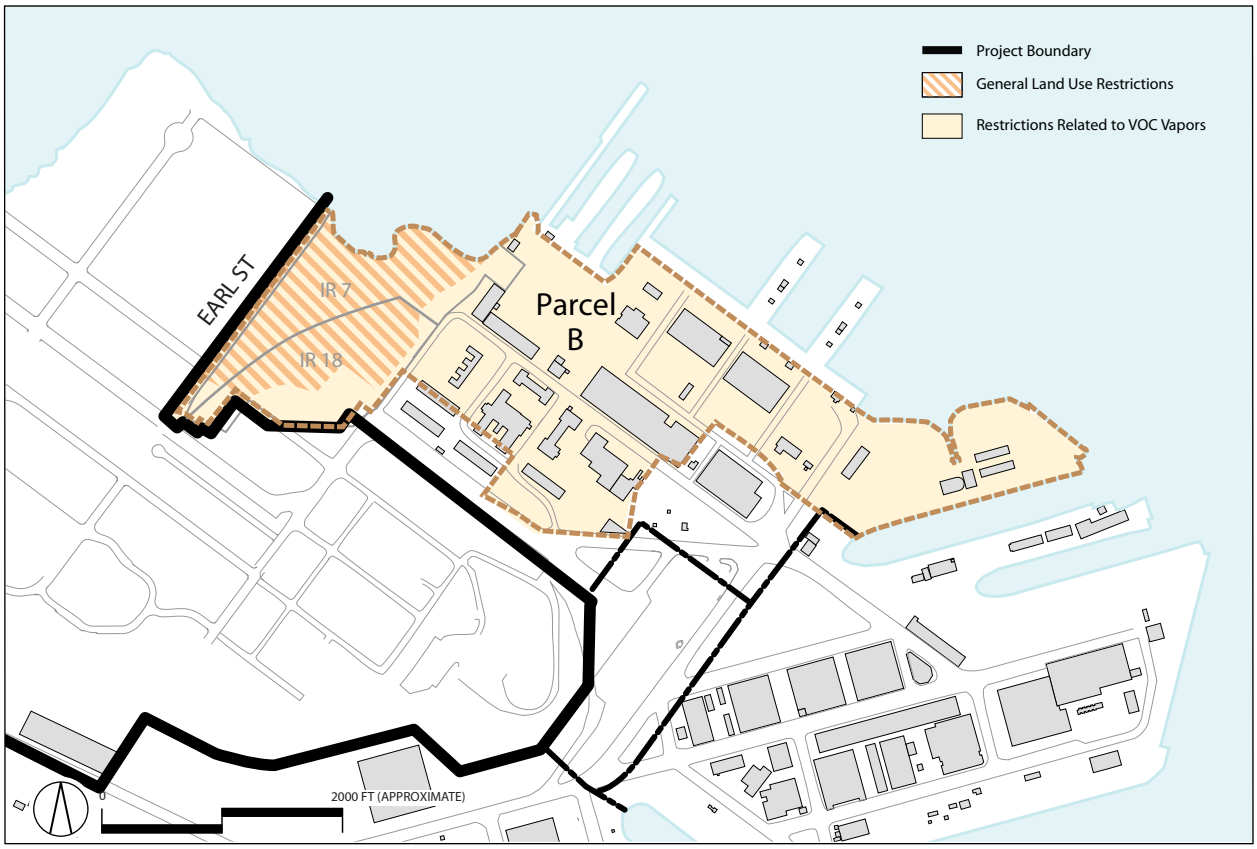
---

[286] Department of Navy, *Final Amended Record of Decision for Parcel B*, January 14, 2009. This document is on file for public review at the San Francisco Redevelopment Agency, One South Van Ness Avenue, Fifth Floor as part of File No. ER06.05.07, or at the Planning Department, 1650 Mission Street, Fourth Floor, San Francisco, CA, 94103 as part of File No. 2007.0946E.

[287] Jonas and Associates, *Final Second Five-Year Review of Remedial Actions Hunters Point Shipyard*, November 11, 2008. This report is on file for public review at the San Francisco Redevelopment Agency, One South Van Ness Avenue, Fifth Floor as part of File No. ER06.05.07, or at the Planning Department, 1650 Mission Street, Fourth Floor, San Francisco, CA, 94103 as part of File No. 2007.0946E.

[288] ChaduxTt and Tetra Tech, *Parcel B Technical Memorandum in Support of a Record of Decision Amendment*, Final, December 12, 2007; ChaduxTt and Tetra Tech, Amended *Parcel B Record of Decision Amendment*, January 14, 2009; Jonas and Associates, *Final Second Five-Year Review of Remedial Actions Hunters Point Shipyard*, November 11, 2008. This report is on file for public review at the San Francisco Redevelopment Agency, One South Van Ness Avenue, Fifth Floor as part of File No. ER06.05.07, or at the Planning Department, 1650 Mission Street, Fourth Floor, San Francisco, CA, 94103 as part of File No. 2007.0946E.

[289] Ibid.



SOURCE: Jonas & Associates, Inc. 2008.

PBS&J 10.30.09 08068 | JCS | 09

FIGURE III.K-2

Candlestick Point — Hunters Point Shipyard Phase II EIR

PARCEL B AREAS REQUIRING INSTITUTIONAL CONTROLS

The primary components of the groundwater cleanup consist of injecting a biological substrate to destroy VOCs in groundwater and monitoring, and water quality monitoring in the area of the mercury and methane source removals to evaluate the effectiveness of the removals in remediating mercury and methane in groundwater. ICs, such as prohibitions on the use of groundwater, would also be implemented.[290]

Radiological contamination in soil will be remediated through ongoing removal and off-site disposal of impacted storm drain and sewer lines and related affected soil, and through removal of contaminated materials at IR Sites 7/18 (if found to be present) to a specific depth. A demarcation layer will be installed across areas of IR 7/18 to mark the boundary between the existing surface and a new soil cap. All buildings, former building sites, and excavated areas across Parcel B would be surveyed after cleanup is completed to ensure no residual radioactivity above the remediation goals is present. Additionally, groundwater monitoring will be conducted at IR Sites 7/18 to confirm that radionuclides have not been released into groundwater. Finally, ICs would be implemented to minimize inadvertent contact with potentially radiologically impacted media. The ICs for radiological impacts would only be applicable to IR Sites 7/18, and potentially for an area deep beneath Building 140, where a culvert is located that may contain radioactive material. The other potentially radiologically impacted sites would be cleared for unrestricted radiological release (or free release) as decided by California Department of Public Health (CDPH). If buildings are found to contain radiologically impacted materials, the Navy will decommission (i.e., remediate radiologically impacted materials) and/or demolish that building.

A CAP was prepared to address petroleum releases at Parcel B.[291] A Work Plan to implement the Parcel B CAP has also been prepared.[292] The remediation of total petroleum hydrocarbons-impacted areas is being conducted primarily under the oversight of RWQCB. These activities are anticipated to be completed in early 2010.

In the above description of the remedy for Parcel B, the terms "cover" and "cap" are both used. Although these terms are sometimes used interchangeably in other contexts, in this EIR they refer to two similar, but distinct, types of remedies that are both designed to prevent exposure from known or suspected residual contaminants (also referred to as cutting off an exposure pathway).

The term "cover" as used in this EIR refers to a remedy requiring that the surface covers being installed (or remaining in place) to support the development (e.g., building slabs, pavement for roads, concrete for sidewalks, soil or grass for landscaped areas), meet certain specifications of thickness and be maintained to prevent breaches. The ICs imposed in conjunction with cover remedies generally contemplate that development activities will result in temporary breaches of the cover and allow such temporary breaches with the approval of the regulatory agency.

The term "cap" as used in this EIR refers to a remedy requiring the installation of a surface specifically engineered to be placed on top of an area of known or suspected residual contamination (typically a landfill); the surface may be asphalt, concrete, or soil, but is generally more robust than a "cover"

[290] Ibid.
[291] Shaw Environmental, *Final Petroleum Hydrocarbon Corrective Action Plan, Parcel B, Revision 2008*, June 25, 2008.
[292] Innovative Technical Solutions, *Draft Project Work Plant, Petroleum Hydrocarbon Corrective Action, Parcel B,* March 2009.

remedy, includes a "demarcation layer" of some sort, is often accompanied with methane recovery or monitoring equipment, and more intensive operation and maintenance requirements than a "cover" remedy. The ICs imposed in conjunction with cap remedies generally make it more difficult to secure approval for a breach of the cap than the ICs for a cover remedy.

In the context of the Parcel B ROD, the soil remedy for IR sites 7/18 is referred to as a "cap," and the soil remedy for the remainder of the parcel is referred to as a "cover."

The implementation and enforcement of ICs at Parcel B and other parcels is described in more detail under Section III.K.3 (Regulatory Framework).

Current Conditions at HPS Parcels C and UC-2

Parcels C and UC-2: Historic Uses

Parcel C is 76 acres of shoreline and lowland along the east-central portion of HPS. It is the oldest portion of the shipyard and has been used primarily for industrial operations since the late 1800s. Within the boundaries of Parcel C are 35 buildings, two drydocks, one wharf, nine ship berths, and one pier. Soil at Parcel C consists largely of artificial fill. As reported in the RI, asphalt, concrete, or buildings cover approximately 90 percent of the surface soil. Bedrock is in close to the surface in areas within Parcel C; hence its desirability for the construction of a drydock within competent material.

HPS Parcels C and UC-2: Results of Environmental Investigations

The primary chemical contaminants detected in Parcel C soil and groundwater include VOCs, SVOCs, PCBs, petroleum hydrocarbons (gasoline and diesel), and metals. Identified sources of these chemicals included leaking sumps containing VOCs and SVOCs, leaking fuel (gasoline and diesel) lines and USTs, sandblast material containing lead and other metals, and leaking PCB-containing transformers. Petroleum hydrocarbon and VOC plumes in groundwater occur in the eastern half and west-central portions of Parcel C. Ongoing quarterly groundwater monitoring indicates exceedances of water quality criteria by certain metals and VOCs. The current magnitude and extent of these chemicals in groundwater at Parcel C are generally consistent with previous quarters, with the exception of an increase recently of vinyl chloride levels in one monitoring well. The Parcel C HHRA indicates that there are areas that require remediation to meet acceptable risk levels for the future land uses as defined in the 1997 Agency Re-Use Plan.[293]

There is not a significant risk to terrestrial species because of the lack of ecological receptors at the site under current use; however, petroleum hydrocarbons in soil and groundwater pose a risk to aquatic receptors in the Bay.[294]

HPS Parcels C and UC-2: Cleanup Status

Numerous physical cleanup activities have been implemented at Parcels C and UC-2, including: removal of USTs and subsurface fuel lines; excavation and/or encapsulation of soil; collection and removal of

[293] SulTech. *Final Feasibility Study Report for Parcel C*, July 31, 2008.
[294] Jonas and Associates, *Final Second Five-Year Review of Remedial Actions Hunters Point Shipyard*, November 11, 2008. SulTech *Final Feasibility Study Report for Parcel C.* July 31, 2008.

sandblast waste; encapsulation of Drydock 4 waste drainage culverts by sealing all inlets and outlets to the culverts with concrete slurry, thereby, eliminating the pathways of exposure of ecological receptors to hazardous substances. In addition, groundwater treatability studies have been performed for VOCs, along with in-situ bioremediation, which have demonstrated reductions in VOC concentrations in soil and groundwater.[295] The Navy published a FS in 2008 as an update to the 1998 FS.[296] Nine remediation alternatives were identified in the FS, with the highest-rated alternative comprising a combination of soil excavation and off-site disposal, covers, soil vapor extraction for VOCs, in-situ groundwater treatment, and ICs. A draft PP outlining the Navy's preferred remedies was published in January 2009. A draft ROD identifying the selected remedy is expected to be issued in December 2009. The final ROD is expected to be signed in the winter of 2010.[297]

Current Conditions at HPS Parcel D (including newly created Parcels D-1, D-2, G, and UC-1)

HPS Parcel D: Historic Uses

The original Parcel D consisted of 101 acres of the southeast-central portion of HPS. Most of the land at Parcel D was formerly part of the industrial support area and was used for shipping, ship repair, and office and commercial activities. The docks at Parcel D were formerly part of the industrial production area. Segments of the basewide steam and sanitary sewer/storm drain system traverse the parcel. Portions of Parcel D were also used by the NRDL. As reported in the RI, approximately 85 percent of the ground surface in Parcel D is covered by pavement and buildings.

HPS Parcel D (Including D-1, D-2, G, and UC-1): Results of Investigations

The primary chemical contaminants detected in Parcel D soil include PCBs and petroleum hydrocarbons (diesel and motor oil), and metals. Diesel and motor oil were also detected in groundwater. Elevated concentrations of lead in soil were detected in several areas. Arsenic and beryllium were detected in both soil and groundwater. Other metals found in serpentinite-derived fill materials, such as arsenic, chromium, nickel, and manganese, were also detected throughout the parcel in soil and/or groundwater. Chromium VI (hexavalent chromium) was detected within groundwater below IR-09, the former pickling and plating yard. Cesium-137 and associated elements strontium and europium were detected on asphalt adjacent to the secondary containment vault behind Buildings 364 and 365. Groundwater monitoring has been conducted on a semi-annual basis across Parcel D. Based on data collected as part of the Groundwater Treatability Study in 2008, the primary chemicals of concern continue to be metals and VOCs. However, VOC concentrations have decreased, and VOC and hexavalent and total chromium concentrations continue to decline as a result of the in-situ treatment (conducted as part of the treatability study, as discussed in more detail below).

Metals (arsenic, lead, manganese) and a few VOCs are the primary contaminants in soil requiring the need for remediation. The following chemical contaminants in groundwater are associated with potential exposure to A-aquifer groundwater via vapor intrusion: benzene, carbon tetrachloride, chloroform,

[295] Jonas and Associates, *Final Second Five-Year Review of Remedial Actions Hunters Point Shipyard*, November 11, 2008.
[296] SulTech, *Final Feasibility Study Report for Parcel C*, July 31, 2008.
[297] California Department of Toxic Substances Control EnviroStor website: Hunters Point Naval Shipyard Parcel C. http://www.envirostor.dtsc.ca.gov/public/profile_report.asp?global_ id=38440003.

naphthalene, tetrachlorethene, trichloroethene, xylene, and methylene chloride. The completed ecological risk evaluations concluded potential exposure pathways (dermal contact and ingestion of contaminated soil) did not pose a significant risk because of the lack of ecological receptors at the site.[298]

HPS Parcel D (Including D-1, D-2, G, and UC-1): Cleanup Status

Several remediation activities have been implemented at Parcel D: removal of PCB-contaminated soil; removal of USTs and associated pipelines; collection and removal of sandblast waste; excavation of radiologically contaminated soil; and removal of contaminated sediment from storm drain lines.

The Navy revised the Parcel D FS in 2007, and prepared a draft PP for Parcel D that presented a proposal for remedial action to be selected in the ROD for Parcel D. It includes all of Parcel D, but for remedy selection, Parcel D was divided into four new parcels: Parcels D-l, D-2, G, and UC-l. Three RODs were prepared: one combined ROD for Parcels D-1 and UC-l and one each for Parcel D-2 and Parcel G. The Navy issued a ROD for Parcel G in February 2009[299] and a ROD for D-1 and UC-1 in July 2009.[300] In the fall of 2009 the Navy is planning to finalize a No Action ROD for Parcel D-2.[301]

The Navy is proposing the following actions in Parcels D-1, G, and UC-1: excavation and off-site disposal of contaminated soils and installing soil covers; treating groundwater at specific locations by injecting chemicals or biological nutrients to break down the chemicals, along with groundwater monitoring; continuing the removal of radiologically contaminated building materials and soils.[302] Similar to Parcel B, ICs will be used to implement land use restrictions to limit potential exposure of future landowner(s) and user(s) to hazardous substances present in Parcels D-1, G, and UC-1, and to ensure the integrity of the remedial actions (refer to Figure III.K-3 [Parcels D and G Areas Requiring Institutional Controls]).

---

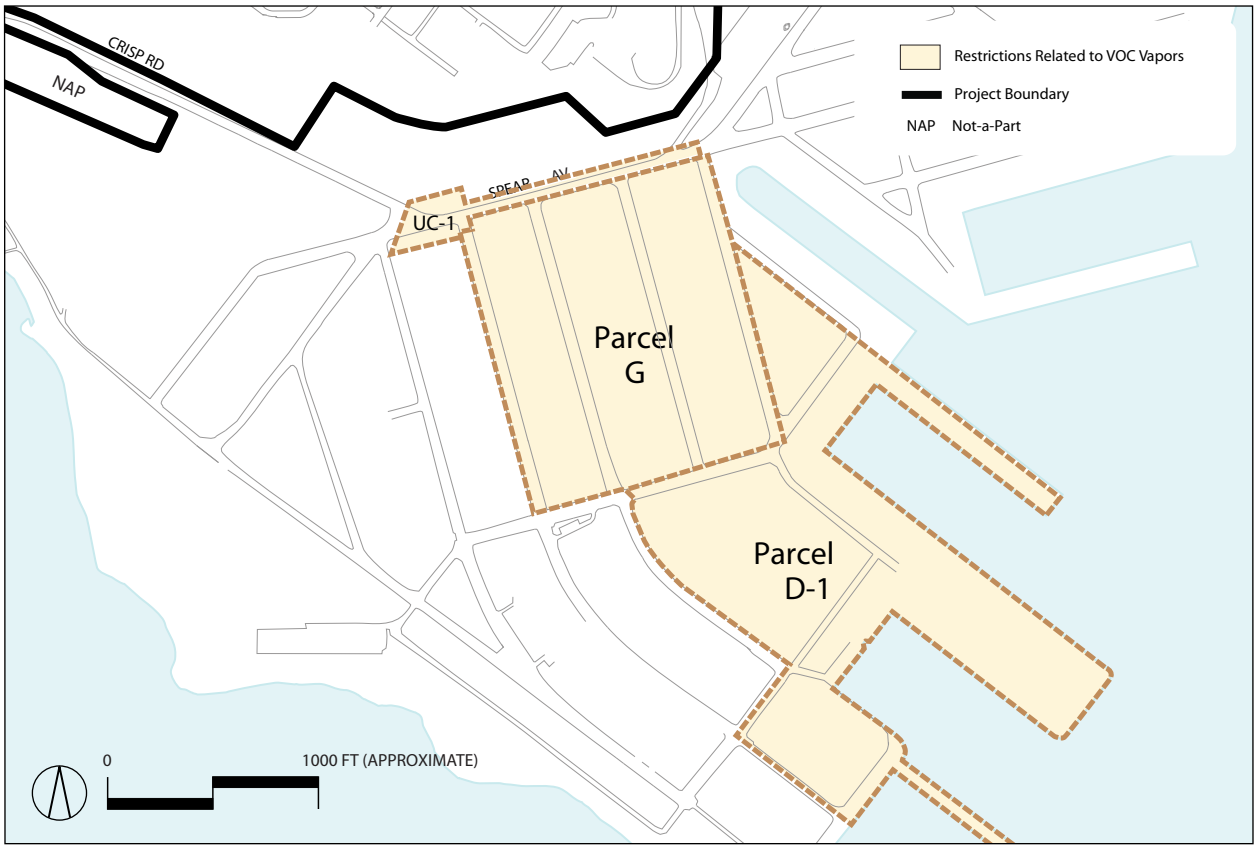
[298] SulTech, *Final Revised Feasibility Study for Parcel D Hunters Point Shipyard, San Francisco*, November 30, 2007; Jonas and Associates, *Final Second Five-Year Review of Remedial Actions Hunters Point Shipyard*, November 11, 2008. These documents are on file for public review at the San Francisco Redevelopment Agency, One South Van Ness Avenue, Fifth Floor as part of File No. ER06.05.07, or at the Planning Department, 1650 Mission Street, Fourth Floor, San Francisco, CA, 94103 as part of File No. 2007.0946E.

[299] Department of Navy, *Final Record of Decision for Parcel G*, February 18, 2009. This document is on file for public review at the San Francisco Redevelopment Agency, One South Van Ness Avenue, Fifth Floor as part of File No. ER06.05.07, or at the Planning Department, 1650 Mission Street, Fourth Floor, San Francisco, CA, 94103 as part of File No. 2007.0946E.

[300] Department of Navy, *Final Record of Decision for Parcels D-1 and UC-1*, July 24, 2009. This document is on file for public review at the San Francisco Redevelopment Agency, One South Van Ness Avenue, Fifth Floor as part of File No. ER06.05.07, or at the Planning Department, 1650 Mission Street, Fourth Floor, San Francisco, CA, 94103 as part of File No. 2007.0946E.

[301] Department of Navy, *Draft Final Record of Decision for No Action at Parcel D-2*, 16 January 2009.

[302] BRAC PMO, *Hunters Point Shipyard Parcel D Draft Proposed Plan Fact Sheet*, July 2008. This document is on file for public review at the San Francisco Redevelopment Agency, One South Van Ness Avenue, Fifth Floor as part of File No. ER06.05.07, or at the Planning Department, 1650 Mission Street, Fourth Floor, San Francisco, CA, 94103 as part of File No. 2007.0946E.



SOURCE: Jonas & Associates, Inc. 2008.

PBS&J 10.30.09 08068 | JCS | 09

FIGURE III.K-3

Candlestick Point — Hunters Point Shipyard Phase II EIR

PARCELS D AND G AREAS REQUIRING INSTITUTIONAL CONTROLS

Current Conditions at HPS Parcels E and E-2

HPS Parcels E and E-2: Historic Uses

In September 2004, the Navy divided the original Parcel E into two parcels: Parcel E and Parcel E-2. Parcel E consists of 138 acres of shoreline and lowland area in the southern portion of HPS. Nearly all of the Parcel E land area was created using artificial fill. Most of Parcel E is covered by annual grasses; the rest is covered by asphalt, buildings, or other structures used in light-industrial operations related to ship repair. Historically, Parcel E was a mixed-use and industrial area that supported HPS shipping and ship repair activities. Areas near the shoreline were used to store construction and industrial materials and to dispose of industrial waste and construction debris. Portions of Parcel E were also used for office and laboratory space by the NRDL.

Parcel E-2 consists of 47.4 acres of shoreline and lowland areas along the southwestern portion of HPS Phase II and is part of an area created from the 1940s to the 1960s by filling in the Bay margin with a variety of material, including soil, crushed bedrock, dredged sediments, and debris. From 1958 to 1974, the landfill received liquid chemical waste, asbestos, domestic wastes and refuse, dredge spoil materials, sandblast grit, solvent wastes, and low-level radioactive wastes from shipboard radium dials, including electronic equipment.

HPS Parcels E and E-2: Results of Investigations

The chemicals of concern at Parcel E include metals and organic chemicals such as VOCs, PAHs, PCBs, and pesticides. The chemicals of concern at Parcel E-2 include metals, PCBs, SVOCs, pesticides, and petroleum hydrocarbons. The radionuclides of concern associated with Parcel E-2 include cobalt-60, cesium-137, radium-226, and strontium-90.

The HHRA results for groundwater indicated that the risk from potential exposure to VOCs (such as chlorinated solvents and benzene) in the A-aquifer via vapor intrusion exceeded action levels at certain locations. The risk assessment also evaluated potential risks from exposure to chemicals in the B-aquifer from domestic use. The chemicals driving risk in B-aquifer groundwater are metals and VOCs. Potential human health risk from exposure to chemicals present in sediment was also evaluated for the shoreline at HPS. Based on this evaluation, hexavalent chromium (chromium VI), total chromium, and PCBs appear to be the primary chemicals of concern for the evaluation of human health in sediment along the Parcel E shoreline.

Two ecological risk assessments were performed for Parcel E: (1) the baseline ecological risk assessment (BERA), prepared in 1997, which evaluated risks from exposure to soil in areas planned for open space reuse along the Parcel E shoreline; and (2) a screening level ecological risk assessment (SLERA), prepared in 2005, which evaluated risks from exposure to sediment in the intertidal zone along the Parcel E-2 shoreline. The BERA found potential risk to birds and mammals from exposure to copper, lead, and total PCBs in soil along the shoreline. The SLERA found potential risk to benthic invertebrates, birds, and mammals from exposure to metals and total PCBs in surface and subsurface sediments along

the shoreline.[303] Although the SLERA was characterized as an assessment of Parcels E/E-2, these sediments posing risk to ecological receptors are actually part of the Parcel F submerged lands because the boundary between Parcels E and E-2 is defined in a manner that makes all sediments part of Parcel F.

HPS Parcels E and E-2: Cleanup Status

Numerous physical cleanup activities have been implemented at Parcels E and E-2. These include: collection and removal of 5,000 tons of sandblast waste; removal and containment of floating petroleum product to prevent further migration to the Bay; a SVE system to extract VOCs from the subsurface; excavation and removal of soil contaminated with PCBs, removal and/or containment of radioactive constituents; and petroleum compounds; removal of contaminated soil and placement of a clean soil cap in the metal debris reef and metal slag areas.

In Parcel E-2, the Navy has installed a groundwater containment and extraction system at the southeast portion of the landfill to reduce the potential for release of chemical constituents into the Bay. This system includes sheet piling and a groundwater extraction system to control potential mounding of shallow groundwater at the southern end of the landfill. A multi-layer interim cap was constructed on a portion of the Parcel E-2 Landfill to prevent oxygen intrusion and extinguish smoldering subsurface areas following a subsurface fire that burned for several months in 2000. Following characterization of the nature and extent of landfill gas, a landfill gas barrier and monitoring system was constructed at the northern end of the landfill to prevent methane gas migration from reaching the University of California San Francisco (UCSF) facility adjacent to parcel E-2 (the UCSF facility is outside of HPS Phase II). In addition, ongoing monitoring programs at Parcel E-2 include Storm Water Discharge Management Program; Landfill Cover Inspection and Maintenance Program; Basewide Groundwater Monitoring Program; and Landfill Gas Control and Monitoring Program.[304,305]

Before the PPs and RODs can be completed for Parcels E and E-2, a methane gas survey must be completed at Parcel E-2, and a groundwater treatability study is planned for Parcel E-2.[306] In addition, the

---

[303] Barajas and Associates, *Final Revised Remedial Investigation Report for Parcel E Hunters Point Shipyard*, May 2, 2008; Jonas and Associates, *Final Second Five-Year Review of Remedial Actions Hunters Point Shipyard*, November 11, 2008; Engineering/Remediation Resources Group, *Draft Final Remedial Investigation /Feasibility Study Report for Parcel E-2, February 1, 2009*. These documents are on file for public review at the San Francisco Redevelopment Agency, One South Van Ness Avenue, Fifth Floor as part of File No. ER06.05.07, or at the Planning Department, 1650 Mission Street, Fourth Floor, San Francisco, CA, 94103 as part of File No. 2007.0946E.

[304] Barajas and Associates, *Final Revised Remedial Investigation Report for Parcel E Hunters Point Shipyard,* May 2, 2008; Jonas and Associates, *Final Second Five-Year Review of Remedial Actions Hunters Point Shipyard*, November 11, 2008; Engineering/Remediation Resources Group, *Draft Final Revised Remedial Investigation Feasibility Study Report for Parcel E-2, February 1, 2009*. These reports are on file for public review at the San Francisco Redevelopment Agency, One South Van Ness Avenue, Fifth Floor as part of File No. ER06.05.07, or at the Planning Department, 1650 Mission Street, Fourth Floor, San Francisco, CA, 94103 as part of File No. 2007.0946E.

[305] Innovative Technical Solutions, *Landfill Gas Monitoring Report Post-Removal Action, Parcel E-2 Industrial Landfill, Hunters Point Shipyard*, November 2, 2007. This document is on file for public review at the San Francisco Redevelopment Agency, One South Van Ness Avenue, Fifth Floor as part of File No. ER06.05.07, or at the Planning Department, 1650 Mission Street, Fourth Floor, San Francisco, CA, 94103 as part of File No. 2007.0946E.

[306]Shaw Environmental, Inc., Draft Work Plan, Methane Gas Survey, Parcel E-2 Panhandle Area, Hunters Point Shipyard, April 15, 2009. Shaw Environmental, Inc., Final Work Plan, Parcel E Groundwater Treatability Study, Hunters Point Shipyard, July 27, 2009.

HHRA has been revised, and an updated draft Parcel E FS was prepared. For Parcel E-2, the range of cleanup options includes: excavation and off-site disposal of solid waste, soil, and sediment (including monitoring and institutional controls); or on-site containment of solid waste, soil, and sediment with Hot Spot Removal (including monitoring and institutional controls or some combination thereof). [307]

The draft PPs and RODs for E and E-2 are expected in the 2010–2011 timeframe. Remedial design plans and completion reports will be developed and are anticipated in the 2012–2014 timeframe.[308]

Current Conditions at HPS Parcel F

HPS Parcel F: Historic Uses

Parcel F comprises 446 acres of underwater property[309] surrounding all portions of HPS to the north, east, south, and southwest. Figure III.K-4 (Hunters Point Shipyard Phase II Parcel F Subareas) shows Parcel F in relation to the other parcels and five specific investigation subareas within the parcel. Features of Parcel F include pier, slip, and drydock areas and offshore sediment. As noted for Parcel E/E-2, the sediments are included as part of the Parcel F submerged lands because the boundary between Parcels E and E-2 is defined in a manner that makes all sediments part of Parcel F.

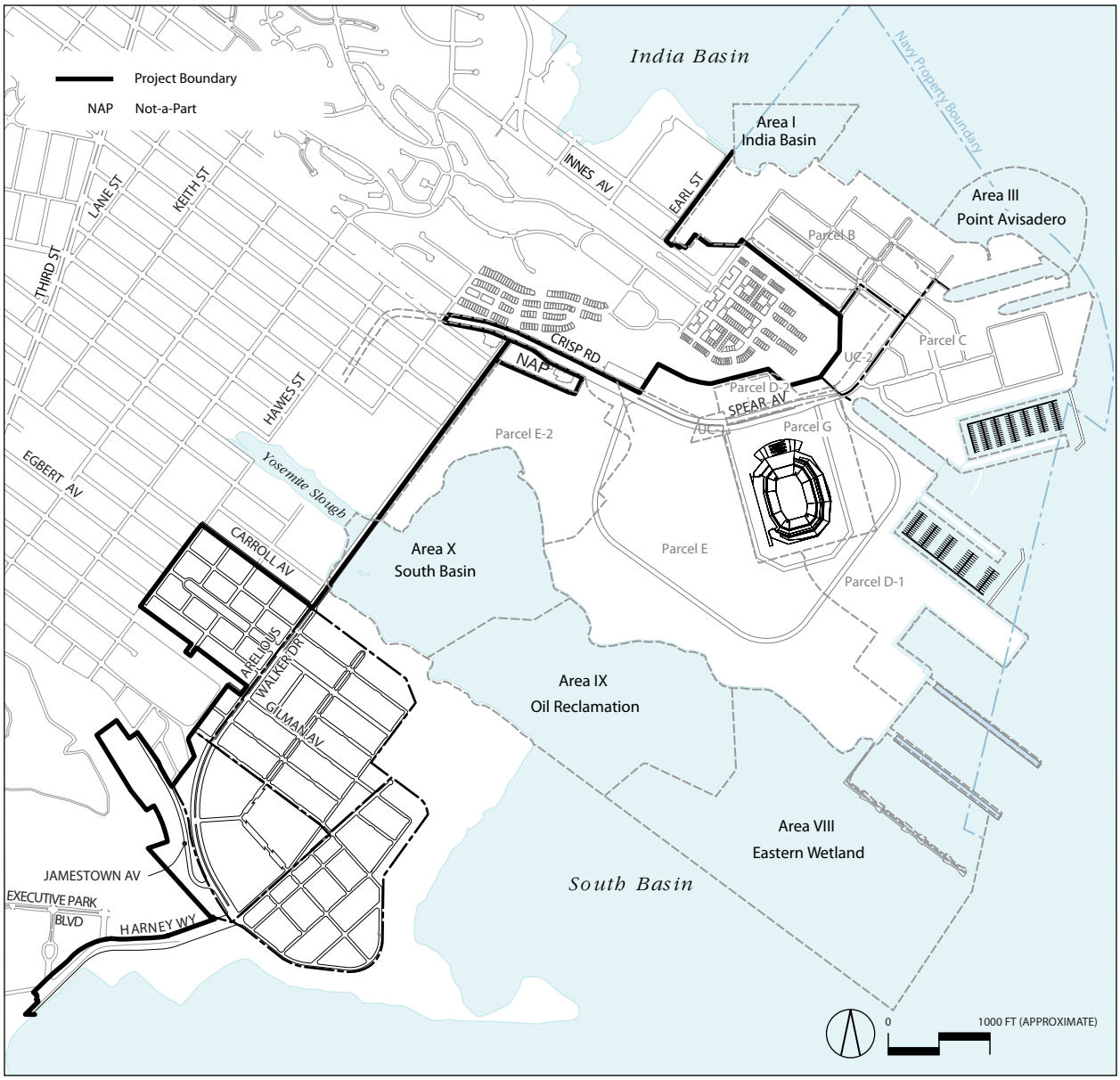
HPS Parcel F: Results of Environmental Investigations

Numerous investigations have been conducted at Parcel F. The investigations include an RI/FS, a human health risk assessment, and an updated FS, as well as the collection of surface and subsurface sediment samples for chemical and ecological toxicity evaluations. Fish and invertebrate tissue samples also were collected at Parcel F and analyzed for chemicals. During Phase 1A and Phase 1B Ecological Risk Assessments, Parcel F was subdivided into eleven subareas. Based on the previous investigation results, five areas were identified for further evaluation: Area I (India Basin Subarea), Area III (Point Avisadero Subarea), Area VIII (Eastern Wetland Subarea), Area IX (Oil Reclamation Subarea), and Area X (South Basin Subarea), which are shown in Figure III.K-4. Although no final determination has been made, at this time no further evaluation of the sediment is considered to be necessary for the remaining subareas.

The India Basin Subarea I of Parcel F is north of Drydocks 5, 6, and 7. Subarea III (Point Avisadero) is between Pier C and Drydock 3. Subareas VIII, IX, and X (Eastern Wetland, Oil Reclamation, and South Basin, respectively) adjoin Parcels E and E-2 on the west side of HPS Phase II. The location for the proposed marina is within Parcel F, but it is not within one of the subareas for which further evaluation has been recommended.

---

[307] Engineering /Remediation Resources Group, Inc., *Draft Feasibility Study Report for Parcel E,* July 2009.
[308] California Department of Toxic Substances Control EnviroStor website. Hunters Point Naval Shipyard Parcel E/E-2. http://www.envirostor.dtsc.ca.gov/public/profile_report (accessed July 2009).
[309] Barajas and Associates, *Final Feasibility Study Report for Parcel F,* April 30, 2008. This report is on file for public review at the San Francisco Redevelopment Agency, One South Van Ness Avenue, Fifth Floor as part of File No. ER06.05.07, or at the Planning Department, 1650 Mission Street, Fourth Floor, San Francisco, CA, 94103 as part of File No. 2007.0946E.



SOURCE: Moffatt & Nichol Engineers, Lennar Urban, RHAA, 2009.

PBS&J 10.31.09 08068 | JCS | 09

Candlestick Point — Hunters Point Shipyard Phase II EIR

HUNTERS POINT SHIPYARD PHASE II PARCEL F SUBAREAS

FIGURE III.K-4

The results of a shoreline investigation in 2002 evaluated whether contamination in Parcels E and E-2 had the potential to migrate (or had migrated) to sediments in the adjacent offshore area of Parcel F, or to affect benthic invertebrates, birds, and mammals in the shoreline area. In Subarea III, copper and mercury were identified as the primary risk drivers; PCBs were of greatest concern in Subareas IX and X. These chemicals also exceeded concentrations considered safe for benthic invertebrates directly exposed to sediment. PCBs also were shown to cause potential risk to humans if they were to consume shellfish collected at HPS. Although the issue of concentration of chemicals in fish is regional, the study also evaluated whether differences existed between levels of chemicals in fish from the vicinity of HPS and those collected elsewhere in the Bay. Results of statistical comparisons of fish tissue data at HPS indicated the results were statistically similar to regional levels.[310] No unacceptable ecological risk was indicated by sediments in Subareas I (India Basin) or VIII (Eastern Wetland).

HPS Parcel F: Cleanup Status

The Navy has implemented source control measures to help reduce contaminant levels including: extensive removal of contaminated soil, and sediment and debris along the Parcels B, E, and E-2 shorelines; storm drain cleaning program; and installation of a steel sheet-pile wall on the Bay side of the former industrial landfill located in Parcel E-2. A revised Parcel F FS has identified a range of alternatives to remediate Parcel F, the offshore areas of the Shipyard. For Subarea III, the options include removal/backfill and off-site disposal of affected media in combination with a cap and institutional controls. For Subareas IX/X, similar methods could be used, along with in-situ stabilization and natural recovery with monitoring. (For Subareas I and VIII, no remedial actions were recommended by the Navy as being necessary because no unacceptable ecological risk was identified.) The Navy will select the preferred remedial alternative after receipt and resolution of regulatory agency comments. The Navy will present its preferred alternative to the public in a PP.[311] The draft PP and ROD are anticipated to be issued in 2012 or 2013.[312]

---

[310] Health concerns associated with fish consumption in San Francisco Bay is a regional issue. Concentrations of six chemicals or groups—including mercury, PCBs, dioxins, dieldrin, DDT, and chlordane in fish collected throughout the San Francisco Bay—are elevated enough to pose a potential risk to recreational anglers and have resulted in health advisory warnings.

Barajas and Associates, *Final Feasibility Study Report for Parcel F Hunters Point Shipyard,* April 30. 2008; Jonas and Associates, *Final Second Five-Year Review of Remedial Actions Hunters Point Shipyard*, November 11, 2008. These documents are on file for public review at the San Francisco Redevelopment Agency, One South Van Ness Avenue, Fifth Floor as part of File No. ER06.05.07, or at the Planning Department, 1650 Mission Street, Fourth Floor, San Francisco, CA, 94103 as part of File No. 2007.0946E.

[311] Barajas and Associates, *Final Feasibility Study Report for Parcel F Hunters Point Shipyard,* April 30. 2008; Jonas and Associates, *Final Second Five-Year Review of Remedial Actions Hunters Point Shipyard*, November 11, 2008. These documents are on file for public review at the San Francisco Redevelopment Agency, One South Van Ness Avenue, Fifth Floor as part of File No. ER06.05.07, or at the Planning Department, 1650 Mission Street, Fourth Floor, San Francisco, CA, 94103 as part of File No. 2007.0946E.

[312] California Department of Toxic Substances Control EnviroStor website: Hunters Point Naval Shipyard Parcel F. http://www.envirostor.dtsc.ca.gov/public/profile_report (accessed July 2009).

Basewide Environmental Investigations at HPS

Basewide Historical Radiological Assessment

HPS has been the subject of many radiological investigations, with particular focus on ionizing radiation. In 2000, the Navy began preparing a basewide assessment of the *potential* for radiological contamination in the buildings and environmental media. The preparation of the Historical Radiological Assessment 1939-2003 (HRA) was an extended process that involved review of thousands of records from 14 federal and private records repositories, electronic mail, and telephone contact with 200 persons with potential knowledge of radiological operations at HPS.

The primary purpose of the HRA was to designate sites as "impacted" or "non-impacted." As identified in the HRA, an impacted site was one that had the potential for radioactive contamination based on historical information, or was known to contain or have contained radioactive contamination. Designation as "impacted" did not confirm that radioactive contamination was present; only that the possibility existed and needed to be investigated. Non-impacted sites are those with no history of radiological operations or those that have no reasonable potential for residual contamination (such as residential or administrative buildings).

Of the 882 HPS historical and current sites and support areas identified in the HRA, 91 were identified as "impacted." The impacted sites included: buildings; drydocks; former building sites; outdoor areas; IR sites, ships' berths; the Gun Mole Pier (re-gunning pier); and septic, sanitary, and storm drain systems. Of the 91 sites, 29 were recommended for review of the Final Status Survey; these sites can be recommended for free release only when the Navy and appropriate regulatory agencies have reviewed the Final Status Survey report and agreed with the assessment. Sixty impacted sites were recommended for further investigative actions or remediation. The HRA identified the following potentially contaminated media: surface soils, subsurface soil and media, structures and drainage systems. The assessment concluded, however, that there was no concern for airborne contamination from the potentially contaminated media in their undisturbed state, and no defined impacted site was recommended for emergency action. Eleven impacted sites required restricted access until the completion of remedial activities as a result of the presence of known levels of undisturbed radioactive contamination.

The overall conclusion of the HRA was that although low levels of radioactive contamination exist at HPS, no imminent threat or substantial risk exists to tenants, the environment of HPS, or the local community.[313] This conclusion has been reinforced by subsequent Finding of Suitability for Lease (FOSL)[314] issued by the Navy for areas in Parcel B and Building 606 in Parcel D and approved by the regulatory agencies authorizing leases for various uses involving hundreds of employees, artists, and visitors in close proximity to various "impacted" sites each day. A Basewide Radiological Work Plan was

[313] US Department of the Navy, *Hunters Point Shipyard Final Historical Radiological Assessment History of the Use of General Radioactive Materials 1939–2003*, August 2004. This document is on file for public review at the San Francisco Redevelopment Agency, One South Van Ness Avenue, Fifth Floor as part of File No. ER06.05.07, or at the Planning Department, 1650 Mission Street, Fourth Floor, San Francisco, CA, 94103 as part of File No. 2007.0946E.
[314] MACTEC Engineering and Consulting, Inc., Final Finding of Suitability to Lease Buildings 103, 104, 115, 116, 117, 120, 125, and 606 Open Spaces 1 and 2, Hunters Point Shipyard February 4, 2008.

subsequently prepared, describing survey and decontamination approaches to be implemented in support of radiological release of buildings and areas.[315]

Other Basewide Investigations for Specific Contaminants at HPS

In addition to the radiological investigations and cleanups, other Navy efforts include basewide investigation and remediation for PCBs, asbestos containing building materials (ACBM), underground and aboveground storage tanks (ASTs). Transformers containing PCBs have been removed, but investigation of soils for PCB contamination has been addressed separately for each parcel. The Navy has conducted building surveys for asbestos and has removed some hazardous ACBM in all parcels except the Parcel F submerged lands where there are no buildings. The Navy investigated USTs and removed or closed them in place in two phases in the 1990s. Most of the USTs contained petroleum products, waste oils, or solvents. The Navy also has removed numerous ASTs. Most of the ASTs contained petroleum products or water, except for two that contained solvents. For both USTs and ASTs, associated contaminated soils have been removed and disposed of off site.[316] As part of the implementation of the remedies set forth in each Parcel's ROD and petroleum Corrective Action Plan, all releases associated with ASTs or USTs will be addressed and determined by the FFA Signatories to be safe for the intended use.

Hazardous Building Materials: Current Conditions

Hazardous building materials include asbestos-containing building materials, electrical equipment such as transformers and fluorescent light ballasts that may contain PCBs, fluorescent lights and switches containing mercury, and lead-based paints. Until the 1970s, asbestos was commonly used in building materials, including use in insulation materials, shingles and siding, roofing felt, floor tiles, brake linings, and acoustical ceiling material. Asbestos is a known carcinogen and presents a public health hazard if it is present in friable (easily crumbled) form. PCBs were commonly manufactured and used in the United States between 1929 and 1977 for use in devices such as electrical transformers and capacitors and fluorescent light ballasts. Spent fluorescent light tubes commonly contain mercury vapors at levels high enough to be considered a hazardous waste under California law; depending on the levels of mercury present, the light tubes may also be classified as hazardous under federal law. Lead-based paint was commonly used prior to 1960 and is likely present in buildings constructed prior to 1960. The Department of Defense assumes that any military building constructed or rehabilitated prior to 1978 contains lead-based paint. Lead is toxic to humans, particularly young children, and can cause a range of human health effects depending on the level of exposure.

The investigation of some hazardous materials in buildings and structures in HPS Phase II has been completed by the Navy for parcels within the site. As described previously, damaged or friable asbestos and PCBs have been removed. However, lead-based paint surveys have not been completed for structures in Parcels B, C, D/G, and E.

---

315 Tetra Tech, *Basewide Radiological Work Plan, Revision 1*, October 5, 2007.

316 Hunters Point Shipyard Reuse Final EIR, June 2000, pp.3-111 to 3-114. This document is on file for public review at the San Francisco Redevelopment Agency, One South Van Ness Avenue, Fifth Floor as part of File No. ER06.05.07, or at the Planning Department, 1650 Mission Street, Fourth Floor, San Francisco, CA, 94103 as part of File No. 2007.0946E.

Project-wide Current Conditions

This section describes Project-wide hazards and hazardous materials conditions such as naturally occurring asbestos, conditions at off-site locations, hazardous materials use on the Project site, and proximity to schools.

Naturally Occurring Asbestos

Asbestos is a naturally occurring mineral found in serpentinite rocks. As shown in Figure III.L-1 (Geologic Map) of Section III.L, there is an area of serpentinite mapped in the northern part of HPS Phase II, which extends north into the India Basin area. Serpentinite may also underlie proposed roadway segment locations in these areas. Previously disturbed serpentinite fragments have also been identified in fill material at HPS Phase II.

Rock types within Candlestick Point are predominantly Franciscan chert, slope debris, ravine fill, and undifferentiated sedimentary deposits. There is no mapped serpentinite within the boundaries of Candlestick Point or locations to the west where proposed roadway improvements could be constructed.

Off-Site Hazardous Materials Release Sites

One site northeast of HPS Phase II is listed on the EnviroStor database and has been the subject of ongoing investigation for contaminated groundwater. The Bayview Plume Study Area is bounded on the west by Keith Street, on the north by Quesada Avenue, on the east by Griffith Street, and on the south by Shafter Avenue. Groundwater is affected with a dry-cleaning solvent (PCE), but results of remedial investigations show that the direction of groundwater flow is towards the northwest, away from the Project site.[317]

Conditions at Off-Site Improvement Locations

The Site History/Initial Site Assessment technical report prepared for the Bayview Transportation Improvements Project (currently under environmental review) reviewed environmental conditions at most of the locations where the off-site improvements (e.g., roadways) may involve disturbance of soil or the existing asphalt cover.[318] At Griffith Street, Ingalls Street, and Carroll Avenue, the report concluded that historic and current land uses indicate the potential for hazardous substances to have been released at some locations, indicating the potential presence of hazardous materials in soil and groundwater in these areas. The proposed segment along Palou Avenue was not included in the Site History/Initial Site Assessment technical report prepared for the Bayview Transportation Improvements Project (currently under environemental review), however, so conditions are not known.

Previous investigations that identified historic uses, USTs, and sampling results along the alignments, along with a review of agency databases, show that many of the locations identified in the above-

[317] California Department of Toxic Substances Control EnviroStor website: Bayview Plume Study Area. http://www.envirostor.dtsc.ca.gov/public (accessed July 2009). State Water Resources Control Board Geotracker website. http://geotracker.swrcb.ca.gov/ (accessed July 2009).
[318] BASELINE Environmental, Bayview Transportation Improvements Project, Technical Report, Site History/Initial Site Assessment, June 2009.

referenced Site History/Initial Site Assessment report have received regulatory closure.[319] However, some sites may still require investigation or remediation, and there may be new sites that have not been comprehensively evaluated for the presence of hazardous materials contamination in soil at the specific locations where soil disturbance could occur.

Hazardous Materials Use and Hazardous Waste

Section III.B. (Land Use and Plans) describes the current land uses within the Project site. There are no industrial, manufacturing/processing, or similar large-scale businesses that routinely use, store, or transport substantial quantities of hazardous materials in the Project site. Limited quantities of household-type products containing hazardous materials such as cleaning agents, paints/solvents, and pesticides are associated with residential uses in Alice Griffith Public Housing and Candlestick Park Stadium operations.

Several former Navy buildings within HPS Phase II are leased to artists and woodworking and picture framing businesses. Some art materials and items used in woodworking contain hazardous materials, but the quantities on site are minimal. As a condition of their leasing agreements, tenants are responsible for the management and appropriate disposal of their hazardous materials and wastes. Tenants are required to comply with all applicable laws and regulations pertaining to the use, transport, storage, and disposal of these materials.

According to information compiled for the Bayview Hunters Point Redevelopment Plan EIR and a review of agency databases in 2009,[320] there is one business with a reported address within the Project site that generates hazardous waste and that is regulated by the US EPA. It is a "small quantity generator" as defined by the US EPA, meaning it generates from approximately 220 to 2,200 pounds of hazardous waste per month, and is required to report hazardous waste quantities in accordance with *Resource Conservation and Recovery Act* (RCRA) requirements.

Schools within One-Quarter Mile of the Project

There are two schools within one-quarter mile of some portions of the Project. The Bret Harte Elementary School at 1035 Gilman Street is within one-quarter mile of the Alice Griffith public housing development. Muhammad University of Islam, a year-round elementary school, is located adjacent to the Hillside portion of HPS Phase I development and is within one-quarter mile of the western-most portion of the Project boundary. Another school in the Project vicinity, Gloria R. Davis Academic Middle School (1195 Hudson Avenue), is more than one-quarter mile from the Project.

---

[319] California Department of Toxic Substances Control EnviroStor website. http://www.envirostor.dtsc.ca.gov/public (accessed July 2009). State Water Resources Control Board Geotracker. http://geotracker.swrcb.ca.gov/ (accessed July 2009).

[320] California Department of Toxic Substances Control EnviroStor website. http://www.envirostor.dtsc.ca.gov/public (accessed July 2009). State Water Resources Control Board Geotracker. http://geotracker.swrcb.ca.gov/ (accessed July 2009).

Regulatory Process for Cleanup Process at HPS Phase II

The oversight of hazardous materials release sites often involves several different agencies that may have overlapping authority and jurisdiction. The DTSC and RWQCB are the two primary state agencies responsible for issues pertaining to hazardous materials release sites.

This section describes regulatory issues that are unique to the cleanup at HPS Phase II and summarizes the primary regulations pertaining to the types of investigation, cleanup, and construction activities that would occur in the Project. This section also describes the general regulatory framework applicable to hazardous materials throughout the Project site.

The general regulatory framework governing cleanup at closed military bases on the NPL like HPS Phase II is described in Section III.K.2 (Setting). The two subsections below describe two specific aspects of the regulatory framework at closed military bases on the NPL: the legal relationship between the cleanup process and the transfer of property at a closed military base; and the establishment and enforcement of institutional controls. In addition, this section notes two considerations, outside the normal regulatory framework applicable to cleanup and redevelopment at contaminated closed military bases that are unique to HPS Phase II.

First, on November 7, 2000, the voters of San Francisco voted to approve Proposition P, which called upon the Navy to remediate HPS to the highest levels practical to ensure flexible reuse of the property. On July 30, 2001, the Board of Supervisors approved a resolution confirming as the policy of the City and County of San Francisco that the Hunters Point Naval Shipyard should be cleaned of toxic and hazardous pollution by the Navy to the highest practical level.

Second, on March 31, 2004, the San Francisco Redevelopment Agency (Agency) and the United States Navy entered into a Conveyance Agreement for Hunters Point Naval Shipyard (HPS Conveyance Agreement). Under the HPS Conveyance Agreement, one of the "closing conditions" for conveying a parcel at HPS from the Navy to the Agency is that the Navy obtain Regulator Assurances prior to conveyance. That term is defined in the Conveyance Agreement to mean written confirmation by the US EPA, DTSC, and the RWQCB that sufficient remedial action has been taken to protect human health and the environment for the parcel's intended future use.

Legal Relationship between the Cleanup Process and Property Transfer at Hunters Point Shipyard

CERCLA requires that, prior to real property conveyance, the Navy must remediate hazardous substances to a level consistent with the protection of human health and the environment; or, if conveying property before completion of remediation, the Navy must ensure that the property is suitable for conveyance for the use intended and that the intended use is consistent with the protection of human health and the environment. In other words, there are two ways in which the Navy can transfer title to the HPS property: (1) after complete remediation of a parcel (e.g., the approach taken with Parcel A) or (2) or as an early transfer before remediation is completed. In addition, the Navy can lease the property before remediation is complete. The conditions associated with title transfers or leases are summarized below.

Transfer After Completion of Cleanup at HPS

The first option for title transfer assumes that all remediation necessary to protect human health and the environment has been conducted on the property. In conveying property that is completely remediated, the Navy documents its findings in a Finding of Suitability to Transfer (FOST).

The FOST would document environmental findings regarding the proposed transfer. It would summarize the environmental condition of the property and, where appropriate, identify any environmental conditions that would pose constraints to activities or uses of the property. It would identify any environmental covenants, conditions, or restrictions that would be included in the deed to ensure protection of human health and the environment, taking into consideration the agreed-upon land uses. Under CERCLA, the deed must contain a notice of the type and quantity of and timeframe in which hazardous substances were stored, disposed, or released on the property and any remedial action taken. The deed must warrant that all remedial action necessary to protect human health and the environment with respect to any remaining hazardous substances has been taken before transfer. Additionally, the deed must warrant that any remedial action found necessary with respect to such hazardous substances after the transfer will be taken by the Navy. At the time of transfer, the Navy is required to covenant that all required remediation has been completed and that if additional remedial action is needed with respect to contaminants on the property at the time of transfer, further cleanup will be the Navy's responsibility. The HPS Conveyance Agreement also requires federal and state environmental regulator concurrence prior to conveyance of a parcel at HPS.

Neither CERCLA nor Department of Defense policy nor regulations require federal or state environmental regulators to concur in the Navy's Finding of Suitability for Transfer; however, as described above, the HPS Conveyance Agreement in essence requires such concurrence prior to conveyance of a parcel at HPS.

Transfer Before Completion of Cleanup (Early Transfer) at HPS Phase II

The second way the Navy can convey title to property at HPS Phase II is a process referred to as "early transfer." This means that title would transfer from the Navy to the Agency before all necessary remedial action has been completed, provided certain conditions specified in CERCLA have been met. These conditions include the following:

- Agreement by US EPA and the State that the property is suitable for the intended use of the property during the completion of the remediation activities, and that the intended use will be protective of human health and the environment;
- Public notice and comment;
- Property use restrictions, if necessary, to ensure that human health and the environment are protected and that the necessary remedial actions can take place; and
- Assurances from the federal government that conveyance of the property will not substantially delay response actions at the property and that the necessary response actions will be completed after conveyance.

The Navy would document its determination that the property may be transferred prior to the completion of all remediation in a Finding of Suitability for Early Transfer (FOSET). For an early

transfer to proceed at an NPL site like HPS Phase II, the US EPA, with the concurrence of the Governor of the state of California, must authorize the early transfer. Under CERCLA, US EPA and the Governor may authorize an early transfer only if each determines that:

- The property is suitable for transfer for the use intended by the transferee;
- The intended use is consistent with protection of human health and the environment;
- The deed will contain restrictions necessary to ensure protection of human health and the environment; and
- All remedial investigations, response actions, and oversight activities will be completed by the transferee notwithstanding the transfer of the property.

The Navy and Agency envision that some of the property at HPS Phase II will be allowed to transfer early. Current plans are for an early transfer of title to Parcels B (except for the area referred to as IR 7/18, discussed further below) and G, followed by potential early transfers of other parcels if deemed appropriate and necessary. Under the early transfers as currently envisioned at HPS Phase II, the Navy would complete all radiological cleanup activities and obtain an approved ROD for any given parcel prior to title transfer. Because the Navy has already conducted significant remedial activities, it is expected that the Navy may complete, before transfer, the initial installation of groundwater treatment systems and soil vapor extraction systems and conduct major soil excavations. Responsibility for any remedial work not yet completed at the time of transfer would be transferred from the Navy to the Agency under the terms of an Early Transfer Cooperative Agreement (ETCA). The ETCA would grant Navy funds to the Agency sufficient to complete the Navy's cleanup obligations.

It is anticipated that the Agency would then be responsible for those remedial activities that could be carried out most easily as part of the redevelopment of the property. Those remedial actions could include:

- Removal of limited areas of contaminated soil;
- Completion of previously-commenced groundwater remediation and groundwater monitoring;
- Construction of revetment walls in Parcel B along the shoreline to prevent contaminant migration into the Bay;
- Placement of vapor barriers under buildings where they are found to be necessary; and
- Placement of a final cover over existing soil through the use of new building foundations, roads, sidewalks, parking lots and/or placement of clean fill in open space areas.

Some or all of the Agency's remediation obligations under the ETCA may be assumed by the Project Applicant of the property, subject to a separate agreement. In addition to the ETCA, the Agency and the Project Applicant would be expected to enter into a legally enforceable remediation agreement with US EPA and state regulatory agencies called an Administrative Order on Consent (AOC). This document would commit the Agency and Project Applicant to completing the remedial work that it has agreed to undertake for the Navy. The AOC would be one of the documents supporting the decision by the Governor and US EPA Administrator to allow an early transfer under CERCLA. In turn, US EPA and the State would be expected to modify the terms of the FFA with the Navy to provide that the Navy is not responsible for the scope of work assumed by the Agency and Project Applicant, provided the Agency and Project Applicant continue to fulfill those obligations.

Leasing Property Before Completion of Cleanup at HPS Phase II

CERCLA also allows the Department of Defense to lease contaminated or potentially contaminated properties to third parties. Under this scenario, the Navy would prepare a Finding of Suitability to Lease (FOSL), and US EPA must determine that the property is suitable for lease for the uses contemplated, and that the uses are consistent with protection of human health and the environment and with remedial action that will be taken. The FOSL would document environmental findings for the parcels and the suitability of parcels for a lease. A lease could be a short-term lease (generally less than 10 years) or a long-term lease (e.g., 60 years) which envisions eventual conveyance of the property. This longer-term lease is called a Lease in Furtherance of Conveyance (LIFOC). The FOSL would include a summary of contamination and risk, and require lease notifications and restrictions necessary to protect against threats to human health and the environment to be included in the LIFOC, and include adequate assurances that all necessary remedial action has been taken or will be taken after the execution of the lease.

The Navy may lease some property to the Agency under a LIFOC, such as where it desires to give the Agency access to the property to carry out some specified activities but the property is not yet ready for a transfer under a FOST or FOSET. Activities likely to be conducted under a short-term lease or LIFOC include abatement of asbestos containing materials or lead-based paint and/or building demolition. (Abatement activities not involving building demolition may also be conducted pursuant to a license issued by the Navy). Interim uses of certain buildings or areas by commercial or industrial subtenants might also take place under a short-term lease or LIFOC. The FOSL would be expected to require the terms of the lease to contain certain restrictions on activities and uses, such as a prohibition against soil excavation without approval of a workplan by the Navy and US EPA.

Under the any leasing scenario, responsibility for environmental remediation at leased property would not transfer to the Agency or Project Applicant as is expected at early-transferred property. Instead, the Navy would continue to be responsible for environmental remediation during the terms of the lease, until either the title to the property transfers under FOST after completion of remediation or title transfers under a FOSET before completion of remediation.

Establishing and Enforcing Institutional Controls at Hunters Point Shipyard

The Role of Institutional Controls at Hunters Point Shipyard

Prior to any transfer or lease, early or not, the Navy must ensure that the property is suitable for the use intended and that the intended use is consistent with the protection of human health and the environment. Where hazardous substances remain on the property at the time of transfer at levels that are not suitable for unrestricted uses, such assurance can be achieved through Institutional Controls (ICs), a set of legal and administrative mechanisms to implement land use restrictions to limit the exposure of future landowner(s) and/or user(s) of the property to hazardous substances present on the property, and to ensure the integrity of remedial action. ICs are required on a property where the cleanup is determined to be complete even though residual levels of hazardous materials remain on the property at levels that would not allow for unlimited use and unrestricted exposure. ICs are expected to be required for HPS Phase II because the Navy and regulatory agencies in exercising their authority have determined that in order to be conservative (e.g., protective) in their evaluation of the property,

particularly the areas composed of Bay Fill, they would require ICs for the residual levels of hazardous materials on the property. Implementation of ICs will allow the property to be developed for its intended use, subject to certain rules and regulations designed to prevent exposure to residual levels of hazardous materials. ICs include requirements for monitoring and inspections, and reporting to ensure compliance with land use or activity restrictions.

To implement ICs, the Navy anticipates that it will rely upon ICs in the form of environmental restrictive covenants as provided in the "Memorandum of Agreement between the United States Department of the Navy and the California Department of Toxic Substances Control" (Navy/DTSC MOA). The "Covenant(s) to Restrict Use of Property" will incorporate the land use restrictions into environmental restrictive covenants that run with the land and that are enforceable by DTSC against future transferees. The Quitclaim Deed(s) will include the identical land use and activity restrictions in environmental restrictive covenants that run with the land and that will be enforceable by the Navy and by regulatory agencies against all future transferees.[321]

In areas not planned for residential development at HPS Phase II, it is anticipated that the restrictions in the Covenant and Deed will prohibit use of the property as a residence, hospital for humans, schools for persons less than 21 years of age or day care center, unless the FFA Signatories approve a specific proposal for such a use., It is also anticipated that there will be a restriction against excavation or disturbance of soil or groundwater unless either a site-specific workplan is approved by the FFA Signatories, or the activity is consistent with an applicable "Risk Management Plan" (RMP) pre-approved by the FFA Signatories. A RMP specifies protocols and requirements for excavation, stockpiling, and transport of soil and for disturbance of groundwater as well as a system to respond to the discovery of previously unknown areas of contamination (e.g., an underground storage tank unearthed during normal construction activities). In a few specific areas, it is expected that there will be special restrictions associated with protecting the integrity of waste containment structures (e.g., caps) or ongoing treatment systems and with implementing the operation and maintenance plan for those remedies.

For parcels subject to early transfer, the restrictions may be more stringent until cleanup actions are completed, but restrictions are still expected to be imposed at most or all areas after remediation is complete because the ubiquitous nature of low levels of hazardous materials in Bay Fill makes it infeasible to remediate all of those materials. The specific mechanisms used to implement and enforce the activity restrictions in the Covenant and Deed(s) will be set forth in a Land Use Control Remedial Design document approved by the FFA Signatories.

If the Navy transfers property under a short-term lease or LIFOC, as explained previously, under CERCLA, the terms of the lease or LIFOC would contain restrictions similar, to those described above that would be contained in a Covenant and deed under an early transfer.

[321] BRAC PMO, *Hunters Point Shipyard Parcel B Proposed Plan Fact Sheet*, June 2008. This document is on file for public review at the San Francisco Redevelopment Agency, One South Van Ness Avenue, Fifth Floor as part of File No. ER06.05.07, or at the Planning Department, 1650 Mission Street, Fourth Floor, San Francisco, CA, 94103 as part of File No. 2007.0946E.

Although the Navy may transfer procedural responsibilities for enforcement of land use restrictions to another party by contract, property transfer agreement, or through other means, the Navy will retain ultimate responsibility.

Specific Institutional Controls Already Selected at HPS Phase II

The ICs included as part of the remedy selected in the Parcel B ROD Amendment are expected to form the basis for the ICs included in the RODs for the other parcels, so they are described in detail here. (As an example of this, the ROD for Parcel G imposes very similar ICs as the ROD for Parcel B). Figure III.K-2 indicates the locations in Parcel B that will require ICs—such as land use restrictions—to minimize potential human health and environmental risks after remediation is completed.

Except for the area called IR 7/18 (IR 7/18 site), Parcel B is intended as a mixed-use, residential community. Therefore, the ICs do not include a prohibition against residential use or other "sensitive uses" like schools, hospitals, and day care centers. Growing vegetables or fruits in native soil for human consumption and use of groundwater will be prohibited. In addition, the following general types of activities would be restricted: "land disturbing activity," which includes, but is not limited to, excavation of soil, road construction and infrastructure, demolition or removal of hardscape, any activity that involves movement of soil excavated from below the surface cover, and any other activity that causes or facilitates movement of known contaminated groundwater; alteration, disturbance, or removal of any component of a response or cleanup action; extraction of groundwater and installation of new groundwater wells; and removal or damage to security features. The ROD specifies that such restricted activities are allowed only if they are conducted in accordance with the requirements of a RMP approved by the FFA Signatories. At the time of transfer, it is expected that there will be two Parcel B RMPs specifying the processes to be used to gain approval for, and conduct, such restricted activities at different stages of the development: an RMP for use during Development and a Post-Development RMP.

Specific activity restrictions associated with certain contaminated areas would also be imposed. These may consist of the use of engineering controls or other design methods to ensure that areas that contain VOCs that could produce unacceptable indoor vapor inhalation risks from VOCs present in the subsurface are reduced to levels that are protective of human health. In addition, land use restrictions for property in IR Sites 7/18 would be reviewed and approved by the FFA Signatories in accordance with the covenants and deed restrictions. For IR Sites 7/18, a document such as an Operation and Maintenance Plan will identify any additional soil and radiological management issues, including restrictions on excavation in the radiologically impacted areas, and protection of the soil cap that will be placed at that location. Excavation within the potentially radiologically impacted area will require a separate site- and activity-specific work plan be prepared and submitted to the Navy and other FFA Signatories. Workplan(s) typically include descriptions of any necessary soil sampling and analysis, disposal of excavated soils, and restoration of the integrity of the soil cap after excavation.[322]

[322] BRAC PMO, *Hunters Point Shipyard Parcel B Proposed Plan Fact Sheet*, June 2008. This document is on file for public review at the San Francisco Redevelopment Agency, One South Van Ness Avenue, Fifth Floor as part of File No. ER06.05.07, or at the Planning Department, 1650 Mission Street, Fourth Floor, San Francisco, CA, 94103 as part of File No. 2007.0946E.

III.K.3 Regulatory Framework

Regulations Governing Hazardous Materials Release Sites

Federal Hazardous Materials Release Cleanup Requirements

The Navy is required to implement the investigation and cleanup of hazardous materials contamination in accordance with a complex framework of established federal laws and regulations in accordance with the FFA, with US EPA as the lead agency for hazardous substances remediation. Although federal environmental cleanup laws like CERCLA and RCRA do apply at the non-federal land at Candlestick Point, they are administered by state agencies and are described below.

State Hazardous Materials Release Cleanup Requirements

Navy remedial actions at HPS Phase II (and any remedial actions that may be necessary at Candlestick Point) must also comply with applicable state requirements. At the state level, DTSC administers laws and regulations related to hazardous waste and hazardous substances pursuant to Division 20, Chapters 6.5 and 6.8 of the *California Health and Safety Code* and Title 22 of the *California Code of Regulations* (CCR), which are the state equivalents of RCRA and CERCLA, respectively. The RWQCB enforces laws and regulations governing releases of hazardous substances and petroleum pursuant to pursuant to Division 20, Chapters 6.7, 6.75, and 6.8 of the *California Health and Safety Code* (Sections 25100, 25200 and 25300 et seq.), and the *Porter Cologne Water Quality Control Act* (Division 7, Section 13100 et seq. of the *California Water Code*) and CCR Title 23. In particular, the RWQCB focuses on all petroleum releases and those hazardous substance releases that may impact groundwater or surface water.

In addition, the CDPH is responsible for ensuring facilities that used, stored, or disposed of radiological materials are properly investigated, decontaminated, and decommissioned or licensed (or properly issued an exemption from such requirements) in accordance with state and federal laws and regulations, including the state Radiation Control Law (*California Health and Safety Code* Section 114960 et seq. and CCR Title 17, Division 1, Chapter 5. The licensing requirements (and, therefore, the process for approving exemptions from such requirements) administered by CDPH do not apply to federal facilities, but do apply when such facilities are transferred out of federal ownership. CDPH has indicated its willingness to consider granting an exemption from the licensing requirements to the City for areas where residual radiological materials may remain in place under a cap, like IR 7/18. The basis for the exemption would be that the requirements of CERCLA, and the ICs imposed pursuant to CERCLA would provide protection equivalent to the requirements of the license.

Local Hazardous Materials Release Cleanup Requirements

San Francisco Health Code Article 22A and its companion Article 21 of the *Public Works Code* (sometimes referred to as the Maher Ordinance) require an investigation of the potential presence of hazardous wastes that may be present in soil within historic fill areas at construction sites as a prerequisite for certain excavation and/or building requirements. As discussed above, Article 22A is intended to protect the health and safety of construction workers, residents, and occupants from risks associated with the potential presence of hazardous wastes in the soil by requiring a site assessment and mitigation of any risks identified as a condition for construction of a planned project. An Article 22A investigation is

required if (1) more than 50 cubic yards of soil are to be disturbed, and (2) the project site is bayward of the 1851 high-tide line (i.e., in an area of Bay fill), as designated on an official City map, or (3) the site is at any other location in the City designated for investigation by the Director of the SFDPH. The reports are submitted to the Department of Public Works (DPW) and SFDPH. Article 22A regulations take effect at the time of the building permit application for projects located on filled land requiring excavation.

Under Article 22A, the Project Applicant must provide a site history to the SFDPH, and a professional geologist, civil engineer, or engineering geologist registered or certified by the State of California must conduct soil sampling to determine whether the soil contains hazardous waste using DTSC- or RWQCB-approved methods. A soils sampling and analysis report must be submitted to SFDPH (and DTSC, RWQCB, and other agencies if determined by SFDPH). If the soil sampling and analysis report indicates there are no hazardous wastes present in soil, the Article 22A requirements are assumed by SFDPH to be satisfied. If the soil sampling and analysis report or site history indicates hazardous wastes are, or may be, present in soil, a site-specific mitigation report must be prepared and submitted to SFDPH. The site mitigation report is required to contain the following information: a determination whether the hazardous wastes in soil are causing or are likely to cause significant environmental or health and safety risks, and if so, recommend measures that will mitigate the risks; and that the recommended site mitigation measures have been completed, which may include follow-up soil sampling and analysis.

Construction in those portions of Candlestick Point located bayward of the 1851 high tide line that would involve excavation of greater than 50 cubic yards of soil would be subject to the requirements of Article 22A. Because Article 22A requirements do not apply to Hunters Point Naval Shipyard, the SFDPH created Article 31. Article 31 was added to the *San Francisco Municipal Code* in 2004 (Ordinance 0303-04) in conjunction with the execution of a Disposition and Development Agreement (DDA) between the Agency and Lennar Urban pertaining to redevelopment of Parcel A (HPS Phase I) after the parcel was transferred from the Navy to the Agency in 2004. As explained in Attachment 12 to the DDA, the legislation was modeled on Article 22A. In general, Article 31 regulations establish the following: allowable residual soil concentrations, and requirements for preparing plans and reports, including Site Evaluation, Supplemental Site Evaluation, Site Mitigation, Risk Evaluation, and Closure Reports. The regulations also establish a mechanism for SFDPH to verify compliance with certain requirements imposed in the previous EIR for development of HPS and establishes minimum criteria for various documents required by that EIR: DCPs, transportation and disposal plans, soil importation plans, health and safety plans, and stormwater and erosion control plans.

As presently drafted, Article 31 applies only to soil disturbances at Parcel A. However, it contains five sections that have no text other than a notation that they are reserved for Parcels B, C, D, E, and F. As discussed in Impacts below, the City anticipates that the requirements of the Land Use Control Remedial Design documents to be prepared as part of the CERCLA process and other aspects of the institutional controls, including the approval of Risk Management Plans, will incorporate many of the requirements for the other HPS parcels that are imposed on Parcel A by Article 31. Nevertheless, the City presently anticipates that, before additional parcels are transferred, it will amend Article 31 to add content to the relevant "Reserved" section(s). That additional content is expected to specify a similar process whereby SFDPH would assist permit-issuing departments of the City to verify that restrictions in deeds and

covenants enforceable by the FFA Signatories and the Navy, and other mitigation measures identified by this EIR, have been complied with before the City issues excavation and other ground-disturbing permits and that compliance with the various measures continues for the duration of the construction.

Handling of Affected Groundwater

It may be necessary to pump shallow groundwater or "dewater" areas to facilitate construction. Discharges to the sewage system related to these activities are regulated by the DPW through Article 4.1, the Industrial Waste Ordinance of the *Public Works Code* as well as San Francisco Public Utilities Commission (SFPUC) batch wastewater discharge permit process. Groundwater from dewatering and/or cleanup activities must meet specific treatment standards before being discharged to the City sewage system under permits issued by the SFPUC. Permittees/dischargers typically also monitor the groundwater discharged to the sewer system and report regularly to the SFPUC.

If shallow groundwater were to be pumped directly into the Bay as a necessary by-product of construction dewatering, the discharger would be required to notify and obtain approval of the RWQCB, as described in Section III.M. Any groundwater proposed for discharge from the Project site into the Bay must meet strict water quality standards established by the San Francisco Bay Basin Plan as defined by the RWQCB, and may have to be treated before discharge into the Bay to avoid potential degradation of the Bay's water quality. Furthermore, dischargers are required to meet stringent monitoring standards established by the RWQCB (and to a certain extent, the State Water Resources Control Board) to ensure compliance under this permitting system.

Handling of Hazardous Waste

Hazardous waste may be generated from the Project site during construction and would need to be transported to a facility permitted to accept such waste. Management of specific hazardous wastes is addressed at the federal, state, and local levels. DTSC is authorized by US EPA to enforce the requirements of the federal RCRA. Under the state's Hazardous Waste Control Law, DTSC has adopted extensive regulations governing the generation, transportation, treatment, and disposal of hazardous wastes, which are more stringent than the requirements of RCRA. The state requirements for hazardous waste management specified in the *California Health and Safety Code*, Chapter 6.5, Article 2,

San Francisco Health Code Article 22 provides for safe handling of hazardous wastes in the City. This article incorporates the state requirements for hazardous waste management specified in the *California Health and Safety Code*, Chapter 6.5, Article 2, and authorizes the SFDPH to implement the requirements of the *Hazardous Waste Control Act* related to hazardous waste generators in San Francisco. As provided by Article 22, the SFDPH has the authority to conduct inspections of any facilities where hazardous wastes are stored, handled, processed, disposed of, or treated to recover resources and must maintain records to document compliance with the *Hazardous Waste Control Act*. Hazardous wastes generated at a facility would be disclosed in the Hazardous Materials Certificate of Registration prepared for the facility. Hazardous wastes generated in areas undergoing remediation, if regulatory thresholds are exceeded, would be subject to Article 22.

Handling of Hazardous Materials

Hazardous materials that could be excavated from construction or activities in the Project site may require off-site transportation for disposal and/or treatment. Transportation and disposal of soil that is classified as hazardous waste would be subject to applicable federal and state regulations. The US Department of Transportation (US DOT) regulates hazardous materials transportation, including contaminated soil, between states, as described in Title 49 of the *Code of Federal Regulations*, and implemented by Title 13 of the CCR. The California Highway Patrol and the California Department of Transportation (Caltrans) are the state agencies with primary responsibility for enforcing federal and state regulations related to transportation within California. These agencies respond to hazardous materials (including contaminated soil) transportation emergencies. Together, these agencies determine container types to be used and grant licenses to hazardous waste haulers for hazardous waste transportation on public roads.

San Francisco Health Code Article 21 provides for safe handling of hazardous materials in the City. In addition to specifying permitting requirements for hazardous materials, Article 21 prohibits unauthorized releases of hazardous materials and specifies requirements for reporting an unauthorized release, inspections after an unauthorized release, addressing abandoned USTs or hazardous materials handling facilities, and closure of hazardous materials handling facilities. If removal of a permitted or previously unidentified abandoned or no longer used UST is required, tank closure would be required in accordance with Article 21.

Worker Safety

Occupational safety standards have been established in federal and state laws to minimize worker safety risks from both physical and chemical hazards in the workplace. California Department of Occupational Safety and Health Administration (Cal/OSHA) and the federal Occupational Safety and Health Administration (OSHA) are the agencies with primary responsibility for assuring worker safety in the workplace. Cal/OSHA has primary responsibility for developing and enforcing standards for safe workplaces and work practices in California in accordance with regulations specified in CCR Title 8. For example, under Title 8 CCR 5194 (Hazard Communication Standard), construction workers must be informed about hazardous substances that may be encountered. Compliance with Injury Illness Prevention Program requirements (Title 8 CCR 3203) would ensure that workers are properly trained to recognize workplace hazards and to take appropriate steps to reduce potential risks due to such hazards. This would be particularly important if previously unidentified contamination or buried hazards are encountered. If additional investigation or remediation is determined to be necessary, compliance with Cal/OSHA standards for hazardous waste operations (Title 8 CCR 5192) would be required for those individuals involved in the investigation or cleanup work. A Site Health and Safety Plan must be prepared prior to commencing any work at a contaminated site or involving disturbance of building materials containing hazardous substances, to protect workers from exposure to potential hazards. Specific regulations related to these conditions are discussed below.

Building Demolition and Renovation

Many existing structures and buildings in the Candlestick Point and HPS Phase II are proposed for demolition. Hazardous wastes may be generated in the form of asbestos from friable building materials, lead-based paint on building surfaces, and lighting fixtures. In addition, previously unknown contamination, possibly the result of improper disposal or housekeeping activities, may be discovered as structures are demolished. Such hazardous wastes and materials would be subject to regulations governing hazardous waste and materials outlined above.

Asbestos in Structures and Buildings

Asbestos is regulated both as a hazardous air pollutant under the federal *Clean Air Act* regulations and as a potential worker safety hazard under the authority of Cal/OSHA. These regulations prohibit emissions of asbestos from asbestos-related manufacturing, demolition, or construction activities; require medical examinations and monitoring of employees engaged in activities that could disturb asbestos- containing building materials; specify precautions and safe work practices that must be followed to minimize the potential for release of asbestos fibers; and require notice to federal and local government agencies prior to beginning renovation or demolition that could disturb asbestos-containing building materials. The agencies with primary responsibility for asbestos safety are the Bay Area Air Quality Management District (BAAQMD), Cal/OSHA and OSHA, and US EPA.

Lead-Based Paint

Federal, state, and local laws and regulations govern handling of building materials that contain lead-based paint. OSHA Lead Construction Standards establish a maximum safe exposure level for the following types of construction work where lead exposure may occur: demolition or salvage of structures where lead or materials containing lead are present; removal or encapsulation of materials containing lead; and, new construction, alteration, repair or renovation of structures or materials containing lead. Typically, building materials with lead-based paint attached are not considered hazardous waste (Chapter II, Division 4.5, Title 22, CCR) unless the paint is chemically or physically removed from the building debris.

San Francisco Health Code, Chapter 34, Section 3407, establishes requirements for projects that disturb lead-based paint on the exterior of buildings or steel structures. It is implemented by the Department of Building Inspection (DBI). The ordinance contains performance standards, including a requirement to establish containment barriers that are at least as effective at protecting human health and the environment as those in the most recent *Guidelines for Evaluation and Control of Lead-Based Paint Hazards* promulgated by the US Department of Housing and Urban Development.

In addition, once a structure containing lead-based paint has been properly demolished there are federal and state requirements for future unrestricted residential reuse areas to verify that areas around a former structure were not contaminated with lead prior to or during the demolition process. For Parcel A at HPS, *San Francisco Health Code* Article 31 required submittal of a Lead Based Paint in Soil Sampling Report to analyze and, if found above action levels, remediate lead-based paint in soil. It is anticipated that Article 31 will be amended to require lead-based paint in soil to be addressed at HPS Phase II.

Lighting Wastes and PCBs

Lighting wastes may be classified as a hazardous waste if they contain concentrations of mercury, lead, or PCBs as a hazardous waste when the concentrations exceed specified limits in liquid or nonliquid substances. Fluorescent light ballasts that contain PCBs, regardless of size or quantity, are regulated as hazardous waste and must be transported and disposed of as hazardous waste. Such hazardous wastes and materials would be subject to regulations governing hazardous waste and materials outlined above.

Disturbance or Disposal of Shoreline Sediment

In San Francisco Bay Area, projects involving the disturbance or disposal of sediments (e.g., routine maintenance of a marina) in the Bay cannot be approved without concurrence from all permitting and commenting agencies in the Dredged Material Management Office (DMMO). The DMMO is a joint program of Bay Conservation and Development Commission (BCDC), RWQCB, State Lands Commission, the US Army Corps of Engineers San Francisco District (USACE), and the US EPA. Also participating are the California Department of Fish and Game (CDFG), the National Marine Fisheries Service, and the US Fish and Wildlife Service, who provide advice and expertise to the process. The purpose of the DMMO is to cooperatively review sediment quality sampling plans, analyze the results of sediment quality sampling, and make suitability determinations for material proposed for disposal in the Bay. The goal of this interagency group is to increase efficiency and coordination between the member agencies and to foster a comprehensive and consolidated approach to handling dredged material management issues. Through the DMMO, Project Applicants fill out one application form that the member agencies then jointly review at bi-weekly meetings before issuing their respective authorizations.[323]

The Dredge Material Reuse/Disposal Application serves as and is accepted for a number of permits, including *(a)* Section 404 or Section 10 dredging authorization by USACE, *(b)* an administrative dredging permit for BCDC, *(c)* the RWQCB water quality certification or waste discharge requirement, and *(d)* a dredging project lease from the State Lands Commission.

The roles, responsibilities, and jurisdictions of the DMMO agencies differ, depending primarily on the proposed dredged material disposal or reuse site. As a result, member agencies may play only an advisory role in certain aspects of the permitting process. Decisions made by the DMMO do not in any way supersede the primary roles of the permitting agencies, which remain free to accept or reject recommendations, including those of the DMMO staff. In practice, however, the discussions at the DMMO meetings help inform the permitting agencies of specific concerns and issues of the member agencies, often before finalization of project documents. The DMMO facilitates the processing of dredging permit applications within existing laws, regulations, and policies. It was specifically designed to provide a mechanism for consistent review of permit applications through coordinated efforts by DMMO member agencies. It also provides a mechanism to allow the involvement and participation of

[323] SFBCDC, Long Term Management Strategy for the Placement of Dredged Material in the San Francisco Bay, Memo, April 18, 2008.

permit applicants and interested parties during the application process. All applicable regulatory authority and processes of the member agencies remain in full force and effect.[324]

Air Emissions Associated with Development of Hazardous Materials Release Sites

The BAAQMD is primarily responsible for planning, implementing, and enforcing federal and state ambient air quality standards in the San Francisco Bay Area. BAAQMD regulates both criteria air pollutants and toxic air contaminants (refer to Section III.H.3 [Regulatory Framework] [in Air Quality]). The state Asbestos Airborne Toxic Control Measure (ATCM) for Construction, Grading, Quarrying, and Surface Mining Operations is also regulated by the BAAQMD. BAAQMD regulates particulate matter from construction activities and requires the implementation of various dust control measures to keep small-diameter particulates, or $PM_{10,}$ levels to a minimum.

In addition, the City has adopted Article 22B, Construction Dust Control Ordinance (Dust Ordinance) that requires stringent controls to minimize dust emissions. The Dust Ordinance was adopted in July 2008 and requires that all site preparation work, demolition, or other construction activities within the City to comply with specific dust control measures. For projects over one half-acre, the Dust Control Ordinance requires that the Project Applicant submit a Dust Control Plan (DCP) for approval by the SFDPH prior to issuance of a building permit by DBI.

The Dust Control Ordinance requires Project Applicants and responsible contractors for construction activities to control construction dust on the site or implement other practices that result in equivalent dust control that are acceptable to the Director. Dust suppression activities may include watering all active construction areas sufficiently to prevent dust from becoming airborne; increased watering frequency may be necessary whenever wind speeds exceed 15 miles per hour. In addition, *San Francisco Health Code* Article 31 required submittal of a DCP for the Parcel A development. It is anticipated that Article 31 will be amended to include a requirement for submittal of a DCP for HPS Phase II (refer to Section III.H.3 [in Air Quality] for additional information).

Naturally Occurring Asbestos

The California Air Resources Board ATCM for Construction, Grading, Quarrying, and Surface Mining Operations is intended to protect public health and the environment by requiring the use of best available dust control measures to prevent off-site migration of naturally occurring asbestos-containing dust from road construction and maintenance activities, construction and grading operations, and quarrying and surface mining operations in areas of ultramafic rock,[325] serpentine,[326] or asbestos.[327] The ATCM applies to grading or excavation activities, which would involve the excavation of bedrock or fill materials potentially containing naturally occurring asbestos.

---

[324] Dredge Material Management Office, DMMO Annual Report January 1st through December 31st 2003, April 2004. http://www.spn.usace.army.mil/conops/2003AnnualReport.pdf (accessed December 4, 2008).
[325] Ultramafic rocks are formed in high temperature environments well below the surface of the earth.
[326] Serpentine is a naturally occurring group of minerals that can be formed when ultramafic rocks are metamorphosed during uplift to the earth's surface. Serpentinite is a rock consisting of one or more serpentine minerals. This rock type is commonly associated with ultramafic rock along faults such as the Hayward Fault. Small amounts of chrysotile asbestos, a fibrous form of serpentine minerals, can be common in serpentinite.
[327] Asbestos is a term used for several types of naturally occurring fibrous minerals found in many parts of California.

For construction activities disturbing less than one acre of area underlain by these types of bedrock potentially containing naturally occurring asbestos, specific dust control measures must be implemented in accordance with the ATCM before construction begins and each measure must be maintained throughout the duration of the portion of the construction project when these types of bedrock are being disturbed. For construction activities disturbing greater than one acre of area underlain by these types of bedrock potentially containing naturally occurring asbestos, construction contractors are required to prepare an Asbestos Dust Mitigation Plan (ADMP) specifying measures that will be taken in an attempt to ensure that no visible dust crosses the property boundary during construction. The ADMP must be submitted to and approved by the BAAQMD prior to the beginning of construction, and the site operator must ensure the implementation of all specified dust control measures throughout the construction project. In addition, the BAAQMD may require air monitoring to monitor for off-site migration of asbestos dust during construction activities and may change the plan on the basis of the air monitoring results.

Section III.H describes construction dust, toxic air contaminants, and airborne asbestos regulations further.

Hazardous Materials Use During Occupancy of the Project

The management of hazardous materials is regulated under a number of laws at federal, state, and local levels through programs administered by the US EPA, agencies within the California Environmental Protection Agency (Cal/EPA) such as the DTSC and the RWQCB, US DOT, California Highway Patrol, federal and state Occupational Safety and Health agencies (OSHA), and the San Francisco Department of Public Health (SFDPH).

Many of the state laws and regulations previously described for the cleanup of hazardous materials release sites, which implement federal laws, would equally apply to the routine use of hazardous materials and the generation of hazardous waste at the Project and are not repeated here. These include the state's Hazardous Waste Control Law administered by DTSC, Cal/OSHA workplace regulations, and federal and state DOT transportation requirements. There are additional state and local laws and regulations that would apply to hazardous materials during Project operation, as described below.

Hazardous materials are required to be stored in designated areas designed to prevent accidental release to the environment. *California Building Code* (CBC) requirements prescribe safe accommodations for materials that present a moderate explosion hazard, high fire or physical hazard, or health hazards.

The *Hazardous Materials Management Act* requires that businesses handling or storing certain amounts of hazardous materials prepare a Hazardous Materials Business Plan (HMBP), which includes an inventory of hazardous materials stored on site (above specified quantities), an emergency response plan, and an employee-training program. Businesses that use, store, or handle 55 gallons of liquid, 500 pounds of a solid, or 200 cubic feet of a compressed gas at standard temperature and pressure require this business plan (i.e., the stadium, and/or marina).

During Project operation, for activities subject to such requirements, these laws and regulations would be monitored and enforced by the City in accordance with specific articles established in the *San Francisco Health Code*, as summarized below.

San Francisco Health Code Article 21

Article 21 of the *San Francisco Health Code* provides for safe handling of hazardous materials in the City. In accordance with this article, any person or business that handles, sells, stores, or otherwise uses hazardous materials in quantities exceeding specified threshold amounts would be required to obtain and keep a current hazardous materials certificate of registration and to implement an HMBP submitted with the registration application. Facilities with USTs are also required to obtain a permit to operate the tank. In addition to specifying permitting requirements for hazardous materials and USTs, Article 21 prohibits unauthorized releases of hazardous materials and specifies requirements for reporting an unauthorized release, inspections after an unauthorized release, addressing abandoned USTs or hazardous materials handling facilities, and closure of hazardous materials handling facilities.

This Article helps protect the health and safety of the general community and emergency response personnel, such as fire fighters and paramedics. Data on hazardous materials use are stored in a citywide computer system and can be made available to emergency responders. The information assists emergency responders to assess and resolve hazardous materials incidents quickly and safely. Inspections are performed by the City every one to two years or upon complaint.

Article 21 incorporates the California Underground Storage Tank Regulations specified in the *California Health and Safety Code*, Chapters 6.7 and 6.75; Hazardous Materials Release Response Plans and Inventory Regulations requiring preparation of an HMBP, and specified in the *California Health and Safety Code*, Chapter 6.95, Article 1; Aboveground Petroleum Storage Tank Regulations requiring preparation of a SPCC plan, and specified in the *California Health and Safety Code*, Section 25270.5; and hazardous materials management provisions of the *Uniform Fire Code* requiring Hazardous Materials Inventories specified in Sections 8001.3.2(a) and 8001.3.3(a). It also provides for additional stricter local requirements.

San Francisco Health Code Article 22

San Francisco Health Code Article 22 provides for safe handling of hazardous wastes in the City. This article incorporates the state requirements for hazardous waste management specified in the *California Health and Safety Code*, Chapter 6.5, Article 2, and authorizes the SFDPH to implement the requirements of the *Hazardous Waste Control Act* related to hazardous waste generators in San Francisco. Hazardous wastes generated at a facility would be disclosed in the Hazardous Materials Certificate of Registration and HMBP prepared for the facility in accordance with Article 21 of the *San Francisco Health Code* (described above).

San Francisco Department of Public Health Hazardous Materials Unified Program Agency

Cal/EPA has adopted regulations implementing a "Unified Hazardous Waste and Hazardous Materials Management Regulatory Program" (Unified Program). The six program elements of the Unified Program are hazardous waste generators and hazardous waste on-site treatment, underground storage tanks, above-ground storage tanks, hazardous material release response plans and inventories, risk management and prevention program, and Uniform Fire Code hazardous substances management plans and inventories. The program is implemented at the local level by a local agency—the Certified Unified

Program Agency (CUPA). The CUPA is responsible for consolidating the administration of the six program elements within its jurisdiction.

The San Francisco Department of Public Health Hazardous Materials Unified Program Agency (HMUPA) has been granted authority by the State under the Unified Program to enforce the program element regulations pertaining to hazardous materials in the City. These include permitting for hazardous materials storage, underground storage tanks, and hazardous waste generation under the DPH Certificate of Registration Program, described below.

A Hazardous Materials Compliance Certificate is awarded to businesses registered with the SFDPH that provide required annual information as applicable to their facility including: hazardous materials and wastes inventories, use, materials reduction, on-site treatment, and employee training; facility maps; emergency response procedures; underground storage tanks management (including forms, leak detection monitoring program, and financial responsibility certificates); medical wastes; regulated substances; aboveground storage tanks; diesel backup generators; and chlorofluorocarbon recovery and recycling. Under the DPH HMUPA, building contractors temporarily storing hazardous materials at a construction site must also apply and receive a HMUPA certificate for storage of hazardous materials during construction and must provide the appropriate fees.

Other Applicable State Regulations

Transportation of Hazardous Materials

CCR Section 31303 requires that when hazardous materials are transported on state or interstate highways, the highway(s) that offer the shortest overall transit time possible shall be used, and as required by federal and state laws, all other hazardous materials transportation regulations must be followed, such as US DOT regulations for packaging and handling hazardous materials to prevent accidental spills of hazardous materials during transit.

Radioactive Materials

Medical and dental offices use X-ray equipment, and practitioners may use small quantities of radioactive materials such as diagnostics and radiopharmaceuticals. The types and quantities of radioactive materials would be minimal. The CDPH is responsible for ensuring facilities that use, store, or dispose of radiological materials are properly licensed (or properly issued an exemption from such requirements) in accordance with state and federal laws and regulations, including the state Radiation Control Law (*California Health and Safety Code* Section 114960 et seq. and CCR Title 17, Division 1, Chapter 5. The Radiologic Health Branch (RHB) licenses institutions that use radioactive materials and radiation-producing equipment, such as X-ray equipment. To maintain a radioactive materials license, an institution must meet training and radiation safety requirements and be subject to routine inspections.

San Francisco General Plan

The *San Francisco General Plan* (1996) provides long-term guidance and policies for maintaining and improving the quality of life and the man-made and natural resources of the community. The Community Safety chapter and the Environmental chapter of the *San Francisco General Plan* contain the following policies relating to hazardous materials:

Community Safety

Policy 2.12 Enforce state and local codes that regulate the use, storage and transportation of hazardous materials in order to prevent, contain and effectively respond to accidental releases.

Environmental Protection

Policy 1.4 Assure that all new development meets strict environmental quality standards and recognizes human needs.

San Francisco Bay Plan

Refer to Section III.B for a description of the Bay Plan. The objectives and policies of the Bay Plan concerning hazards that are relevant to the Project are listed below:

Part IV: Development of the Bay and Shoreline: Safety of Fills

2. Even if the Bay Plan indicates that a fill may be permissible, no fill or building should be constructed if hazards cannot be overcome adequately for the intended use in accordance with the criteria prescribed by the Engineering Criteria Review Board.

III.K.4 Impacts

On-site workers and other persons visiting or occupying a site are potentially at risk at sites where hazardous materials have been used or where there could be an exposure to such materials as the result of the presence of unidentified fill materials or historic uses of a site, such as at locations in the Project site. Ecological communities, such as avian and terrestrial habitats and the aquatic environment, may also be at risk, depending on the type of populations and locations relative to potential exposure sources. This section addresses the potential impacts on construction workers, the public, and the ecological environment from exposure to hazardous materials at Candlestick Point and HPS Phase II, including shoreline/intertidal improvements such as rock wall buttresses and riprap-protected slopes that could disturb sediments. Section III.N (Biological Resources) and Section III.M (Hydrology and Water Quality) provide more detailed analysis about construction of Project features that could affect offshore water quality. Potential impacts associated with construction of infrastructure off site are also evaluated.

This section also describes the nature and extent of routine hazardous materials use in existing land uses in the Project site (e.g., PDR [production, distribution, and repair] uses and mixed-use development), and the potential for upset and accident conditions in which hazardous materials could inadvertently be released. The impact analysis identifies how proposed new land uses would introduce additional operational components (e.g., R&D) that would increase the types and amounts of hazardous materials routinely used, stored, or transported to, from, and within the Project site, and the extent to which existing and future populations could be exposed to hazardous materials.

Significance Criteria

The City and Agency have not formally adopted significance standards for impacts related to hazards and hazardous materials, but generally consider that implementation of the Project would have significant impacts if it were to:

K.a Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials

K.b Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment

K.c Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school

K.d Be located on a site that is included on a list of hazardous materials sites compiled pursuant to *Government Code* Section 65962.5 and, as a result, create a significant hazard to the public or the environment

K.e For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, result in a safety hazard for people residing or working in the project area

K.f For a project within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the project area

K.g Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan

K.h Expose people or structures to a significant risk of loss, injury, or death involving fires

Analytic Method

Scope of Impact Analysis for Hazardous Materials Release Sites

The presence of hazardous materials is related to both the industrial and commercial history of many locations within the Project site as well as the development of the current shoreline through the placement of fill materials. The existing conditions, as described in the Setting (including the status of remediation plans under regulatory agency oversight), provide the baseline against which to compare the effects of the Project. The following impact analyses focus on the potential human health effects associated with hazardous materials that could be encountered during construction, during development (e.g., some land uses would be occupied while new locations are being developed and/or remediated), and at full build-out of the Project.

The analysis also evaluates potential health effects due to materials such as asbestos, lead, or PCBs that could be present in buildings that would be demolished or renovated, or in soil or rock that would be excavated or graded. The potential for previously unidentified contamination to be encountered and possible adverse effects, if any, are qualitatively analyzed as well.

The analysis presented in this section is based on conditions as they existed in 2007 through 2009, based on published reports and agency databases available in 2009. As noted in the Introduction, remediation of hazardous materials releases identified in HPS Phase II is taking place through a regulatory process that the Navy is required to implement under CERCLA irrespective of whether or not HPS Phase II part of the Project is implemented.

Risk Estimates and Cleanup Levels

Various regulatory agencies, such as the US EPA, RWQCB, DTSC, and OSHA and Cal/OSHA are responsible for developing and/or enforcing risk-based standards to protect the public and the

environment. The current regulatory view of redevelopment where chemical and radiological constituents are present in the soil or groundwater is that the decisions regarding cleanup and future site use should be based on actual and reasonably projected risks presented by individual sites. This risk-based approach is marked by a focus on planned land uses, a recognition that all sites do not present the same risk, the understanding that the actual risks posed by a site are a function of the populations that could be present and the activities they could be engaged in, and an acknowledgment that many risks can be reduced and/or eliminated through the implementation of controls placed on the future use of the land, including through legally enforceable restrictions on use and risk management plans.

Depending on the types of chemicals present and potential pathways through which individuals might be exposed to the chemicals, contaminants in soil or groundwater can often be left in place or cleaned up to a degree that does not pose a threat to human health or the environment. The risk estimates take into consideration such factors as the concentration and further potential migration of contaminants, potential hazards to remediation workers and nearby populations, and potential exposures to the public, based on future land use. The risk-based decision-making relies on the preparation of risk-based evaluations to quantify potential exposures and resultant potential adverse health effects. For instance, in an area of known soil contamination where a park is to be constructed, once the park is in place it would provide a barrier to prevent direct access to the contamination. The assessment of whether soil and groundwater is contaminated and requires remediation is guided by using established risk assessment procedures and comparing concentrations of potential contaminants (chemical or radiological), obtained through site sampling, to regulatory standards or to site-specific standards. Numerical risk values are estimated for cancer-causing compounds and for non-cancer-causing compounds. At HPS Phase II, where there is identified contamination requiring the preparation of a risk assessment, the risk assessment calculations for soil and groundwater were based on exposure rates recommended by US EPA and DTSC. As part of the CERCLA remedial process for HPS, the Navy, in consultation with the FFA Signatories, adopted a conservative and protective approach that estimates the highest health risks that are reasonably expected at HPS. The human health risk assessments assumed a one-in-a-million (1×10^{-6}) excess cancer risk[328] threshold for developing suitable and protective remedial action alternatives. Unlike cancer risk estimates, the measure used to describe the potential for noncarcinogenic toxic effects to occur is expressed in terms of a Hazard Index (HI). The HI assumes that there is a level of exposure below which it is unlikely, even for sensitive populations, to experience adverse health effects. Adverse health effects are not anticipated when chronic and acute hazard indices are less than one. The final calculated risk values represent a conservative probability of occurrence.

The contaminants in HPS Phase II, and risk assessments that were used in developing cleanup levels, are an existing condition. As described in the Setting, the cleanup levels and remedial plans have been or will be approved by the FFA Signatories (and by the Governor for the case of an early transfer) at HPS Phase II. Remediation to achieve those levels will occur regardless of whether the Project is implemented. The cleanup will follow actions and timelines that have been, or will be, coordinated between the Navy and FFA Signatories for HPS Phase II. However, this analysis does evaluate the

[328] Carcinogenic compounds are present in daily life and present a risk of exposure to individuals; there is a cumulative risk from numerous environmental sources. The risk criterion (1x10-6) and the quantified values that are compared to the criterion represent the *probability* of occurrence that exposure to carcinogenic materials would exceed—in others words, would be in addition to—existing risk.

potential impacts of the limited remedial activities that may be conducted by the Agency or Project Applicant in conjunction with development activities, as described below.

Figure III.K-5 (Hunters Point Shipyard Phase II Navy Parcel Overlay) illustrates the relationship of the Project districts to the existing Navy cleanup parcel designations.

Management of Hazardous Materials Contamination Risks During Development

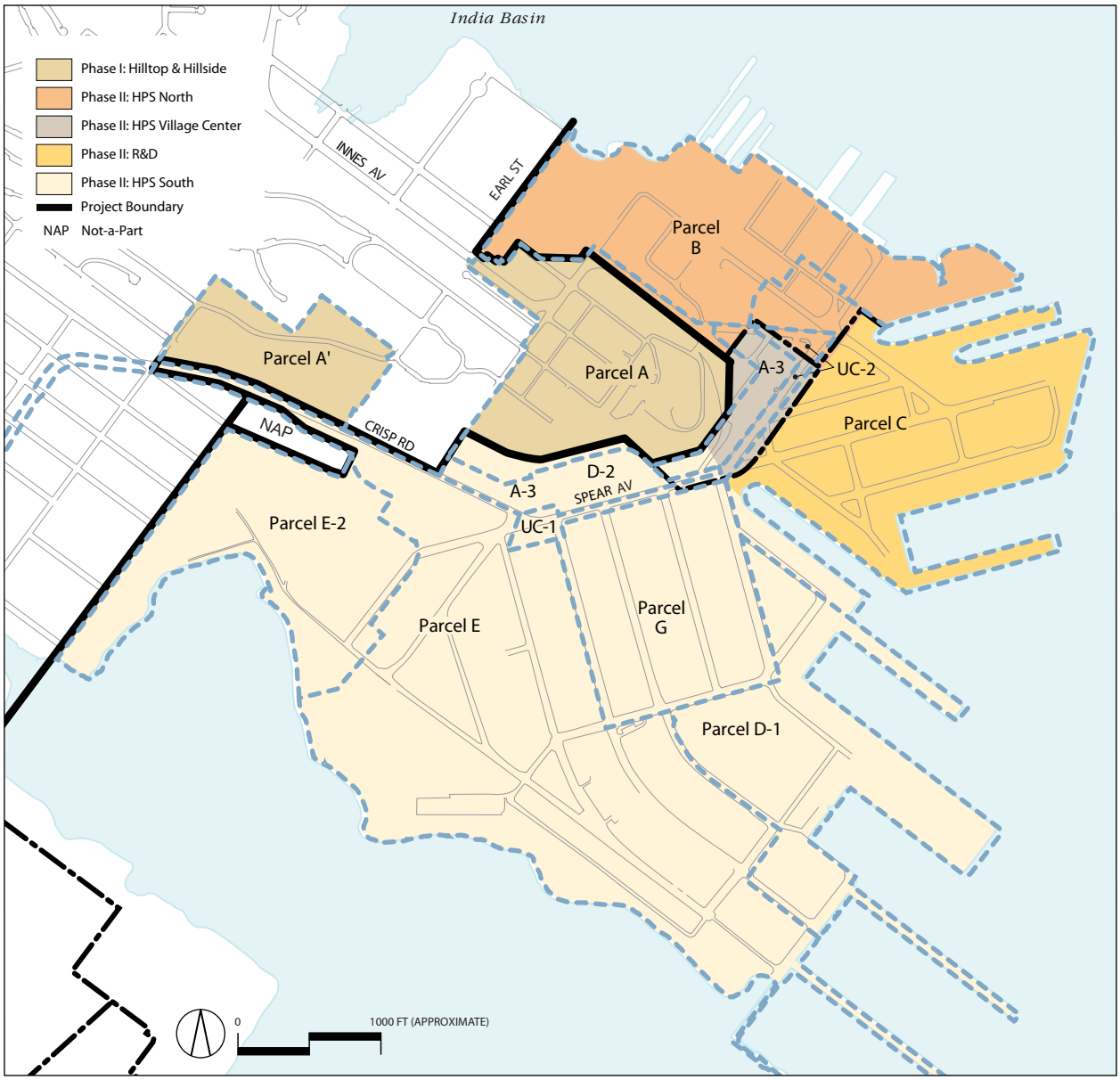
The analysis in this EIR focuses on whether the physical development of the Project could expose construction and maintenance workers, visitors, or occupants, or ecologic systems, to potential hazards associated with identified contaminants throughout the life of the Project.

Further, for HPS Phase II, the analysis reflects the requirements of the RODs approved to date and the stated intentions of the Navy, US EPA, DTSC (and through DTSC, CDPH) and the RWQCB to require through the CERCLA process that before any Project development activity occur at HPS Phase II, appropriate and legally enforceable environmental restrictions on uses and activities at the Project site (as described above) will be in place and applicable to that activity, whether in the form of a recorded covenant, deed provision, or lease term. Such restrictions will have been approved by the FFA Signatories as being sufficient under CERCLA and other applicable laws to ensure protection of human health and the environment during and after the development activity process, and the FFA Signatories will have approved a Land Use Control Remedial Design Document, or similar documents, identifying the specific mechanisms to be used to implement and enforce the restrictions. Although these restrictions and enforcement mechanisms will be established independent of this EIR, the mitigation measures identified in this EIR will provide redundant protection by requiring all Project development activities as well as all activities and uses conducted after the completion of development, to be in compliance with these environmental restrictions.

Such restrictions are expected to be applicable both to development activities that take place before remediation is complete (e.g., if the property is subject to an early transfer), and to development activities that take place after remediation is complete (e.g., if the property is transferred after a FOST, or if the property is leased and limited development activities like asbestos and lead-based paint abatement or building demolition are permitted under the terms of the lease). Although use and activity restrictions may be more stringent before remediation is complete, it is expected that restrictions will still be necessary after remediation is complete in most or all areas of HPS Phase II.

Development Schedule

Development is proposed to occur over a period of 20 or more years; it is likely development and occupancy of some portions of the Project would occur at the same time as demolition and construction would occur in other portions of the Project site in which contaminated soils or groundwater have been identified. Relatively few individuals would be exposed to the potential contaminated material during the initial construction. During later periods of construction, existing uses may remain, some interim uses may be occupied, and some of the proposed commercial, retail, open space, and residential uses would be completed and occupied. Consequently, an increasingly greater number of people could be affected by



SOURCE: Lennar Urban, 2009.

PBS&J 10.30.09 08068 | JCS | 09

Candlestick Point — Hunters Point Shipyard Phase II EIR

HUNTERS POINT SHIPYARD PHASE II NAVY PARCEL OVERLAY

FIGURE III.K-5

construction activities involving the disturbance of contaminated soil or groundwater during later development. This could be a particular issue in the residential portions of HPS Phase II, where construction in contaminated soils may occur near occupied residential units.

Existing uses adjacent to the Project site (e.g., in HPS Phase I) and new interim uses in the Project site during development present issues similar to those of development that occurs over a period of years. The issues would be whether there would be potentially significant impacts to people occupying sites in the Project (1) while remediation of nearby hazardous material sites has not been completed, and (2) while development that would disturb soils and/or shallow groundwater was occurring at adjacent or nearby sites in the Project. Those impacts would be of greater concern than impacts following build-out, because exposure to chemicals in soil and/or groundwater would be more likely to occur during, rather than after, development. Thus, the analysis of potential human health and ecological effects that could occur during construction applies to existing, remaining, interim uses, and to permanent uses occupied in early or middle periods of development.

Impacts from adjacent and nearby hazardous material release sites are carefully analyzed in the transfer documents (e.g., FOSTs, FOSETs, and FOSLs) prepared to comply with the requirements of CERCLA. For example, the FOST for Parcel A described in detail the potential impact on future residents of Parcel A from the hazardous material release sites where remediation had not been completed on other adjacent parcels, particularly what is now Parcel E-2, and concluded that there would not be significant impacts on Parcel A from Parcel E-2 or other adjacent parcels at HPS Phase II.

Scope of Impact Analysis for Hazardous Materials Use During Occupancy

The analysis assumes nearly all Project uses would involve the routine use of hazardous materials at varying levels, including uses at existing PDR and mixed-use land uses, and that there is the potential that such use could result in a release of hazardous materials. Quantification of precise amounts of additional hazardous materials use associated with new proposed uses is not practical at this stage of Project development. Therefore, the analysis qualitatively evaluates broad categories of hazardous materials use, ranging from R&D in which a wide variety of hazardous materials would be used, to facilities such as the proposed stadium where fuels and maintenance products would comprise the majority of hazardous materials, to smaller-scale users, such as artists' studios and households. For purposes of the analysis, compliance with existing federal, state, and local laws and regulations pertaining to hazardous materials management are presumed to be sufficient to minimize health and safety risks, and that state and local agencies would be expected to continue to enforce applicable requirements to the extent they do so now.

Existing Regulatory Framework

The following impact analyses also relies on compliance with applicable site development regulations including, but not limited to, the requirements imposed in deeds, leases or recorded land use covenants, RMPs, and the requirements of the federal, state, and local laws and regulations that have been summarized in Section III.K.3.

Construction Impacts

Impact HZ-1: Exposure to Known Contaminants

Impact of Candlestick Point

Impact HZ-1a **Construction at Candlestick Point bayward of the historic high tide line would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of the disturbance of soil and/or groundwater with known contaminants from historic uses. (Less than Significant with Mitigation)** ***[Criterion K.b]***

Types of Construction and Development Activity Anticipated at Candlestick Point

Implementation of Candlestick Point would involve extensive construction to accommodate new development within that area, as shown in Figure II-4 (Proposed Land Use Plan) and in Table II-2 (Existing and Proposed Uses) in Chapter II. Site preparation would include deep excavations for large structures such as residential towers, with plans to use the cut material elsewhere within the Project site as fill; installation of foundation piles; trenching for utility lines; grading and compaction; and other earth-disturbing activities. Additionally, there would be roadway improvements, including rebuilding Harney Way and other new roadways within the site. As stated in the Setting, the current site of Candlestick Park and associated parking, CPSRA, an area north of Yosemite Slough (North Park Area), an area southeast of Harney Way (Last Port Area), and Hunters Point Expressway (ring road) comprising approximately 235 acres was investigated in 1998.

Portions of Candlestick Point with a Potential for Exposure

As described in the Setting section above, there are no sites with known contamination requiring remediation at Candlestick Point. At Candlestick Point, results of soil and groundwater sampling taken at depths of up to 15 feet detected organic compounds and metals at various depths and locations, indicating the chemicals were associated with fill materials. A human health risk evaluation concluded that the presence of the detected chemicals in soil and groundwater did not pose an unacceptable carcinogenic or non-carcinogenic risk to future workers or visitors, nearby residents or workers, or recreational uses in the Bay. The report concluded no further action was necessary. The report did note that if excavation to depths greater than 15 feet were planned, additional sampling, risk evaluation, or methane monitoring, may be appropriate. A Phase I ESA conducted in 2006 and updated in 2009 concluded that releases or areas of recognized environmental conditions were not observed during either of these Phase I assessments. DPR staff have also indicated that, decades ago, individuals may have disposed of household hazardous waste on portions of the CPSRA, although DPR does not have any files indicating that a state-regulated landfill was on-site. The ESAs do recommend that a soil management plan be developed prior to redevelopment to describe procedures to follow in the event unexpected contamination is encountered during construction activities and if appropriate, comply with Article 22A.

Although there are no known releases of hazardous materials requiring remediation in the portions of Candlestick Point bayward of the 1851 high-tide line, the detection of low-levels of hazardous materials

in 1998 and general knowledge of the types of material that can be in Bay fill lead to the conclusion that there is a potential for exposure to hazardous materials from development activity in these areas.

Since the potential source of hazardous materials that could require remediation at Candlestick Point is fill material, and the portions of Candlestick Point located landward of the 1851 high tide line are not composed of fill material, and the ESAs for these portions did not identify any other sources, there is no significant potential for exposure to hazardous materials from development activities at these areas. The discussion of Candlestick Point in the rest of this section, therefore, applies only to the portions of Candlestick Point located bayward of the 1851 high tide line.

Application of the Article 22A Site Evaluation and Mitigation Process to Potential Construction Impacts at Candlestick Point

The requirement for a site assessment prior to obtaining a grading permit for new construction would be triggered by Article 22A for sites at Candlestick Point located bayward of the 1851 high tide line, which are the Candlestick Point North and Candlestick Point South districts, comprising the bulk of the area previously investigated in 1998. Compliance with Article 22A requirements would ensure current conditions are assessed in the area previously investigated in 1998, and that they are assessed in light of the specific planned depths of excavation.

Article 22A requires further investigation and site mitigation if a release of hazardous materials is indicated by the environmental assessment. The Article 22A soil analysis report would be submitted to the SFDPH. If concentrations of chemicals are found above certain criteria via the Article 22A soil sampling process, a site mitigation plan is required to be submitted to and approved by the SFDPH and would also include the planned disposal method for any wastes generated. The site mitigation plan would specify the actions that must be implemented to mitigate the risks posed by the identified release of hazardous materials. Site mitigation plans are described in more detail in the discussion of mitigation measure MM HZ-1a below.

To reduce impacts related to exposure to known contaminants at Candlestick Point from construction activities, the following mitigation measure shall be implemented.

MM HZ-1a *Article 22A Site Mitigation Plans. (Applies only to Candlestick Point.) Prior to obtaining a site, building or other permit from the City for development activities involving subsurface disturbance at portions of Candlestick Point bayward of the high tide line, the Project Applicant shall comply with the requirements of San Francisco Health Code Article 22A. If the site investigation required by Article 22A (or, in the case of development activity in CPSRA, which is not subject to Article 22A, a comparable site investigation that is carried out to comply with this measure), indicates the presence of a hazardous materials release, a site mitigation plan must be prepared. The site mitigation plan must specify the actions that will be implemented to mitigate the significant environmental or health and safety risks caused or likely to be caused by the presence of the identified release of hazardous materials. The site mitigation plan shall identify, as appropriate, such measures as excavation, containment, or treatment of the hazardous materials, monitoring and follow-up testing, and procedures for safe handling and transportation of the excavated materials, or for protecting the integrity of the cover or for addressing emissions from remedial activities, consistent with the requirements set forth in Article 22A.*

To the extent that Article 22A does not apply to state-owned land at CPSRA, prior to undertaking subsurface disturbance activities at CPSRA, the Agency and the California Department of Parks and Recreation shall enter into an agreement to follow procedures comparable to those set forth in Article 22A for construction and development activities conducted at Candlestick Point State Recreation Area.

Implementation of mitigation measure MM HZ-1a would reduce effects related to exposure of known contaminants at Candlestick Point, including construction activities at CPSRA, by requiring compliance with Article 22A or an equivalent process. Any remedial activities and the associated safety protocols and control measures would be similar to those described in Table III.K-2 (Remedial Actions, Potential Environmental Effects, and Methods to Reduce Effects). At a Bay Fill site like Candlestick Point, a site mitigation plan may instead take a similar approach to the one taken by the Navy to address Bay Fill materials at HPS Parcel B. As described above, that approach involved Institutional Controls and implementation of Risk Management Plans with the placement of recorded deed restrictions on the property, if necessary, to limit uses or activities on the property to ensure any significant environmental or health and safety risk is mitigated. Implementation of this measure would ensure that potential adverse effects on human health and the environment from construction activities disturbing known subsurface hazards would be reduced to a less-than-significant level.

Impact of Hunters Point Shipyard Phase II

Impact HZ-1b **Construction at HPS Phase II would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of the disturbance of soil and/or groundwater with known contaminants from historic uses. (Less than Significant with Mitigation)** ***[Criteria K.b and K.d]***

Implementation of HPS Phase II would involve construction to accommodate new development within that area, as shown in Figure II-4 and in Table II-2 in Chapter II. Site preparation would include deep excavations for large structures such as residential towers; installation of foundation piles; trenching for utility lines; grading and compaction; and other earth-disturbing activities. This impact specifically addresses potential hazards associated with landward soils that could be encountered during construction. Potential impacts associated with sediment that could be disturbed during shoreline improvements are evaluated in Impact HZ-10.

As described in the Setting, HPS Phase II is going through a remediation process independent of the Project, and property could transfer or be leased or accessed for limited activities, such as installation of infrastructure, before or after completion of remediation activities. To the extent that the property under development contains hazardous materials at the time of development, potentially significant impacts could result from exposure to such hazardous materials by workers, occupants, and visitors if controls are not in place to manage the risks from such exposure.

As discussed above, the Navy, US EPA, DTSC, RWQCB, and CDPH will, independent of the Project and this EIR, require that before any Project development activity occurs at HPS, appropriate and legally enforceable environmental restrictions on uses and activities at the Project site be in place and applicable to that activity, whether in the form of a recorded covenant, deed provision, easement, or lease term. The nature of the expected restrictions are described in detail in the "Regulatory Process for Cleanup Process

at HPS Phase II" in Section III.K.2, above. Such restrictions will have been approved by the FFA Signatories as being sufficient under CERCLA and other applicable laws to ensure protection of human health and the environment during and after the development activity process, and the FFA Signatories will have approved a Land Use Control Remedial Design Document, or similar documents, identifying the specific mechanisms to be used to implement and enforce the restrictions. Although these restrictions and enforcement mechanisms will be established independent of this EIR, the mitigation measures identified in this EIR, including mitigation measure MM HZ-1b, would provide redundant protection by requiring that all Project development activities and uses conducted after the completion of development be in compliance with these environmental restrictions.

Such restrictions are expected to be applicable both to development activities that take place before remediation is complete (e.g., if the property is subject to an early transfer), and to development activities that take place after remediation is complete (e.g., if the property is transferred after a FOST), or if the property is leased or accessed through a license or easement and limited development activities like asbestos and lead-based paint abatement or building demolition are permitted under the terms of the lease, or infrastructure is installed under a license or easement). Although use and activity restrictions may be more stringent before remediation is complete, it is expected that restrictions will still be necessary after remediation is complete in most or all areas of HPS Phase II.

To reduce impacts related to exposure to known contaminants from construction activities at HPS Phase II to a less-than-significant level, the following mitigation measure shall be implemented.

MM HZ-1b *Compliance with Requirements Imposed by Cleanup Decision Documents and Property Transfer Documents. (Applies only to HPS Phase II) Prior to obtaining a grading, excavation, site, building or other permit from the City for development activity at HPS Phase II involving subsurface disturbance, the Project Applicant shall submit documentation acceptable to the San Francisco Department of Public Health that the work will be undertaken in compliance with all restrictions imposed pursuant to a CERCLA ROD, Petroleum Corrective Action Plan, FOST, FOSET or FOSL, including restrictions imposed in deeds, covenants, leases, easements, and LIFOCs, and requirements set forth in Land Use Control Remedial Design Documents, Risk Management Plans and health and safety plans. Such restrictions, imposed by federal and state regulatory agencies as a condition on the Navy transfer of the property to the Agency, will ensure that the property after transfer will be used in a manner that is protective of the environment and human health. The City/Agency may choose to implement this measure by requiring these actions as part of amendments to San Francisco Health Code Article 31, which currently sets forth procedural requirements for development in HPS Phase I, or through an equivalent process established by the City or Agency.*

With implementation of this mitigation measure, for areas not planned for residential development, the restrictions in the Covenant and Deed will prohibit use of the property as a residence, hospital, school, or day care center, unless the FFA Signatories approve a specific proposal for such a use. In most non-residential areas, and residential areas, it is anticipated that there will be a restriction against excavation or disturbance of soil or groundwater unless either a site-specific workplan is approved by the FFA Signatories, or the activity is consistent with an applicable RMP pre-approved by the FFA Signatories. In a few specific areas, such as IR 7/18 in Parcel B, the Building 123 area in Parcel B, and the former landfill in Parcel E-2, it is expected that there will be special restrictions associated with protecting the integrity of waste containment structures or ongoing treatment systems and with implementing the

operation and maintenance plan for those remedies. For parcels subject to early transfer under a FOSET, the restrictions may be more severe until cleanup actions are completed, but restrictions are still expected to be imposed at most or all areas after remediation is complete because the ubiquitous nature of low levels of hazardous materials in Bay Fill makes it infeasible to remediate all of those materials. The specific mechanisms used to implement and enforce the activity restrictions in the covenant and deed(s) will be set forth in a Land Use Control Remedial Design document approved by the FFA Signatories.

If the Navy transfers property under a lease or LIFOC, as explained previously, under CERCLA, the terms of the lease or LIFOC would contain restrictions similar to those described above that would be contained in a Covenant and deed under an early transfer. Although these restrictions will be imposed independent of this EIR through separate environmental regulatory processes, to ensure compliance with these restrictions prior to development activities that disturb soil or groundwater, mitigation measure MM HZ-1b would require SFDPH to verify, before all development activities at HPS Phase II that disturb soil or groundwater occur that the activities would be done in compliance with all applicable restrictions imposed pursuant to a CERCLA ROD, Petroleum Corrective Action Plan, FOST, FOSET or FOSL, or License Agreement, including restrictions imposed in deeds, covenants, leases, and LIFOCs, and requirements set forth in Land Use Control Remedial Design Documents, Risk Management Plans and health and safety plans.

Combined Impact of Candlestick Point and Hunters Point Shipyard Phase II

Impact HZ-1 **Construction activities associated with the Project would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of the disturbance of soil and/or groundwater with known contaminants from historic uses. (Less than Significant with Mitigation)** ***[Criteria K.b and K.d]***

Construction activities associated with the Project would involve extensive construction to accommodate new development within that area, as shown in Figure II-4 and in Table II-2 in Chapter II. Site preparation could include deep excavations for large structures such as residential towers; cut material may be used elsewhere within the Project site as fill, subject to certain restrictions; installation of foundation piles; trenching for utility lines; grading and compaction; and other earth-disturbing activities. Those activities could result in exposure to known contaminants at the Project site that could expose construction workers, the public, or the environment to hazardous materials. Implementation of mitigation measure MM HZ-1a would reduce effects related to exposure of known contaminants at Candlestick Point, including construction activities at CPSRA, by requiring compliance with Article 22A or an equivalent process. For construction activities at HPS Phase II, mitigation measure MM HZ-1b would require SFDPH to verify, before all development activities at HPS Phase II that disturb soil or groundwater occur, that the activities would be done in compliance with all applicable restrictions imposed for the site by requiring compliance with additional Article 31 sections for specific parcels or an equivalent process. Implementation of these measures would ensure that potential adverse effects on human health and the environment from exposure to known subsurface hazards from construction activities would be reduced to a less-than-significant level.

Impact HZ-2: Exposure to Previously Unidentified Contaminants During Construction

Impact of Candlestick Point

Impact HZ-2a **Construction at Candlestick Point would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of the disturbance of soil and/or groundwater with previously unidentified subsurface contaminants from historic uses. (Less than Significant with Mitigation)** ***[Criterion K.b]***

As at any development in an urban setting, particularly one to be constructed on Bay Fill, there is a potential for construction activities at Candlestick Point to encounter previously unidentified hazards, such as an abandoned underground storage tank located before permitting requirements were imposed, or other hazards. Exposure of construction workers, the public, or the environment to such hazards could result in a significant impact. The purpose of Article 22A is to minimize this potential at construction sites on Bay Fill, by requiring a site evaluation and soil sampling. If the results of the evaluation and testing indicate hazardous wastes are present in soil, site mitigation measures must be identified and a site mitigation report submitted to SFDPH, prior to commencement of construction activities. Nevertheless, there is still some potential that unidentified hazardous material releases could be encountered after compliance with the Article 22A process. For example, if an unidentified UST were discovered during construction activities, it would have to be closed in place or removed. Removal activities could pose both health and safety risks, such as the exposure of workers, tank handling personnel, and the public to tank contents or vapors. Similarly, the discovery of buried debris that could be hazardous could also present an increased risk of adverse health or environmental effects.

The likelihood that significant adverse effects would result from the discovery of previously unidentified USTs is minimal because there are multiple existing requirements in place to address such effects, such as Article 22A, RWQCB, and SFDPH UST removal and site cleanup requirements, implementation of contingency monitoring procedures and RWQCB notification (as necessary), and implementation of a site-specific health and safety plan (HASP) prepared in accordance with Cal/OSHA regulations.

To reduce impacts related to exposure to unknown contaminants at Candlestick Point, the following mitigation measure shall be implemented.

MM HZ-2a.1 *Unknown Contaminant Contingency Plan. (Applies to Candlestick Point, HPS Phase II, and off-site improvements.) Prior to obtaining the first site, building or other permit for development activities involving subsurface disturbance, the Project Applicant shall prepare and the San Francisco Department of Public Health shall approve a contingency plan to address unknown contaminants encountered during development activities. This plan, the conditions of which shall be incorporated into the first permit and any applicable permit thereafter, shall establish and describe procedures for implementing a contingency plan, including appropriate notification and site control procedures, in the event unanticipated subsurface hazards or hazardous material releases are discovered during construction. Control procedures would include, but would not be limited to, further investigation and, if necessary remediation of such hazards or releases, including off-site removal and disposal, containment or treatment. In the event unanticipated subsurface hazards or hazardous material releases are discovered during construction, the requirements of this unknown contaminant contingency*

plan shall be followed. The contingency plan shall be amended, as necessary, in the event new information becomes available that could affect the implementation of the plan. This measure shall be implemented for HPS Phase II through additions to Article 31 or through an equivalent process established by the City or Agency as explained in MM HZ-1b.

MM HZ-2a.2 *Site-Specific Health and Safety Plans. (Applies to Candlestick Point, HPS Phase II, and off-site improvements.) Prior to obtaining the first site, building or other permit for the Project from the City for development activities involving subsurface disturbance, the Project Applicant shall prepare and submit to SFDPH a site-specific health and safety plan (HASP) in compliance with applicable federal and state OSHA requirements and other applicable laws to minimize impacts to public health and the environment. Implementation of the plan shall be required as a condition of any applicable permit. The plan shall include identification of chemicals of concern, potential hazards, personal protective equipment and devices, and emergency response procedures. The HASP shall be amended, as necessary, in the event new information becomes available that could affect the implementation of the plan.*

This measure shall be implemented for HPS Phase II through additions to Article 31 or through an equivalent process established by the City or Agency as explained in MM HZ-1b.

Implementation of mitigation measure MM HZ-2a.1 would require the development of an unknown contaminant contingency plan to describe procedures to follow in the event unexpected contamination is encountered during construction activities, including procedures for ensuring compliance with the above laws and regulations. Additionally, mitigation measure MM HZ-2a.2, would require the preparation and implementation of a site-specific HASP in compliance with federal and state OSHA regulations and other applicable laws. Implementation of those measures would ensure that potential adverse effects on human health and the environment from unidentified subsurface hazards would be reduced to a less-than-significant level.

Impact of Hunters Point Shipyard Phase II

Impact HZ-2b **Construction at HPS Phase II would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of the disturbance of soil and/or groundwater with previously unidentified subsurface contaminants from historic uses. (Less than Significant with Mitigation)** ***[Criteria K.b and K.d]***

As noted in the Setting, there have been a number of investigations and actions to identify and remove subsurface structures (e.g., USTs, utility lines) at HPS Phase II and to manage identified contamination from those historic uses. Although these efforts have been extensive, the potential still exists for unidentified, old, or abandoned subsurface structures to be present at sites to be developed in HPS Phase II; in particular, it has not always been feasible to conduct physical investigation or comprehensive soil testing to determine the presence of USTs or the extent, if any, of soil contamination underneath existing buildings and structures.

If an unidentified UST were discovered during construction activities, it would have to be closed in place or removed. Removal activities could pose both health and safety risks, such as the exposure of workers, tank handling personnel, and the public to tank contents or vapors. Similarly, the discovery of buried debris that could be hazardous could also present an increased risk of adverse health or environmental

effects. The likelihood that significant adverse effects from the discovery of previously unidentified USTs would occur is minimal because there are multiple existing requirements in place to address such effects, such as the RWQCB's requirement to prepare and implement parcel-by-parcel CAPs comprehensively addressing petroleum issues, and the SFDPH UST removal and site cleanup requirements, implementation of contingency monitoring procedures and RWQCB notification (as necessary).

Implementation of mitigation measure MM HZ-2a.1 would require the development of an unknown contaminant contingency plan to describe procedures to follow in the event unexpected contamination is encountered during construction activities, including procedures for ensuring compliance with the above laws and regulations, in conjunction with implementation of mitigation measure MM HZ-2a.2, which would require the preparation of a site-specific HASP prepared in accordance with federal and state OSHA and other applicable regulations. Implementation of those measures would ensure that potential adverse effects on human health and the environment from unidentified subsurface hazards would be reduced to a less-than-significant level.

Combined Impact of Candlestick Point and Hunters Point Shipyard Phase II

Impact HZ-2 **Construction activities associated with the Project would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of the disturbance of soil and/or groundwater with previously unidentified subsurface contaminants from historic uses. (Less than Significant with Mitigation)** ***[Criteria K.b and K.d]***

As at any development in an urban setting, particularly one to be constructed on Bay Fill, there is a potential for construction activities associated with the Project to encounter previously unidentified hazards, such as an abandoned underground storage tank located before permitting requirements were imposed, or other hazards. Exposure of construction workers, the public, or the environment to such hazards could result in a significant impact. Implementation of mitigation measures MM HZ-2a.1 would require the development of an unknown contaminants contingency plan. Mitigation measure MM HZ-2a.2 would require the preparation and implementation of a site-specific health and safety plan. Implementation of mitigation measures MM HZ-2a.1 and MM HZ-2a.2 would ensure that potential adverse effects on human health and the environment from unidentified subsurface hazards would be reduced to a less-than-significant level.

Impact HZ-3: Off-Site Transport and Disposal of Contaminated Soil and Groundwater

Impact of Candlestick Point

Impact HZ-3a **Construction at Candlestick Point would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of off-site transport and disposal of contaminated soil and groundwater. (Less than Significant with Mitigation)** ***[Criterion K.b]***

For those locations within Candlestick Point where remediation or UST removal could require off-site transport of contaminated soil or groundwater, exposure to hazardous materials could result if these materials were not handled appropriately during transport or disposal. These materials could be classified

as a hazardous waste under federal or state regulations depending on the specific characteristics of the materials. The generator of the hazardous wastes would be required to follow federal or state regulations for characterization of and manifesting of the wastes, using licensed hazardous waste haulers, and disposing the materials at an appropriately permitted disposal or recycling facility. Soil or groundwater containing petroleum and other chemical products that do not meet the regulatory definition of hazardous waste would still be subject to special disposal requirements under RWQCB regulations and solid waste laws. These measures are described under Impact HY-1a in Section III.M. To reduce potential impacts of groundwater discharge to separate stormwater systems, mitigation measure MM HY-1a.3 would require the Project Applicant to prepare and implement a dewatering plan and comply with applicable standards to protect receiving water quality and anticipated SFPUC and/or RWQCB permit compliance provisions.

In addition, if construction in Candlestick Point would require dewatering of groundwater, a release of hazardous materials could occur, potentially resulting in exposure to the public and the environment. If dewatering were required, the groundwater could be discharged to the City's combined storm and sanitary sewer system in compliance with the Industrial Waste Ordinance, *Public Works Code*, Article 4.1, and Order No. 158170 of the DPW (refer to Section III.M for a discussion of Article 4.1 and Order No. 158170 and with SFPUC discharge guidelines). These regulations require a permit for discharge to the combined sewer, sampling of the water to be discharged and establish discharge limitations and other discharge criteria. Article 4.1 also prohibits discharge of hazardous wastes into the Combined Sewer System.

Under the Industrial Waste Ordinance, the discharged water would need to be sampled prior to and possibly during dewatering (depending on permit conditions) to demonstrate that discharge limitations in the ordinance were met. If the pumped groundwater would not meet discharge requirements, on-site pretreatment may be required before discharge to the sewer system. If standards could not be met with on-site treatment, the SFPUC may allow the discharger to pay a premium to discharge the wastewater to the system, or the discharger may need to transport the wastewater off site using a certified waste hauler. Thus, compliance with the Industrial Waste Ordinance and mitigation measure MM HY-1a.3 would ensure that potential adverse effects on human health and the environment from discharge of contaminated water to the sewer system would be reduced to a less-than-significant level.

Impact of Hunters Point Shipyard Phase II

Impact HZ-3b **Construction at HPS Phase II would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of off-site transport and disposal of contaminated soil and groundwater. (Less than Significant with Mitigation)** ***[Criteria K.b and K.d]***

Construction activities in HPS Phase II could involve extensive construction to accommodate new development. Site preparation could include deep excavations for large structures such as residential towers; cut material may be used elsewhere as fill, subject to certain restrictions; installation of foundation piles; trenching for utility lines; grading and compaction; and other earth-disturbing activities. To the extent that the property under development contains hazardous materials at the time of development, some soils may need to be removed and disposed of off site.

For those locations within HPS Phase II where construction would require off-site transport of contaminated soil, the remediation contractor would be required, as necessary and where required, to follow state and federal regulations for manifesting (including transportation and disposal) the wastes, using licensed hazardous waste haulers, and disposing the materials at a permitted disposal or recycling facility. The ICs and, if applicable, Risk Management Plans, would set forth the process for approval or specific approved methods for disposal of excavated soils during grading or removal of groundwater during dewatering.

Likewise, the ICs and, if applicable, Risk Management Plans would establish a process for regulatory agency approval that will describe the procedure that must be followed to ensure that extraction of groundwater that may be necessary to accommodate trenching for utilities would not alter the physical or chemical characteristics of contaminant plumes. If dewatering were required, the groundwater could be discharged to the City's combined storm and sanitary sewer system provided the discharged water complied with the Industrial Waste Ordinance, *Public Works Code*, Article 4.1, and Order No. 158170 of the DPW (refer to Section III.M for a discussion of Article 4.1 and Order No. 158170 and with SFPUC discharge guidelines). The discharged water may be required to be sampled both prior to and during dewatering to demonstrate that discharge limitations in the ordinance are met. If the pumped groundwater would not meet discharge requirements, on-site pretreatment would be required before discharge to the sewer system. If standards could not be met with on-site treatment, the SFPUC may allow the discharger to pay a premium to discharge the wastewater to the system, or the discharger may need to transport the wastewater off site using a certified waste hauler. In addition mitigation measure MM HY-1a.3 would require the Project Applicant to prepare and implement a dewatering plan and comply with applicable standards to protect receiving water quality and anticipated RWQCB permit compliance provisions. Thus, compliance with the ICs and, if applicable, Risk Management Plans, the Industrial Waste Ordinance, and implementation of MM HZ-1b and would ensure that potential adverse effects on human health and the environment from disposal of dewatered groundwater would be reduced to a less-than-significant level.

Combined Impact of Candlestick Point and Hunters Point Shipyard Phase II

Impact HZ-3 **Construction activities associated with the Project would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of off-site transport and disposal of contaminated soil and groundwater. (Less than Significant with Mitigation)** ***[Criteria K.b and K.d]***

Construction associated with the Project where remediation activities would require off-site transport of contaminated soil or groundwater, exposure to hazardous materials could result if these materials were not handled appropriately during transport or disposal. At HPS Phase II, the ICs and, if applicable, Risk Management Plans, would set forth the process for approval or specific approved methods for disposal of excavated soils during grading or removal of groundwater during dewatering. For all construction and remediation activities associated with the Project requiring transport of contaminated soil or groundwater, compliance with existing federal, state, and local regulations and implementation of mitigation measures MM HZ-1b and MM HY-1a.3 would ensure that potential adverse effects on human

health and the environment from disposal of dewatered groundwater would be reduced to a less-than-significant level.

Impact HZ-4: Installation of Underground Utilities

Impact of Candlestick Point

Impact HZ-4a **Construction at Candlestick Point would not expose construction workers, the public, or the environment to unacceptable levels hazardous materials as a result of improvements to existing and installation of new underground utilities. (Less than Significant with Mitigation)** ***[Criterion K.b]***

Development in Candlestick Point would involve the improvement of underground utilities as well as the installation of new utilities. There is the potential to encounter hazardous materials in soil and/or groundwater during work on underground utilities that, if encountered, could potentially expose workers or the environment to hazardous materials. Utility trenches have the potential to create a horizontal conduit for chemical contaminants contained in soil vapors or shallow groundwater to migrate along permeable soils that would be placed as trench backfill. In the event hazardous materials are encountered, the Agency would require the construction contractor to follow proper health and safety precautions and to dispose of contaminated soil and groundwater safely and legally, as discussed above. Installation of utilities bayward of the 1851 high-tide line would also be subject to the requirements of Article 22A. The potential for contaminants to be encountered is addressed by the requirement in mitigation measure MM HZ-2a.1 to prepare an unknown contaminant contingency plan. If contaminants were encountered in a location where piles are to be installed, the site mitigation plan required by Article 22A and mitigation measure MM HZ-1a would specify procedures necessary to prevent pile installation from creating a vertical conduit for chemicals occurring in shallow groundwater to move along the pile to deeper groundwater zones, and avoid degradation of the deeper groundwater. The measure would require all excess fill or native soil materials generated during pile driving to be properly managed. Implementation of mitigation measures MM HZ-1a and MM HZ-2a.1 would ensure the safe handling of potentially contaminated materials encountered during improvement or installation of underground utilities and effects on human health and the environment would be reduced to a less-than-significant level.

Impact of Hunters Point Shipyard Phase II

Impact HZ-4b **Construction at HPS Phase II would not expose construction workers, the public, or the environment to unacceptable levels hazardous materials as a result of improvements to existing and installation of new underground utilities. (Less than Significant with Mitigation)** ***[Criteria K.b and K.d]***

Development in HPS Phase II would involve the improvement of underground utilities to serve new development. As described above for Candlestick Point, utility trenches have the potential to create a horizontal conduit for chemical contaminants contained in soil vapors or shallow groundwater to migrate along the permeable soils that would be placed as trench backfill. The areas of the site that require vapor or groundwater utility cutoffs and the performance standard for these systems will be identified in the remedial design documents that must be prepared under the CERCLA process before these activities can

be carried out. Compliance with the ICs and any applicable RMPs, and implementation of mitigation measures MM HZ-1b, MM HZ-2a.1, and MM HZ-2a.2 would avoid or minimize the potential for horizontal migration of contaminants in HPS Phase II, which would reduce effects to less-than-significant levels. Underground utility construction off site, or in portions of HPS Phase II retained by the Navy to support development of the Project in areas the Navy has transferred, is discussed in Impact HZ-11. Those measures would ensure the safe handling of potentially contaminated materials encountered during improvement or installation of underground utilities and effects on human health and the environment would be reduced to a less-than-significant level.

Combined Impact of Candlestick Point and Hunters Point Shipyard Phase II

Impact HZ-4 **Construction activities associated with the Project would not expose construction workers, the public, or the environment to unacceptable levels hazardous materials as a result of improvements to existing and installation of new underground utilities. (Less than Significant with Mitigation)** ***[Criteria K.b and K.d]***

Construction of the Project would involve the improvement of underground utilities as well as the installation of new utilities. There is the potential to encounter hazardous materials in soil and/or groundwater during work on underground utilities that, if encountered, could potentially expose workers, the public, or the environment to hazardous materials. Implementation of mitigation measure MM HZ-1a, MM HZ-1b, MM HZ-2a.1, and MM HZ-2a.2 would ensure the safe handling of potentially contaminated materials encountered during improvement or installation of underground utilities and effects on human health and the environment would be reduced to a less-than-significant level.

Impact HZ-5: Installation of Foundation Support Piles

Impact of Candlestick Point

Impact HZ-5a **Construction at Candlestick Point would not create vertical conduits for hazardous materials that could contaminate groundwater as a result of installation of foundation support piles. (Less than Significant with Mitigation)** ***[Criterion K.b]***

Candlestick Point is principally underlain by fill materials that overlie a thick sequence of Bay Mud (refer to Section III.L). Additional clay units and bedrock underlie the Bay Mud. Foundation support piles would be driven from the surface to various depths within Candlestick Point to provide structural support for various building and structure features. Unless properly managed and depending on the depth and location of the support piles, shallow groundwater could be encountered as a result of this activity. Groundwater generation is not a concern when driving piles. Piles installed in locations where contaminants have been identified could, under certain soil conditions, create a vertical conduit for chemicals occurring in shallow groundwater to move along the pile to deeper groundwater zones, causing degradation of the deeper groundwater, a potentially significant impact.

Piles installed at Candlestick Point generally would extend through the Young Bay Mud to develop friction support in the underlying Old Bay Clay. In certain locations, the piles could extend through the Old Bay Clay to develop end support by resting on the bedrock that underlies the Project site. Prior to

installing each pile, a pilot borehole would be drilled through the artificial fill to ensure the pile would pass undamaged and properly aligned through the debris and rubble that commonly is encountered in non-engineered fill materials. Drilling the pilot boreholes also would reduce the potential for the piles to push artificial fill that may contain hazardous constituents into the underlying sediments or groundwater, as could occur if the piles were driven from the ground surface without the benefit of pre-drilling. Mitigation measure MM HZ-5a would require pre-drilling pilot boreholes before pile driving in non-engineered fill material to avoid potential contaminant transport.

Because Bay Mud is soft, cohesive, and has a low permeability, the materials encountered during pile installation would adhere to the sides of piles during and after placement. This action would form a seal that would effectively prevent the formation of conduits for shallow groundwater to migrate downward into deeper water-bearing zones. Therefore, natural conditions would prevent the creation of a vertical conduit for chemicals moving from shallow intervals to deeper ones, or vice versa.

To reduce impacts related to potential groundwater contamination resulting from installation of foundation support piles at Candlestick Point, the following mitigation measure shall be implemented.

MM HZ-5a *Foundation Support Piles Installation Plan. (Applies to Candlestick Point and HPS Phase II.) Prior to obtaining a permit from the City that authorizes installation of deep foundation piles, the Project Applicant shall prepare and submit a plan acceptable to the City stating that pilot boreholes for each pile would be drilled through the artificial fill materials so the piles can be installed without damage or misalignment and to prevent potentially contaminated fill materials from being pushed into the underlying sediments or groundwater. This measure shall be implemented for Candlestick Point through implementation of mitigation measure MM HZ-1a. This measure shall be implemented for HPS Phase II through additions to Article 31 or through an equivalent process established by the City or Agency as explained in MM HZ-1b.*

Implementation of mitigation measure MM HZ-5a would reduce potential groundwater quality impacts from pile driving to less-than-significant levels by ensuring compliance with Articles 22A and 31 and preparation of a plan for pilot boreholes for each pile to prevent disturbance of potentially contaminated fill materials.

Impact of Hunters Point Shipyard Phase II

Impact HZ-5b **Construction at HPS Phase II would not create vertical conduits for hazardous materials that could contaminate groundwater as a result of installation of foundation support piles. (Less than Significant with Mitigation) *[Criteria K.b and K.d]***

HPS Phase II is principally underlain by fill materials that overlie a thick sequence of Bay Mud (refer to Section III.L). If foundation support piles were used, shallow groundwater could be encountered during installation.

Piles installed in locations at HPS Phase II where contaminants have been identified could, under certain soil conditions, create a vertical conduit for chemicals occurring in shallow groundwater to move along the pile to deeper groundwater zones, causing degradation of the deeper groundwater. Piles generally would extend through the Young Bay Mud to develop friction support in the underlying Old Bay Clay. In certain locations, the piles could extend through the Old Bay Clay to develop end support by resting

on the bedrock that underlies the Project site. Prior to installing each pile, a pilot borehole would be drilled through the artificial fill to ensure the pile would pass undamaged and properly aligned through the debris and rubble that commonly is encountered in non-engineered fill materials. Drilling the pilot boreholes also would reduce the potential for the piles to push artificial fill that may contain hazardous constituents into the underlying sediments or groundwater, as could occur if the piles were driven from the ground surface without the benefit of pre-drilling. Mitigation measure MM HZ-5a would require pre-drilling pilot boreholes before pile driving in non-engineered fill material to avoid potential contaminant transport.

Restrictions that will apply upon transfer will dictate where pile driving will be permitted and under what circumstances. If permitted, all excess fill or native soil materials generated during pile driving would need to be managed consistent with the restrictions set forth in the ICs and any applicable Risk Management Plans as described above. Compliance with those restrictions through mitigation measures MM HZ-1b and MM HZ-5a would reduce potential groundwater quality impacts from pile driving to less-than significant levels.

Combined Impact of Candlestick Point and Hunters Point Shipyard Phase II

Impact HZ-5 **Construction activities associated with the Project would not create vertical conduits for hazardous materials that could contaminate groundwater as a result of installation of foundation support piles. (Less than Significant with Mitigation)** ***[Criteria K.b and K.d]***

The Project site is principally underlain by fill materials that overlie a thick sequence of Bay Mud (refer to Section III.L). Additional clay units and bedrock underlie the Bay Mud. Foundation support piles would be driven from the surface to various depths within the Project site to provide structural support for various building and structure features. Unless properly managed and depending on the depth and location of the support piles, shallow groundwater could be encountered as a result of this activity. Groundwater generation is not a concern when driving piles. Piles installed in locations where contaminants have been identified could, under certain soil conditions, create a vertical conduit for chemicals occurring in shallow groundwater to move along the pile to deeper groundwater zones, causing degradation of the deeper groundwater, a potentially significant impact. Implementation of mitigation measures MM HZ-1a, MM HZ-1b, and MM HZ-5a would reduce potential groundwater quality impacts from pile driving to less-than significant levels.

Impact HZ-6: Soil Handling, Stockpiling, and Transport Within the Project Site Boundaries

Impact of Candlestick Point

Impact HZ-6a **Construction at Candlestick Point would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of handling, stockpiling, and transport of soil that may contain contaminants. (Less than Significant with Mitigation)** ***[Criterion K.b]***

Various construction activities in Candlestick Point, such as grading, trenching, compacting, and excavating soils, would result in soil being handled and moved. The excavated soil is expected to be used as fill elsewhere at Candlestick Point and possibly at HPS Phase II. Movement of soil that contains hazardous materials could result in impacts from human exposure to chemicals in the soil from dust and impacts to water quality and the environment if hazardous constituents were to migrate to the Bay. Movement of these soils also could result in impacts to air quality and water quality from the release of particulate matter to the air or sediment in storm water. Potential impacts from stockpiling and transport of these soils and associated dust control and stormwater management mitigation measures are discussed in greater detail in Section III.H (Air Quality) and Section III.M (Hydrology and Water Quality). Potential impacts associated with sediment that could be disturbed during shoreline improvements are evaluated in Impact HZ-10a

Soil excavated from portions of Candlestick Point that are subject to Article 22A and mitigation measure MM HZ-1a would be subject to restrictions or requirements imposed on soil movement or reuse within the Project site as part of any applicable site mitigation plan. Soil characterized as hazardous waste would be subject to applicable hazardous waste management, transportation, and disposal requirements under federal and state hazardous waste management laws. Transportation and reuse of soils not characterized as hazardous waste would be conducted in accordance with any applicable laws concerning nonhazardous soil transport and disposal.

Soil excavated from Candlestick Point could be transported to and reused at HPS Phase II only if (1) the soil were not characterized as hazardous waste under state or federal hazardous waste management regulations; and (2) the soil were to comply with any applicable soil import requirements related to what type of soil can be placed into particular areas of the site, imposed as part of the remediation program overseen by the FFA Signatories and/or by a RMP and/or by local ordinance. In the case of soils containing hazardous waste at Candlestick Point, the site mitigation plan would incorporate dust control measures, including placing covers on the trucks to reduce the potential for spreading material from one area to another or requiring that soil be sufficiently moist to prevent dust generation during transport. Further, whenever workers could be exposed to hazardous levels of chemicals, a site-specific HASP would be prepared by the contractor prior to construction and would contain a section regarding decontamination of both personnel and equipment. The site mitigation plan would also address the potential for trespassers or visitors to gain access to construction sites and come into direct contact with native soils by specifying measures to prevent unauthorized entry into the construction site and provide appropriate monitoring/enforcement procedures to ensure the effectiveness of site security.

Soil handling, stockpiling, and transport activities have the potential to create erosion and potential migration of soils into the Bay during rainstorms, absent implementation of management measures. Soils could contain contaminants such as metals and organic compounds, which could degrade water quality in the Bay. Implementation of measures to control stormwater runoff during construction would also control discharge of potential chemicals adhered to soil in the runoff. These measures are described under Impact HY-1a in Section III.M and include implementation of a Stormwater Pollution Prevention Plan (SWPPP) and best management practices (BMPs) for construction sites. Mitigation measures MM HY-1a.1 and MM HY-1a.2 would require preparation of a SWPPP to identify the specific measures

and BMPs that are applicable to Candlestick Point construction activities in the event of a spill or exposure of hazardous materials.

Compliance with the procedures described above would ensure that soil handling, stockpiling, and movement within Candlestick Point would not present a significant risk to human health and the environment, and would also reduce the potential for inadvertent exposure of adults and children to contaminated soils. Therefore, with implementation of Article 22A, mitigation measures MM HZ-1a, MM HY-1a.1, and MM HY-1a.2, impacts related to handling, stockpiling, and transport of contaminated soil would be reduced to less-than-significant levels.

Impact of Hunters Point Shipyard Phase II

Impact HZ-6b **Construction at HPS Phase II would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of handling, stockpiling, and transport of soil that may contain contaminants. (Less than Significant with Mitigation)** ***[Criteria K.b and K.d]***

Various construction activities at HPS Phase II, such as grading, trenching, compacting, and excavating, would result in soil being handled and moved. The excavated soil may be used as fill elsewhere at HPS Phase II, to the extent permissible under the restrictions discussed below. Movement of soil that contains hazardous materials could result in impacts from human exposure to chemicals in the soil from dust and impacts to water quality and the environment if hazardous constituents were to migrate to the Bay. Movement of nonhazardous soils also could result in impacts to air quality and water quality from the release of particulate matter to the air or sediment in storm water. Potential impacts from stockpiling and transport of nonhazardous soils and associated dust control and stormwater management mitigation measures are discussed in greater detail in Section III.H (Air Quality) and Section III.M (Hydrology and Water Quality). Potential impacts associated with sediment that could be disturbed during shoreline improvements are evaluated in Impact HZ-10b.

Restrictions on handling, stockpiling and transport of soil during construction activities at HPS Phase II will be a component of the legally-enforceable restrictions on uses and activities at the Project site described above (refer to the "Management of Hazardous Materials Contamination Risks During Development" section) which the Navy, US EPA, DTSC, RWQCB, and CDPH will, independent of the Project and this EIR, require be in place before any Project development activity occurs at HPS Phase II. Although these restrictions will be imposed independent of this EIR through independent environmental regulatory processes, to ensure compliance with these restrictions prior to development activities, mitigation measure MM HZ-1b would require SFDPH to verify, before any development activity at HPS Phase II occurs, that it would be done in compliance with all restrictions imposed pursuant to a CERCLA ROD, Petroleum Corrective Action Plan, FOST, FOSET or FOSL, or License Agreement, including restrictions imposed in deeds, covenants, leases, and LIFOCs, and requirements set forth in Land Use Control Remedial Design Documents, Risk Management Plans, and health and safety plans. Those legally enforceable restrictions would incorporate dust control measures such as covers on the trucks to reduce the potential for spreading material from one area to another or requiring that soil be sufficiently moist to prevent dust generation during transport. Further, whenever workers could be exposed to hazardous levels of chemicals, a site-specific HASP would be prepared by the contractor

prior to construction and would contain a section regarding decontamination of both personnel and equipment. The restrictions would also address the potential for trespassers or visitors to gain access to construction sites and come into direct contact with contaminated soils by specifying measures to prevent unauthorized entry into the construction site and provide appropriate monitoring/enforcement procedures to ensure the effectiveness of site security.

Those legally enforceable restrictions would incorporate dust control measures such as covers on the trucks to reduce the potential for spreading material from one area to another or requiring that soil be sufficiently moist to prevent dust generation during transport. Further, whenever workers could be exposed to hazardous levels of chemicals, a site-specific HASP would be prepared by the contractor prior to construction and would contain a section regarding decontamination of both personnel and equipment. The restrictions would also address the potential for trespassers or visitors to gain access to construction sites and come into direct contact with contaminated soils by specifying measures to prevent unauthorized entry into the construction site and provide appropriate monitoring/enforcement procedures to ensure the effectiveness of site security.

Soil handling, stockpiling, and transport activities have the potential to create erosion and potential migration of soils into the Bay during rainstorms, absent implementation of management measures. Soils could contain contaminants such as metals and organic compounds, which could degrade water quality in the Bay. Implementation of measures to control stormwater runoff during construction would also control discharge of potential chemicals adhered to soil in the runoff. Mitigation measures MM HY-1a.1 and MM HY-1a.2 would require preparation of a SWPPP would be required to identify the specific measures and BMPs that are applicable to HPS Phase II construction activities in the event of a spill of construction materials or exposure of hazardous materials. The SWPPP would identify the specific measures that are applicable to HPS Phase II construction.

As a result of these controls and mitigation measures, including mitigation measures MM HZ-1b, MM HY-1a.1, and MM HY-1a.2, impacts related to handling, stockpiling, and transport of contaminated soil would be reduced to less-than-significant levels.

Combined Impact of Candlestick Point and Hunters Point Shipyard Phase II

Impact HZ-6 **Construction activities associated with the Project would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of the handling, stockpiling, and transport of soil that may contain contaminants. (Less than Significant with Mitigation)** ***[Criteria K.b and K.d]***

Project construction activities, such as grading, trenching, compacting, and excavating, would result in soil being handled and moved. The excavated soil is expected to be used as fill elsewhere at within the Project site. Handling, stockpiling, and transport of soil that contains hazardous materials could result in impacts from human exposure to chemicals in the soil from dust and impacts to water quality and the environment if hazardous constituents were to migrate to the Bay. For all construction associated with the Project requiring handling, stockpiling, or transport of soil, compliance with existing federal, state, and local regulations and controls and implementation of mitigation measures MM HZ-1a, MM HZ-1b,

MM HY-1a.1, and MM HY-1a.2 would ensure that potential adverse effects on human health and the environment would be reduced to a less-than-significant level.

Impact HZ-7: Contaminated Surface Runoff from Construction Sites

Impact of Candlestick Point

Impact HZ-7a **Construction at Candlestick Point would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials that could be present in stormwater runoff. (Less than Significant with Mitigation)** ***[Criterion K.b]***

Construction activities at Candlestick Point, such as the compaction and installation of fill, grading, and other geotechnical work have the potential to remove the vegetative cover from parts of the site, spill soils onto roads, or otherwise create the potential for erosion or movement of soils from the Project site and potentially into surface waters during rain storms, absent implementation of management measures. Implementation of measures to control stormwater runoff during construction would also control potential discharge of chemicals, if chemicals were present in the runoff. These measures are described under Impact HY-1a in Section III.M and include implementation of a SWPPP and BMPs for construction sites. Mitigation measures MM HY-1a.1 and MM HY-1a.2 would require preparation of a SWPPP to identify the specific measures and BMPs that are applicable to Candlestick Point construction activities in the event of a spill or exposure of hazardous materials.

The actual control measure(s) that would be implemented would be developed to account for the specific characteristics of each site, contaminant type and concentrations, potential exposure pathways, and populations that could be at risk. Implementation of these measures, which would be identified in a site-specific SWPPP, would be adequate to control human health and environmental exposure from unremediated, if any, soil and/or groundwater sites that are unknown but may be encountered during construction at Candlestick Point. The types of actions likely to be required by a site mitigation plan and unknown contaminant contingency plan are included in mitigation measures MM HZ-1a and MM HZ-2a.1. Therefore, there would not be a significant hazard to the public or the environment involving release of contaminated surface runoff into the environment. Implementation of mitigation measures MM HZ-1a, MM HZ-2a.1, MM HY-1a.1, and MM HY-1a.2 would ensure that potential adverse effects on human health and the environment would be reduced to a less-than-significant level.

Impact of Hunters Point Shipyard Phase II

Impact HZ-7b **Construction at HPS Phase II would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials that could be present in stormwater runoff. (Less than Significant with Mitigation)** ***[Criteria K.b and K.d]***

Construction activities at HPS Phase II, such as the compaction and installation of fill, grading, and other geotechnical work have the potential to remove the vegetative cover from parts of the site, spill soils onto roads, or otherwise create the potential for erosion or movement of soils from the Project site and potentially into surface waters during rain storms, absent implementation of management measures. Implementation of measures to control stormwater runoff during construction would also control

discharge of potential chemicals if present in the runoff. Mitigation measures MM HY-1a.1 and MM HY-1a.2 would require preparation of a SWPPP to identify the specific measures and BMPs that are applicable to HPS Phase II construction activities in the event of a spill of construction materials or exposure of hazardous materials. The SWPPP would identify the specific measures that are applicable to HPS Phase II construction.

The actual control measure(s) that would be implemented would be developed to account for the specific characteristics of each site, contaminant type and concentrations, potential exposure pathways, and populations that could be at risk. Implementation of these measures, which would be identified in a site-specific SWPPP, would be adequate to control human health and environmental exposure from unremediated, if any, soil and/or groundwater sites that are unknown, but may be encountered during construction at HPS Phase II. Therefore, there would not be a significant hazard to the public or the environment involving release of contaminated surface runoff into the environment. Implementation of mitigation measures MM HY-1a.1, MM HY-1a.2, MM HZ-1b, and MM HZ-2a.1 would ensure that potential adverse effects on human health and the environment would be reduced to a less-than-significant level.

Combined Impact of Candlestick Point and Hunters Point Shipyard Phase II

Impact HZ-7 **Construction activities associated with the Project would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials that could be present in stormwater runoff. (Less than Significant with Mitigation)** ***[Criteria K.b and K.d]***

Project construction activities, such as the compaction and installation of fill, grading, and other geotechnical work have the potential to remove the vegetative cover from parts of the site, spill soils onto roads, or otherwise create the potential for erosion or movement of soils from the Project site and potentially into surface waters during rain storms, absent implementation of management measures. Mitigation measures MM HY-1a.1 and MM HY-1a.2 would require preparation of a SWPPP to identify the specific measures and BMPs that are applicable to construction activities in the event of a spill of construction materials or exposure of hazardous materials. Implementation of mitigation measures MM HZ-1a, MM HZ-1b, MM HZ-2a.1, MM HY-1a.1, and MM HY-1a.2 would ensure that potential adverse effects on human health and the environment would be reduced to a less-than-significant level.

Impact HZ-8: Exposure to Hazardous Materials Releases That Have Not Been Fully Remediated

Impact HZ-8 **Project occupants or visitors in or near portions of HPS Phase II where remediation has not been fully completed would not be exposed to unacceptable levels of hazardous materials. (Less than Significant with Mitigation)** ***[Criteria K.b and K.d]***

As presented in the Setting, the results of comprehensive basewide and parcel-specific investigations have shown that chemicals and radioactive materials are present in soil and groundwater in various locations throughout HPS Phase II at levels that require remediation. As described above in the "Overview of the Environmental Investigation and Cleanup Process" section, the Navy has completed

substantial investigation and remediation of the site and the FFA Signatories overseeing the remediation program have required interim measures to be put in place in areas that still require remediation. This would ensure that while remediation continues, the site would not pose a risk to persons or the environment outside of the ongoing remediation locations. Those measures include numerous actions to remove hazardous materials from soil and groundwater at the site, cleaning up shoreline debris, placing a temporary cap on the landfill at Parcel E-2 and securing areas still undergoing remediation with fencing. The cleanup required by the regulatory agencies will continue to be implemented by the Navy regardless of whether or not the Project is implemented.

In addition to the numerous cleanup activities for more conventional contaminants that are complete, underway, or are planned for each parcel within HPS Phase II, the Navy has prioritized the removal of all radiologically contaminated soils throughout the entire HPS Phase II site. This includes removal of former utility lines and impacted soils. Completion of radiological remedial actions will occur on each parcel prior to transfer of that parcel to the Agency.

As described above, RODs for many of the parcels have either been completed or are planned for completion in late 2009. Nevertheless, the remediation design documents necessary to carry out full remediation have not been developed nor approved. Further, while remediation investigations have been undertaken and remedies for Parcels C, E, E-2, and F have been refined, RODs have not been approved. Therefore, full remediation of the entire HPS Phase II site is not anticipated until after commencement of Project-related construction activities on, and perhaps occupancy of, portions of HPS Phase II. As described under Regulatory Framework, above, property in HPS Phase II could be transferred or leased (or accessed for limited purposes under a license or easement) to the Agency in advance of complete cleanup in two ways: FOSET or FOSL/LIFOC. Further, property that is fully remediated could be transferred to the Agency under a FOST while the Navy continues with remediation activities on other parcels.

Two types of impacts could be associated with occupancy on or near portions of HPS Phase II where remediation has not been fully completed. First, persons who would be present in portions of HPS Phase II prior to its complete remediation could be exposed to risks from exposure to hazardous materials releases that have not been fully remediated. Second, remediation activities themselves (e.g., soil excavation and groundwater treatment) could occur simultaneously with nearby construction and occupancy of new structures located in nearby areas where remediation has been completed; if not properly managed, these remediation activities could result in occupants or visitors being exposed to hazardous materials exposed or emitted during the remediation activities. Both potential impacts of occupancy on or near sites where remediation has not been fully completed are addressed in this section. As described below, the risk of either type impact is not substantial because of the physical characteristics and administrative controls already in place. Nevertheless, the analysis in this section conservatively assumes there could be some risk to occupants or visitors in or near portions of HPS Phase II where remediation has not been fully completed, although that risk would be small.

The risk of exposure to hazardous materials releases in areas where remediation has not been fully completed is small, for the following reasons. First, all buildings and parcels within HPS Phase II have been investigated for chemical and radiological contamination. Second, human health risk assessments have been prepared to determine which locations could present a risk, and to determine approaches to

cleanup. Where hazards existed that posed an immediate risk, the Navy has either removed the contaminant(s) or restricted access to those locations. Third, Parcels B, C, D-1, D-2, UC-1, UC-2, and at least half of Parcels E and G are covered with buildings, pavement, or other solid surfaces that would limit the amount of exposed soil that could become mobilized by wind or water. Fourth, as the Navy continues the cleanup of HPS, risks from unremediated hazardous materials releases will be further reduced throughout Project development. The potential risk to future occupants, workers, and visitors to unremediated sites would decrease.

The small risk of occupants or visitors being exposed to hazardous materials released will be addressed by the restrictions required by Navy cleanup documents such as CERCLA RODs, Petroleum Corrective Action Plans, FOSTs, FOSETs, FOSLs, Land Use Control Remedial Design Documents, Risk Management Plans and health and safety plans and restrictions set forth in property transfer documents, such as deeds, covenants, easements, LIFOCs. and short-term leases.

The principal purpose of the restrictions imposed at sites transferred or leased prior to completion of cleanup activities, under a FOSET or FOSL, are to ensure that the unremediated hazardous material releases will not pose a risk to occupants or visitors. This is accomplished through use restrictions (e.g., restrictions against residences, schools, childcare centers), through activity restrictions (e.g., restrictions against disturbing soil), and through site security requirements (e.g., fencing and signs around excavation sites). The restrictions imposed in FOSETS or FOSLs, and also those imposed on properties where cleanup is determined to be complete under a FOST, are designed to protect not only occupants and visitors on the parcel itself, but also on nearby property. This is sometimes accomplished through conservatively establishing the boundaries of the area subject to restrictions, to include a "buffer zone" establishing a safe distance from the area that was remediated. Similarly, restrictions may be imposed to address the potential of migration from nearby parcels where remediation has not been fully completed. This is sometimes accomplished through an ongoing monitoring requirement to determine if a groundwater plume, or methane, from an adjacent area has migrated, or it may be accomplished through a requirement to install vapor barriers to prevent exposure from releases from the adjacent property.

Compliance with the restrictions in these documents, which is required by MM HZ--1b, would reduce the potential impact of exposure to hazardous materials releases to occupants and visitors on or near portions of HPS Phase II where remediation has not been fully completed to less than significant.

As indicated above, occupants or visitors at or near portions of HPS Phase II where remediation activities have not been fully completed could also be exposed to hazardous materials as a result of remediation activities themselves, if physical controls and administrative procedures are not in place to manage that risk. Such remediation activities could include excavation and transport of contaminated soils to an off-site treatment or disposal facility, in-situ treatment of soils (e.g., soil vapor extraction), or groundwater treatment (with chemicals) that could expose occupants and visitors to contaminated dusts, soil gases, and other contaminated material. Table III.K-2 (Remedial Actions, Potential Environmental Effects, and Methods to Reduce Effects) provides an overview of the types of remediation activities, potential human health, and environmental effects associated with each activity for each parcel, and the types of measures that EPA, DTSC, and the Regional Water Board will require the Navy to implement to control exposures from such activities to people in proximity to the activities.

Table III.K-2 Remedial Actions, Potential Environmental Effects, and Methods to Reduce Effects

Remedial Action	Parcels in Which Remedial Action Could Occur: B	C, UC-2	D (includes D-1, UC-1, and G)	E/ E-2	F	Potential Environmental Effects and Sources	Methods to Reduce Effects
SOIL REMEDIATION							
Removal							
Conventional Excavation/ Temporary Stockpiling	X	X	X	X	X	Air emissions; contact with soil; potential infiltration of contaminants to groundwater; contaminants carried in stormwater runoff; inadvertent spread of contamination	Air monitoring and engineering controls; health and safety plan; covering soil stockpiles; NPDES (National Pollutant Discharge Elimination System) stormwater SWPPP; site security
Dredging					X	Air emissions from dredging equipment; contact with sediments; remobilization or spread of contaminants into surface water	Air monitoring and engineering controls; coffer dams, barriers and liners; health and safety plan; NPDES SWPPP
After excavation or dredging, off-site treatment, and/or disposal	X	X	X	X	X	After excavation, truck traffic and associated noise, criteria air pollutant emissions; inadvertent spread of contamination	Selecting best truck route, dust control measures (freeboard and tarping), decontaminating equipment leaving site
On-Site Physical/Chemical Treatment							
Soil Vapor Extraction	X	X				Air emissions, noise	Comply with BAAQMD regulations for emissions source controls; air monitoring; use mufflers on equipment and/or enclosures; health and safety plan
Active Landfill Gas Control System				X		Vapors from methane extraction	Air monitoring; soil gas monitoring
Containment							
Soil Covers	X	X	X	X	X	Soil movement, placement, compaction—air emissions, noise	Air monitoring and engineering controls; health and safety plan; covering stockpiled sediments; NPDES stormwater SWPPP; federal and state permit/mitigations to protect aquatic resources; site security
Asphalt and Concrete Covers	X	X	X	X		Air emissions from asphalt, air emissions from heavy equipment	Air monitoring and engineering controls; health and safety plan; NPDES stormwater SWPPP; federal and state permit/mitigations to protect aquatic resources; site security
Maintained Landscaping	X	X	X	X		Subsurface irrigation maintenance	Adequate cover with clean fill

Table III.K-2 Remedial Actions, Potential Environmental Effects, and Methods to Reduce Effects

	Parcels in Which Remedial Action Could Occur						
Remedial Action	*B*	*C, UC-2*	*D (includes D-1, UC-1, and G)*	*E/ E-2*	*F*	*Potential Environmental Effects and Sources*	*Methods to Reduce Effects*
Shoreline Revetment	X	X		X	X	Construction of revetment – heavy equipment emissions, noise, visual, disturbance of shoreline aquatic systems	Air monitoring and engineering controls; health and safety plan; covering stockpiled sediments; NPDES stormwater SWPPP; federal and state permit/mitigations to protect aquatic resources; site security
Multilayer Cap	X (IR7/18)			X		Construction of cap – air emissions and noise from equipment, construction site runoff into Bay	Air monitoring and engineering controls; health and safety plan; covering soils; NPDES stormwater SWPPP; site security
Geosynthetic Cap	X (IR 7/18)			X		Construction of cap – air emissions and noise from equipment, construction site runoff into Bay	Air monitoring and engineering controls; health and safety plan; covering soils; NPDES stormwater SWPPP; site security
Backfilling	X	X	X	X	X	Dust emissions from placement of fill, air emissions from heavy equipment, construction site runoff into Bay	Air monitoring and engineering controls; health and safety plan; covering soils; NPDES stormwater SWPPP; site security
Cofferdam				X	X	Construction of coffer dam – air emissions and from equipment, visual, construction site runoff, disturbance of shoreline aquatic systems	Air monitoring and engineering controls; health and safety plan; covering stockpiled sediments; NPDES stormwater SWPPP; federal and state permit/mitigations to protect aquatic resources; site security
						GROUNDWATER REMEDIATION	
Monitoring	X	X	X	X		Water sampling would involve minimal physical disturbance	Health and safety plan; quality assurance plan
Monitored Natural Attenuation (passive)		X		X		Monitoring would involve collecting and analyzing groundwater samples, which would involve minimal physical disturbance	Health and safety plan; quality assurance plan
In-Situ Chemical Treatment	X	X	X	X		Transport of chemical products to site, operation and maintenance of pumps – air, noise emissions	Air monitoring and engineering controls; health and safety plan; compliance with state and local hazardous materials use/storage regulations; site security
Vapor Controls	X	X	X	X		Collection of vapors in enclosed spaces – inhalation hazard, possible explosion hazard	Groundwater Soil Vapor Extraction (SVE) program, monitoring, vapor barriers in buildings

Table III.K-2 Remedial Actions, Potential Environmental Effects, and Methods to Reduce Effects

Remedial Action	Parcels in Which Remedial Action Could Occur: B	C, UC-2	D (includes D-1, UC-1, and G)	E/ E-2	F	Potential Environmental Effects and Sources	Methods to Reduce Effects
SEDIMENT AND SURFACE WATER REMEDIATION							
Removal/Backfill					X	Dust emissions from excavation; noise and air emissions from heavy equipment; contact with sediment; potential for contaminated sediments to be carried in stormwater runoff to Bay; potential to affect aquatic resources	Air monitoring and engineering controls; health and safety plan; covering stockpiled sediments; NPDES stormwater SWPPP; federal and state permit/mitigations to protect aquatic resources; site security
Removal and Off-Site Disposal	X	X	X	X	X	Dust emissions from excavation; noise and air emissions from heavy equipment. After excavation, truck traffic and associated noise, criteria air pollutant emissions; inadvertent spread of contamination; contact with sediment	In addition to above, selecting best truck route, dust control measures (freeboard and tarping), decontaminating equipment leaving site
Armored Cap/Aquablok Cap					X	Construction of cap—air emissions and noise from equipment, potential for cap materials to be carried into surface water; permanent visual effect; potential to affect aquatic resources	Air monitoring and engineering controls; health and safety plan; NPDES stormwater SWPPP; federal and state permit/mitigations to protect aquatic resources; site security
In-Situ Stabilization					X	Emissions and noise from heavy equipment	Air monitoring and engineering controls; health and safety plan; NPDES stormwater SWPPP; federal and state permit/mitigations to protect aquatic resources; site security
Monitored Natural Recovery					X	Monitoring would involve collecting and analyzing sediment and water samples, which would involve minimal physical disturbance	Specified monitoring protocols.
Monitoring	X	X	X	X	X	Same as above	Same as above

SOURCE: Compiled by PBS&J from Navy HPS reports.

As a result of the protective measures described in Table III.K-2 that the environmental regulators will require the Navy to implement, the potential impact to occupants or visitors on or near portions of HPS Phase II from exposure to hazardous materials exposed or emitted during remediation activities conducted by the Navy is less than significant.

To the extent this impact could still be potentially significant despite the Navy's implementation of these protective measures, it would be reduced to less than significant through implementation of Mitigation Measure MM HZ-1b, which requires compliance with restrictions in cleanup and transfer documents. The determinations of suitability for transfer or lease made in FOSETs, FOSTs, and FOSLs all take into account the potential for ongoing remediation activities to be conducted on the parcel (in the case of a FOSET or FOSL) or on a nearby parcel (in the case of a FOST) to impact occupants or visitors; if such a risk is identified, the FOSET, FOSL or FOST would impose restrictions to address the risk.

Potential impacts to occupants or visitors from remediation activities that may be conducted by or on behalf of the Agency or the Project Applicant are addressed by MM HZ-12, which requires compliance with all requirements incorporated into remedial design documents, work plans, health and safety plans, dust control plans, and any other document or plan required under the Administrative Order on Consent. This includes all restrictions imposed pursuant to a CERCLA ROD, Petroleum Corrective Action Plan, FOSET, including restrictions imposed in deeds, covenants, and requirements set forth in Land Use Control Remedial Design Documents, Risk Management Plans and health and safety plans.

Impact HZ-9: Exposure to Hazardous Materials in Conjunction with Limited Remediation Activities During Construction of the Yosemite Slough bridge

Impact HZ-9 **Construction at HPS Phase II would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of Yosemite Slough bridge construction. (Less than Significant with Mitigation)** ***[Criteria K.b and K.d]***

The Project would include construction of a bridge crossing the narrowest part of the South Basin portion of the Yosemite Slough to link Candlestick Point with HPS Phase II. The northern access point for the bridge would be at the edge of Parcel E and Parcel E-2, in an area where radiological contaminants are suspected to be present below the surface (refer to Figure III.K-1).

If soil, sediment, or debris containing radiological contamination were disturbed, this could expose construction workers to hazards associated with radiological materials. The public and the environment could also be at risk if the excavated materials were not properly managed.

To access the bridge construction site from HPS Phase II, excavation of the potentially radiologically contaminated area must first be completed. Before any work beings, a removal action workplan would be submitted to and approved by the FFA Signatories and the CDPH. The workplan would include the same types of safety protocols and control measures included in previously approved workplans for the Navy's ongoing excavations of the radiologically impacted sewer lines and storm drains throughout HPS. In addition, the area to be excavated (work corridor) would be established in conjunction with design

work and identified in the work plan, and all construction documents would indicate the boundary of excavation work corridor. No excavation would take place outside that boundary.

The safety protocols and control measures would include the following:

- The contractor will implement radiological control program including set up of designated lay down areas, radiological control areas, and exclusion zones.
- All personnel working on the site will receive specific training as required to perform the work specified.
- The contractor will implement an erosion and stormwater management plan including installation of erosion and stormwater control measures.

The approach to clearing the corridor to allow construction would involve excavating materials that would be tested for radiological materials as the soil is removed. As noted above, only soils within the corridor boundary would be excavated and tested. To accomplish this, the contractor would mobilize radiological sorting equipment and all other construction vehicles and equipment to the site required to execute the Project. Pilot tests would be performed to calibrate the equipment that ensure the sorting process is working properly and the contractor is achieving the required screening levels. Excavation would begin from the water's edge and work towards Crisp Road (on HPS Phase II), and would keep the material handling on the non-screened area to minimize any cross contamination. Material would first be excavated to depth and stockpiled near the sorting equipment for access with a loader. Material would next pass through a screen to remove oversized material and cobbles, then through a tumbler to break up clods of dirt. It would then fall onto a conveyor system and pass through a bank of detectors to measure the level of radiological activity, if any. Material that fails the desired screening level would be directed to a separate conveyor and the remaining material would be directed to a different conveyor and stockpiled for reuse as backfill. Any material that exceeds screening levels or re-use criteria would be stockpiled and sampled for off-site disposal at an approved facility. As the excavation proceeds, the screening plant and conveyor system would be moved, staying on non-cleared areas to prevent cross-contamination. Once the excavation has met the required depth (excavation would extend no deeper than the water table), verification sampling would be performed to ensure radiological constituents have been removed. Once verified clean, a 12-inch-wide concrete retaining wall would be installed from the bottom of the excavation to two feet above final grade to act as a permanent vertical barrier between the radiologically impacted area and the newly cleared area for street construction. Material verified as clean would be used as backfill to bring the site back up to grade for street construction.

In addition to the specific safety protocols and control measures described above, the approved removal action workplans would incorporate applicable requirements to control potential impacts from dust and other air emissions and to prevent migration of contaminants to groundwater or stormwater, as set forth in Table III.K-2. To reduce the impact related to exposure to contaminated soil during construction of the Yosemite Slough bridge, the following mitigation measure shall be implemented.

MM HZ-9 *Navy-approved workplans for construction and remediation activities on Navy-owned property. (Applies only to the portions of HPS Phase II on Navy-owned property). Construction activities and remediation activities conducted on behalf of the Agency or the Project Applicant, on Navy-owned property shall be conducted in compliance with all restrictions set forth in the applicable lease, easement, or license or other form of right of entry and in accordance with a Navy-approved workplan.*

This mitigation measure also requires that such activities be conducted in accordance with applicable health and safety plans, dust control plans, stormwater pollution prevention plans, or any other documents or plans required under applicable law. The City/Agency will access Navy property through a lease, license, or easement. The City/Agency shall not undertake any activity or approve any Project Applicant activity on Navy-owned property until the Navy and other agencies with approval authority have approved a workplan for the activity. The requirement to comply with the approved work plans shall be incorporated into and made a condition of any City/Agency approvals related to activities on Navy property. This measure shall be implemented for HPS Phase II through a process established by the City or Agency as explained in MM HZ-1b.

The general requirement of mitigation measure MM HZ-9 would apply to the Yosemite Slough bridge remediation activities by requiring that remediation activities conducted in conjunction with the construction of the Yosemite Slough bridge be performed only after approval by the FFA Signatories and the CDPH, of a removal action workplan for excavation of radiologically contaminated materials. The safety protocols and control measures expected to be included in that workplan. This mitigation measure further requires the excavation to be conducted in accordance with the requirements of that workplan and of other applicable health and safety plans, dust control plans, stormwater pollution prevention plans or any other document or plan required under applicable law, including, but not limited to applicable requirements illustrated in Table III.K-2.

As a result of these Project controls and mitigation measures, the potential for exposure to hazardous materials during remediation activities conducted in conjunction with the construction of the Yosemite Slough bridge would be reduced to less-than-significant levels.

Impact HZ-10: Exposure to Hazardous Materials during Construction of Shoreline Improvements

Impact of Candlestick Point

Impact HZ-10a **Construction in the shoreline areas at Candlestick Point would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of the disturbance of sediment or soil that may contain chemical contaminants. (Less than Significant with Mitigation)** ***[Criteria K.b and K.d]***

The Project would include shoreline improvements along Candlestick Point. These improvements would include the placement of additional (rock) riprap, creation of a sandy recreational beach at the mid-point of the Wind Meadow reach along the Eastern Shoreline, and creation of new tidal habitat in several locations.

As described in the Setting and in Impact HZ-1a, there are no known releases of hazardous materials requiring remediation in the portions of Candlestick Point bayward of the 1851 high-tide line, but the detection of low-levels of hazardous materials in 1998 and general knowledge of the types of material that can be in Bay fill lead to the conclusion that there is a potential for exposure to hazardous materials from development activity in these areas. Installation of the proposed shoreline improvements have the potential to disturb sediments overlying and/or derived from Bay fill, which could contain hazardous materials. The primary effect of disturbance of sediment that could contain hazardous materials would be

re-suspension of hazardous materials adhering to sediment, which could enter surface water, which could, in turn, affect water quality and/or aquatic species.

Impact HY-1a in Section III.M provides a comprehensive description of the required permits and additional mitigation that would require site-specific controls to minimize sediment disturbance to reduce water quality effects. Mitigation measures MM HY-1a.1 and MM HY-1a.2 require that the Stormwater Pollution Prevention Plan (SWPPP) include specific best management practices (BMPs) to minimize the potential transport of sediment, debris, and construction materials to the Lower Bay during construction of shoreline improvements. Where possible and necessary, excavation and construction of improvements would be implemented prior to removal of existing structures. Materials management and construction BMPs would be implemented to minimize potential discharges to the Lower Bay or disturbance of sediment. All BMPs would be included in related permits/permit requirements obtained for construction of Shoreline Improvements (e.g., USACE 404 permit, SFRWQCB 404 certification, BCDC/DMMO permit). Following removal/replacement of structures, exposed surfaces would be stabilized with hardscape, vegetation, or bioengineered features, as feasible.

Impact BI-2, Impact BI-4a, Impact BI-10a, Impact BI-11a, and Impact BI-12a in Section III.N (Biological Resources) describe the effect of shoreline sediment disturbance on aquatic species and mitigation measures to reduce those effects. The general requirements of mitigation measures MM BI-4a.1 and MM BI-4a.2 (described in Section III.N) would reduce the effects of construction-related activities on aquatic habitat by requiring that appropriate permits be obtained from the USACE, SFRWQCB, BCDC, and other agencies as applicable (MM BI-4a.1) and implementing construction BMPs (MM BI-4a.2) to reduce and/or prevent impacts to waters of the United States, including aquatic habitats.

The potential risks to construction workers and the public would be reduced through implementation of mitigation measure MM HZ-1a, which would reduce effects related to exposure of known contaminants at Candlestick Point, including construction activities at CPSRA, by requiring compliance with Article 22A or an equivalent process to identify and manage potential hazards. In the event previously unidentified contamination is found in sediments during shoreline improvements, implementation of mitigation measure MM HZ-2a.1 would ensure the appropriate steps are taken to minimize exposure to people and the environment.

Therefore, there would not be a significant hazard to the public or the environment from hazardous materials as a result of shoreline improvements in Candlestick Point. Implementation of mitigation measures MM BI-4.a.1, MM BI-4.a.2, MM HY-1a.1, MM HY-1a.2, MM HZ-1a, and MM HZ-2a.1 would ensure that potential adverse effects on human health and the environment would be reduced to a less-than-significant level.

Impact of Hunters Point Shipyard Phase II

Impact HZ-10b **Construction in the shoreline areas at HPS Phase II would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of the disturbance of sediment or soil that is radiologically affected or that may contain chemical contaminants. (Less than Significant with Mitigation)** ***[Criteria K.b and K.d]***

The Project would include several shoreline improvements, which are described in Chapter II. Many of the improvements would involve work within the Bay (e.g., the marina, modifications to berths, wharves, and drydocks, installation of marina breakwater). For such features, and others, that would occur within the Bay and do not require anchoring, foundations, or other contact with sediment, submerged lands, or rock, the primary environmental effects associated with those improvements would be related to water quality or increased turbidity, which could affect aquatic species. Refer to Impact BI-2, Impact BI-4b, Impact BI-5b, Impact BI-10b, Impact BI-11b, and Impact BI-12b in Section III.N for additional information about those effects. Some of the proposed shoreline improvement activities that may potentially disturb sediments and impact submerged lands include pile-driving, construction of rock buttresses, dredging, riprap installation, marina construction and installation of natural-looking shoreline protection using fill and articulated concrete block (ACB) mats.

HPS Phase II parcels where shoreline improvements affecting sediment could occur are limited to Parcels B, C, E/E-2, and F. All sediments that may be affected by these shoreline improvements, however, are contained within Parcel F. Because of the known presence of contamination in sediment within Parcel F, the Navy is in the process of preparing a ROD for Parcel F. Once a ROD is approved, remediation can occur. Any remedies for radiologically impacted material will be implemented by the Navy prior to transfer. The options for remediating potentially affected sediment could include removing the sediment or capping in place as per the ROD. Sediments found to be non-hazardous would not require remediation and will be left in place. It is also possible that shoreline improvements could occur after the Navy has capped sediments in place and these improvements could disturb the cap. Shoreline improvements would be completed in accordance with mitigation measures MM HZ-1b, MM HZ-10b, MM HZ-12, and the RMPs.

As previously described, RODs have been finalized for Parcels B, D-1, G, UC-1 and UC-2. RODs have not been completed for Parcels C, D-2, E/E-2, and F but are expected in the late 2009 to summer 2012 timeframe. Depending on the development schedule relative to the remaining RODs and their subsequent implementation, sediments could be remediated by the Navy under CERCLA in advance of Project Applicant activities, in which case all necessary administrative and physical controls would be in place that would minimize potential hazards to the occupants, the public, construction workers and the environment from exposure to hazardous materials in sediment. If the shoreline improvements require disturbance of sediments capped in place, work will be completed in accordance with mitigation measures MM HZ-1b, MM HZ-10b, and MM HZ-12.

This impact analysis assumes a shoreline improvement scenario in which the Navy does not implement the selected remedy in the ROD for these parcels (with the exception of radiological contamination), and the Agency or the Project Applicant implements the remaining remediation activities in conjunction with

shoreline improvement activities with appropriate regulatory oversight. Such remediation and shoreline improvement activities are considered part of the Project, and their potential impacts are analyzed here.

Because contaminants have been identified in those parcels for which a remedy has been selected but not yet implemented, construction of the shoreline improvements has the potential to disturb sediment or soil that may contain chemical contaminants at levels that could expose construction workers, the public, or the environment to hazardous materials if not properly managed.

(At some Navy shipyards, ordnance and munitions have been discovered in offshore sediments as a result of offloading from ships during wartime. There is no evidence of this at HPS. HPS is not considered a Military Munitions Program Site, so hazards associated with munitions are not anticipated.)

One type of improvement is a development-related remediation activity that is expected to be the responsibility of the Agency or Project Applicant under the Parcel B ROD. That activity involves construction of a shoreline revetment to prevent erosion of soil contaminants into the Bay. The Parcel B ROD requires construction and/or reconstruction of a revetment at two portions of the Parcel B shoreline: a 1,200-foot segment near IR Site 26, and a 230-foot segment near IR Site 23. The revetment would consist of 500-pound stones underlain by geotextile material. It is expected that a temporary cofferdam, water- filled barrier tube, select sheet piles or equivalent would be used during construction of the revetment.

Other shoreline improvements that could disturb sediment include: marina construction, a rock buttress along the submarine docks and repairs to or replacement of the caisson piles at the wharf along berths 55 to 61 (Parcel B); rock or sand buttress along Drydock 2, 3 and 4 only if sediment is in the drydock prior to buttress construction (Parcel C); and natural edge/riprap-protected slope for the proposed grasslands ecology park (Parcel E/E-2).

The following outlines the process that would be followed by Agency or Project Applicant in conjunction with development activities with appropriate regulatory oversight to manage potentially contaminated sediments that could be affected by Project shoreline improvements.

For sediments identified for removal, remedial design documents will be prepared and submitted to US EPA, DTSC, RWQCB, and, if necessary, the Navy and CDPH for approval. A Dredged Material Management Office (DMMO) permit will be required (refer to Section III.K.3). The design documents would incorporate the necessary shoreline improvements required for each specific area (e.g., rock buttressing, pile replacement, backfilling, riprap, or installation of natural-looking shoreline protection using fill and ACB mats) such that remediation (removal of sediment and any necessary dredging) and shoreline improvements are performed under the same regulatory approvals and permits.

In instances where sediments are determined to be non-hazardous and allowed to be left in place but the proposed shoreline improvements require sediment removal, a dredging plan would be prepared and submitted to US EPA, DTSC, RWQCB, and, if necessary, the Navy and CDPH for approval. A DMMO permit would be required. Following sediment removal, improvements would proceed as described in the Project Description.

More specific approaches are proposed for locations where the shoreline improvements are proposed and the selected ROD remedy is to leave sediments in place with covers or caps, as described below. These additional measures are needed to ensure that already-completed remedies (e.g., the cover at E/E-2) are not compromised.

a. The installation of the rock buttress at Drydocks 5–7 (Parcel B) would be evaluated to determine if the placement of the rock would compromise the integrity of the Navy-installed cover. If the cover could be compromised, appropriate design documents describing how construction activities would be performed to mitigate environmental risk and to restore the cap would be prepared and submitted to the US EPA, DTSC, RWQCB, and, if necessary, the Navy and CDPH for approval. A DMMO permit may also be obtained.

b. If the inspection of the steel piles below the wharf at berths 55–61 (Parcel B) shows that piles need to be replaced by driving new piles, then proper design documents describing (1) how construction activities would be performed to mitigate environmental risk and (2) restore the cap would be prepared and submitted to US EPA, DTSC, RWQCB, and, if necessary, the Navy and CDPH for approval. A DMMO permit may also be obtained.

c. Two options are possible for Drydocks 2, 3, and 4 (Parcel C). If the cap remains in place, appropriate design documents describing how construction activities (rock buttressing) would be performed to mitigate environmental risk and restore the cap would be prepared and submitted to US EPA, DTSC, RWQCB, and, if necessary, the Navy and CDPH for approval. If the sediment and cap would need to be removed, appropriate design documents would be produced for regulatory approval (US EPA, DTSC, RWQCB, and, if necessary, the Navy and CDPH) describing the construction activities required for removal of the existing cap and contaminated sediment below. A plan describing removal of contaminated sediment and the methods used to determine that all contamination has been removed would be prepared and submitted to these agencies for approval. Following regulatory approval and the removal of the sediment from the drydocks, installation of the rock buttress may be completed as originally planned. A DMMO permit may also be obtained.

d. The installation of natural-looking shoreline protection using fill and Articulated Concrete Block (ACB) mats along the shoreline of Parcels E and E-2 would be evaluated to determine if the placement of fill cover and ACB mats would compromise the integrity of the Navy-installed cover and riprap. If the cover may be compromised, design documents describing how construction activities would mitigate environmental risk and restore the cap would be prepared and submitted to US EPA, DTSC, RWQCB, and, if necessary, the Navy and CDPH for approval. Even if it is determined that the cover would not be impacted by Project activities, a DMMO permit would likely be required.

MM HZ-10b *Regulatory Agency–Approved Workplans and Permits for Shoreline Improvements. Prior to undertaking any shoreline improvement activities that would affect sediment at HPS Phase II, the Agency or its contractor or Project Applicant shall prepare appropriate design documents and submit to US EPA, DTSC, RWQCB, and, if necessary, the Navy and CDPH for approval. A Dredged Material Management Office (DMMO) permit shall be obtained. The design documents shall incorporate the necessary shoreline improvements required for each specific area (e.g., including, but not limited to, rock buttressing, pile replacement, backfilling, riprap, or installation of natural-looking shoreline protection using fill and ACB mats) such that remediation (removal of sediment and any necessary dredging) and structural improvements are performed under the same regulatory approvals and permits.*

Prior to undertaking any shoreline improvement activities that could affect contaminated sediments left in place and covered or capped with a Navy-installed remedial measure, or that would involve pile replacement in such areas, the Agency or its contractor or Project Applicant shall prepare appropriate design documents that: (1) describes how the cover or cap would be inspected to determine whether proposed shoreline improvements would adversely affect the cover or cap; and (2) describes how construction activities would be performed to mitigate environmental risk and to restore the cover or cap. The design documents shall be submitted to US EPA, DTSC, RWQCB, and, if necessary, the Navy and CDPH for approval. A DMMO permit shall be obtained, as applicable.

Prior to undertaking any shoreline improvements that could encounter contaminated sediments, the Agency or its contractor or Project Applicant shall comply with all requirements incorporated into the design documents, work plans, health and safety plans, dust control plans, and any other document or plan required under the Administrative Order of Consent. This includes all restrictions imposed pursuant to a CERCLA ROD, Petroleum Corrective Action Plan, FOSET, including restrictions imposed in deeds, covenants, and requirements set forth in Land Use Control Remedial Design Documents, Risk Management Plans and health and safety plans. Prior to obtaining a grading, excavation, site, building, or other permit from the City that authorizes remedial activities, SFDPH shall confirm that the work proposed complies with the applicable plans required by the Administrative Order of Consent. This measure shall be implemented through additions to Article 31 or through an equivalent process established by the City or Agency as explained in MM HZ-1b.

This mitigation measure requires that all shoreline activities that could affect sediment be conducted in accordance with agency-approved design documents, applicable health and safety plans, DCPs, or any other documents or plans required under applicable law or laws, including but not limited to applicable requirements shown in Table III.K-2. As a result of these Project controls and mitigation measures, the potential for exposure to hazardous materials during shoreline improvements construction activities would be reduced to less-than-significant levels.

Mitigation measures identified in Section III.M and Section III.N further reduce this impact. Mitigation measures MM HY-1a.1 and MM HY-1a.2 require that the Stormwater Pollution Prevention Plan (SWPPP) include specific best management practices (BMPs) to minimize the potential transport of sediment, debris, and construction materials to the Lower Bay during construction of shoreline improvements. The general requirements of mitigation measures MM BI-4a.1 and MM BI-4a.2 (described in Section III.N) would reduce the effects of construction-related activities on aquatic habitat, including special-status fish, by requiring that appropriate permits be obtained from the USACE, SFRWQCB, BCDC, and other agencies as applicable (MM BI-4a.1) and implementing construction BMPs (MM BI-4a.2) to reduce and/or prevent impacts to waters of the United States, including aquatic habitats. Potential impacts on eelgrass beds would be mitigated through mitigation measure MM BI-5b.4, which also requires BMPs specific to that sensitive natural community. Mitigation measure MM BI-12b.1 identifies additional sediment management controls to reduce the effects of construction-related activities on aquatic species.

With implementation of mitigation measures MM BI-4a.1, MM BI-4a.2, MM BI-5b.4, MM BI-12b.1, MM HY-1a.1, MM HY-1a.2, and MM HZ-10b, along with applicable regulations and permits, potential impacts related to exposure to hazardous materials releases from contaminated sediments that could be disturbed during proposed shoreline improvements in HPS Phase II would be reduced to a less-than significant level.

Combined Impact of Candlestick Point and Hunters Point Shipyard Phase II

Impact HZ-10 **Construction activities associated with the Project in shoreline areas would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of the disturbance of sediment or soil that may contain chemical or radiological contaminants. (Less than Significant with Mitigation)** ***[Criteria K.b and K.d]***

The proposed shoreline improvements along Candlestick Point and Hunters Point Phase II have the potential to disturb sediments that could contain hazardous materials. If sediment containing hazardous materials were released to the water, this could adversely affect water quality, and could also impact aquatic species. With implementation of mitigation measures MM BI-4a.1, MM BI-4a.2, MM BI-5b.4, MM BI-12b.1, MM HY-1a.1, MM HY-1a.2, MM HZ-1a, MM HZ-2a.1, MM HZ-10b, along with applicable regulations and permits, potential impacts related to exposure to hazardous materials releases from contaminated sediments that could be disturbed during proposed shoreline improvements would be reduced to a less-than significant level by ensuring locations where sediments containing hazardous materials have been identified, plans are developed and implemented to manage the sediment, all appropriate permits have been obtained, and best management practices (BMPs) are implemented.

Impact HZ-11: Exposure to Hazardous Materials While Constructing Infrastructure on Navy-Owned Property

Impact HZ-11 **Construction activities associated with the Project on Navy-owned property, including improvements to existing utilities and installation of new underground utilities, would not expose occupants, construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of the disturbance of soil, sediment, or groundwater that may contain contaminants from historic uses, including radiological contaminants. (Less than Significant with Mitigation)** ***[Criteria K.b and K.d]***

It is expected that development of properties the Navy has transferred would require underground utilities be installed across land the Navy still owns and that may still be undergoing remediation. As described above, utility trenches have the potential to create a horizontal conduit for chemical contaminants contained in soil vapors or shallow groundwater to migrate along the permeable soils that would be placed as trench backfill. The easement or other legal instrument providing a right to access the Navy property would require underground utility excavation activities to be conducted in accordance with a Navy-approved workplan that will require implementation of measures to prevent such migration.

Mitigation measure MM HZ-1b would apply to development activities that take place before remediation is complete (e.g., if property is subject to an early transfer) or accessed through a license or easement. MM HZ-1b requires the Project Applicant submit documentation to the SFDPH that the work will be undertaken in compliance with all restrictions imposed pursuant to the ICs and transfer documents.

The general requirement of mitigation measure MM HZ-9 would also apply to underground utility construction activities by requiring that such activities be conducted only after approval of a workplan by the Navy, and if required, by the other FFA Signatories. This mitigation measure would also require such

underground utility construction activities be conducted in accordance with applicable health and safety plans, DCPs, or any other documents or plans required under applicable law or laws. As a result of these Project controls and mitigation measures, the potential for exposure to hazardous materials during underground utility construction at HPS Phase II would be reduced to less-than-significant levels.

Impact HZ-12: Remediation Activities Conducted in Conjunction with Development Activities at HPS Phase II Early Transfer Parcels

Impact HZ-12 **Remediation activities conducted on behalf of the City or Project Applicant at the HPS Phase II parcels transferred prior to completion of remediation in an "early transfer" would not expose remediation and construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of the disturbance of soil, sediment, and/or groundwater that may contain contaminants from historic uses. (Less than Significant with Mitigation)** ***[Criteria K.b and K.d]***

Although the ongoing remediation activities conducted by the Navy under the FFA are not part of the Project, if any of the parcels are transferred prior to completion of remediation in an "early transfer" as described in the Regulatory Framework, the Agency or the Project Applicant may instead implement the remaining remediation activities in conjunction with development activities with appropriate regulatory oversight. Such remediation activities conducted by or on behalf of the Agency or Project Applicant are considered part of the Project, and their potential impacts are analyzed here.

The Navy and the Agency are currently evaluating an early transfer for Parcel B (except IR7/18) and Parcel G. Parcel C, and portions of Parcels D and E also are being considered for potential early transfers after the transfer of Parcels B and G. Early transfers are not being considered for Parcel E-2, the Parcel E shoreline area, or Parcel F. At parcels subject to early transfer, the Navy would be responsible for securing an approved ROD selecting the remedies prior to property transfer. The Navy would be responsible for completing all remediation activities associated with radiological materials prior to property transfer. Because the Navy has already conducted significant remedial activities, it is expected that the Navy may complete, before transfer, the initial installation of groundwater treatment systems and soil vapor extraction systems and conduct major soil excavations.

The remedial activities for which the Agency or the Project Applicant may be responsible include: covering Bay Fill areas with clean soil or other impervious surfaces such as pavement, concrete, or buildings; operating groundwater treatment systems and soil vapor extraction systems; implementing parcel-wide groundwater monitoring programs; performing soil vapor investigations to determine where it may be necessary to install soil vapor barriers underneath new buildings, and installing such barriers; reconstructing the shoreline revetment wall to protect ecological receptors along the Bay shoreline; excavating small "hot spots" in soil; and implementing and enforcing institutional controls.

Under the legal agreements that would be executed as part of an early transfer, the Agency and the Project Applicant are also likely to assume responsibility for remediating previously unidentified hazardous material releases discovered during redevelopment, to the extent the costs of such remediation are paid by environmental insurance secured with funds provided by the Navy. Those legal agreements are also expected to specify that the Navy will retain responsibility for addressing any radiological

material releases and for addressing unidentified hazardous materials releases at HPS to the extent the costs of addressing such releases are not paid by environmental insurance secured with funds provided by the Navy. These legal agreements among the Navy, Agency, the Project Applicant, and the insurer would not alter the obligations to implement the mitigation measures identified in this EIR.

The remedial activities for which the Agency or the Project Applicant would be responsible at early-transferred parcels would be conducted by experienced engineering firms and environmental remediation contractors, as is also the case with the ongoing work supervised by the Navy. Under the AOC, which would be signed by the Agency, the Project Applicant, US EPA, DTSC, and the RWQCB before any early transfer, the Agency and Project Applicant's remedial activities would be subject to all of the same requirements, and subject to all of the same review by the FFA Signatory environmental agencies, as the Navy's ongoing work.

The remedial design documents and workplans that would be reviewed by the environmental agencies pursuant to the AOC include health and safety plans and would incorporate numerous requirements to ensure that the remedial activities would not cause exposures to hazardous materials that could pose a significant risk to human health and the environment. Table III.K-2 shows the potential environmental effects of different remedial activities and the measures that would be required in the documents and workplans approved by the environmental agency to control those effects.[329]

Many of the potential impacts of construction activities discussed in this section are also potential impacts of remediation activities. Therefore, the text notes where the discussion of impacts and mitigation measures referenced in those subsections would apply to site investigation and remediation activities.

Although the AOC will require the types of control measures described above and in Table III.K-2 independent of this EIR, to ensure compliance with these controls, mitigation measure MM HZ-12 would require SFDPH to ensure that before development occurs, the Agency or the Project Applicant and their contractors have incorporated all applicable requirements into remedial design documents, work plans, health and safety plans, DCPs and any other document or plan required under the AOC or other applicable law, as a condition of development, as illustrated by the requirements set forth in Table III.K-2, and to conduct work in accordance with the RMPs. As a result of those Project controls and mitigation measures, the potential impact of exposure to hazardous materials during remediation activities conducted on behalf of the Agency or the Project Applicant in conjunction with development of HPS Phase II would be reduced to less-than-significant levels.

MM HZ-12 *Compliance with Administrative Order on Consent at Early Transferred Parcels. (Applies only at HPS Phase II.) Prior to undertaking any remediation activities at HPS Phase II on property that the Navy has transferred to the Agency as part of an early-transfer, the Agency or its contractor or Project Applicant shall comply with all requirements incorporated into remedial design documents, work plans, health and safety plans, dust control plans, and any other document or plan required under the Administrative Order on Consent. This includes all restrictions imposed pursuant to a*

[329] This table includes remedial activities which will not be the responsibility of the Agency or the Project Applicant and activities on parcels which will not be early-transferred. These activities are included because they are relevant to the discussion earlier in this section of the impacts of occupancy of portions of HPS in proximity to other portions where Navy remediation may still be ongoing.

CERCLA ROD, Petroleum Corrective Action Plan, FOSET, including restrictions imposed in deeds, covenants, and requirements set forth in Land Use Control Remedial Design Documents, Risk Management Plans and health and safety plans. Prior to obtaining a grading, excavation, site, building, or other permit from the City that authorizes remedial activities, SFDPH shall confirm that the work proposed complies with the applicable plans required by the Administrative Order of Consent. This measure shall be implemented through a requirement in the potential additions to Article 31 imposing requirements to parcels other than Parcel A or through an equivalent process established by the City or Agency.

The specific types of requirements anticipated to be included in these documents and plans are illustrated in Table III.K-2. With the implementation of these mitigation measures, potential impacts from remediation activities conducted in conjunction with development activities at HPS Phase II early transfer parcels would be reduced to a less-than significant level.

Impact HZ-13: Exposure to Hazardous Materials Contamination During Construction of Off-Site Roadway Improvements

Impact HZ-13 **Construction of off-site roadway improvements would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of the disturbance of soil or groundwater that may contain contaminants. (Less than Significant)** ***[Criterion K.b]***

Location of Off-Site Roadway Improvements

The Project would improve existing roadways to serve Candlestick Point and HPS Phase II and surrounding Bayview and Hunters Point neighborhoods as described in Chapter II. Those improvements include:

- **Roadway Improvements:** Ingalls Street (from Carroll Avenue to Thomas Avenue), Thomas Avenue (from Ingalls Street to Griffith Street), and Griffith Street (from Thomas Avenue to Crisp Road) would be converted from two-lane to four-lane facilities. Existing on-street parking would be removed on Ingalls Street and Griffith Street to create the new facilities. Parking would be retained on both sides of Thomas Avenue. A new signal would be installed at the Thomas Avenue/Ingalls Street intersection.
- **Streetscape Improvements:** Innes Avenue/Hunters Point Boulevard, Palou Avenue, and Gilman Avenue would serve as primary access corridors from the north for pedestrians, bicyclists, transit vehicles, and automobiles. Streetscape improvements would include street trees, sidewalk plantings, furnishings, and paving treatments along Innes Avenue/Hunters Point Boulevard, Palou Avenue (from Crisp Road to Third Street), and Gilman Avenue.
- **Harney Way Improvements:** The existing four-lane roadway would be rebuilt as a new four-lane facility with right-of-way reserved for an additional westbound lane to be built in the future as needed for increased traffic levels. Six lanes would be constructed west of Thomas Mellon Drive to connect with the future modifications to the US-101 interchange. Two exclusive Bus Rapid Transit (BRT) lanes would be constructed adjacent to the roadway in addition to the auto lanes. Left-turn lanes on eastbound Harney Way would be installed at the Thomas Mellon Drive and Executive Park Boulevard intersections to provide access to Executive Park.
- **Palou Avenue Transit Preferential Street:** One Muni line would be extended along Palou Avenue to serve the Hunters Point Shipyard Transit Center. In addition, two other lines would

operate along Palou Avenue with service near the Project. In order to provide efficient, attractive service on these lines, transit preferential treatments including transit-priority technology would be implemented, including installation of new traffic signals along Palou Avenue to Third Street. To improve pedestrian comfort and the accessibility of transit in this corridor, new bus shelters would be installed and the street would be upgraded with ADA ramps, bulbouts, and crosswalks.

The Site History/Initial Site Assessment technical report prepared for the Bayview Transportation Improvements Project (currently under environemental review) reviewed environmental conditions at most of the locations described above where the off-site improvements may involve disturbance of soil or the existing asphalt cover.[330] At Griffith Street, Ingalls Street, and Carroll Avenue, the report concluded that historic and current land uses indicate the potential for hazardous substances to have been released at some locations along those roadways such that soil could have been affected. The Site History/Initial Site Assessment technical report did not include the segment of Palou Avenue where improvements are proposed. Previous investigations that identified historic uses, USTs, and sampling results along the alignments, along with a review of agency databases, show that many of the sites identified in the above-referenced Site History/Initial Site Assessment report have received regulatory closure. However, some locations may still require investigation or remediation, and there may be new sites that have not been comprehensively evaluated for the presence of hazardous materials contamination in soil at the specific locations where soil disturbance could occur.

Description of Construction Activities at Off-Site Roadway Improvements

Construction activities for off-site street improvements include the following: demolition of existing street and sidewalk; protection, replacement or relocation of existing underground utilities; signage and traffic light installation; asphalt/concrete paving; curb, gutter and ramp installation; striping; bus shelter installation; landscape installation including trees, shrubs and irrigation systems; street lighting installation; and electrical connection installation.

Typical excavation depths associated with these types of activities would range from 1 to 3 feet for roadway (including sidewalk, curb, gutter). For utility improvements along roadways, trench depths could be as shallow as 4-5 feet (e.g., landscape irrigation lines, dry utilities) to as much as 20-30 feet for storm drain and sewer facilities, depending on size and type. The width of disturbed area for roadways would depend on the right-of-way, but generally would range from 60 to 100 feet. For utility improvements, trenches would be approximately 1 to 4 feet wide for dry utilities and water lines, but could be up to 20 to 30 feet wide for storm and sewer components.

Off-site street improvements would be performed by first removing the existing pavement section. The existing pavement section consists of asphalt, concrete and an aggregate or Portland concrete cement (PCC) base material. The existing pavement section would be removed by scraping the paving section away from the sub-base utilizing typical street construction equipment. The demolished material would either be reused as backfill or disposed of by trucking it to an off-site landfill that accepts construction debris, including asphalt, in accordance with pre-determined City haul route(s). Existing utilities would be protected in place, replaced, or relocated as needed prior to construction of the new street. The new

[330] BASELINE Environmental, Bayview Transportation Improvements Project, Technical Report, Site History/Initial Site Assessment, June 2009.

asphalt/concrete pavement section would be installed per City structural section requirements and include an eight-inch PCC base. The curb, gutter, and ramps would be constructed of PCC. After installation of the new street structural sections the new street surface would be painted per a striping plan approved by the City. Other street improvements may then include signage, traffic lights, bus shelters, and street light installation.

The width and depth of proposed off-site improvements would determine the extent to which contaminants (if any) could be encountered during the construction activities.

The majority of the off-site roadway improvements are bayward of mean high tide line and thus subject to the requirements of *San Francisco Health Code* Article 22A, including, if required, the preparation and implementation of a site mitigation plan. Compliance with Article 22A would ensure that impacts from exposure to hazardous materials associated with off-site roadway improvements would be less than significant. No mitigation is required.

Impact HZ-14: Exposure of Ecological Receptors to Hazardous Materials

Impact of Candlestick Point

Impact HZ-14a **Construction at Candlestick Point would not expose ecological receptors to unacceptable levels of hazardous materials as a result of the disturbance of soil, sediment, and/or groundwater that may contain contaminants from historic uses. (Less than Significant with Mitigation)** ***[Criterion K.b]***

Site preparation would include deep excavations for large structures such as residential towers; installation of foundation piles; trenching for utility lines; grading and compaction; and other earth-disturbing activities. Additionally, there would be roadway improvements. These construction activities would involve grading, trenching, compacting, and excavating, which would result in soil and/or fill being handled, stockpiled, and moved on site.

Section III.N identifies the fish and wildlife species that could be affected by Project construction. These species include a broad range of resident and migratory fish and wildlife species. Common wildlife includes a number of species of invertebrates, reptiles and amphibians, birds, and mammals (terrestrial and aquatic). Common aquatic resources include many species of fish, shellfish, and mollusks.

There are no sites with known contamination requiring remediation at Candlestick Point, and no immediate risks to fish or wildlife have been identified for the Candlestick Point portion of the Project. However, as described in Impact HZ-2a, there is a potential for hazardous materials to be present in fill or soil materials bayward of the 1851 high tide line, or there is a possibility that previously unknown contamination could be discovered during site development. The reader is also referred to Impact HZ-1a and Impact HZ-2a for descriptions of the processes for determining whether contaminants are present in fill or soil, and, if contaminants are identified, mitigation measures MM HZ-1a and MM HZ-2a.1 prescribe the types of actions required by a site mitigation plan and unknown contaminant contingency plan.

To the extent that the property under development in areas underlain by fill or soils that could contain hazardous waste, soil disturbance and associated stockpiling and on-site soil movement could provide

potential pathways through which fish and wildlife species could be exposed to contaminants in soil or fill material. Soil disturbance could be the result of general construction activities in which previously unidentified contaminants have been discovered, or it could be the result of implementation of mitigation deemed necessary through Article 22A testing to reduce an environmental hazard. The site mitigation report required under Article 22A would determine if there is a significant environmental risk, which would include risks to ecological systems, and if so, recommend measures that will mitigate the risks.

The primary environmental mechanisms for ecological exposure during soil disturbance would be (1) direct species contact with the fill or soil containing contaminants (e.g., birds landing on or rodents burrowing into stockpiled materials); (2) stormwater runoff from exposed soils or fill, or soils spilled onto roads during transport, which could carry contaminants into aquatic environments, where fish and benthic invertebrate species could be affected; or (3) windblown dust, which could be inhaled by terrestrial and avian species, or that could be deposited on surface water, where aquatic organisms could be affected.

There are controls and mitigation measures identified in this EIR that would reduce potential impacts on human populations, which would also help reduce the impact on ecological systems, as explained below. In addition, there are environmental conditions that would also reduce the potential for adverse impacts.

For example, the site mitigation plan required under Article 22A would incorporate measures, such as covering stockpiles, which would minimize the potential for avian and terrestrial species to have direct contact with soil. Implementation of measures to control stormwater runoff during construction would control the discharge of potential chemicals adhered to soil in the runoff. Mitigation measures MM HY-1a.1 and MM HY-1a.2 would require preparation of a SWPPP would be required to identify the specific measures and BMPs applicable to Candlestick Point construction activities in the event of a spill of construction materials or exposure of hazardous materials. This would reduce the likelihood of contaminants being conveyed to near-shore and offshore environments, which would reduce the risk to the aquatic environment and species that rely on that habitat (e.g., birds and mammals).

As described, dust control measures are required both by local ordinance and by BAAQMD. Implementation of dust control measures (mitigation measure MM HZ-15) would effectively reduce the potential for windborne dust that could affect fish and wildlife species. However, natural environmental conditions would also be a factor in minimizing the potential for contaminated dusts to adversely affect ecological systems. Avian species could be exposed to windblown dust through inhalation and ingestion during preening and prey consumption. Although various avian species use Candlestick Point for nesting and foraging, the mobility of the bird species results in their use of a relatively large home range and foraging range. Due to this mobility, avian species would not be present in one foraging area for an extended period of time in which they could receive substantial exposure to contaminants in dust. Windblown dust deposited onto water bodies could result in direct exposure to filter-feeding mollusks and other aquatic species. Additionally, excessive deposition of dust onto surface water, such as the Bay, could increase turbidity, which could, in turn, decrease light penetration into water and available oxygen. Even if dust control measures were not implemented, dusts generated by wind during construction would be dispersed over a relatively large area, with no single area receiving a sufficient volume of dust to generate a significant exposure to species.

Ponded water in open excavations and trenches (if contaminants were present and if standing water remained) could also present an ecological risk. However, because dewatering would be necessary to ensure proper construction conditions, groundwater would be removed routinely and frequently. Groundwater would either be pumped into the sewage system or to the Bay in accordance with the Industrial Waste Ordinance of the *Public Works Code*. The sewage system is a closed system, so there would be no direct exposure pathway to fish or wildlife. If shallow groundwater were to be pumped directly into the Bay as a necessary by-product of construction dewatering, the discharger would be required to notify and obtain approval of the RWQCB, as described in Section III.M (mitigation measure MM HY-1a.3). Any groundwater proposed for discharge from the Project site into the Bay must meet strict water quality standards established by the San Francisco Bay Basin Plan as defined by the RWQCB, and may have to be treated before discharge into the Bay to avoid potential degradation of the Bay's water quality. Furthermore, dischargers are required to meet stringent monitoring standards established by the RWQCB (and to a certain extent, the SWRCB) to ensure compliance under this permitting system. This would ensure potential aquatic impacts are minimized.

As explained in Impact HZ-10a, mitigation measures identified in Section III.N (Biological Resources) would also reduce impacts on ecological receptors. The general requirements of mitigation measures MM BI-4a.1 and MM BI-4a.2 (which are fully described in Section III.N) would reduce the effects of construction-related activities on aquatic habitat by requiring that appropriate permits be obtained from the USACE, SFRWQCB, BCDC, and other agencies, as applicable (refer to MM BI-4a.1) and implementing construction BMPs to reduce and/or prevent impacts to waters of the United States, including aquatic habitats (refer to MM BI-4a.2).

Compliance with the procedures described above would ensure that soil handling, stockpiling, and movement, and construction dewatering within Candlestick Point would not present a significant risk to the ecological environment. Therefore, with implementation of Article 22A, and mitigation measures MM HZ-1a, MM HZ-2a.1, MM HZ-15, MM HY-1a.1, MM HY-1a.2, MM HY-1a.3, MM BI-4a.1, and MM BI-4a.2, potential construction ecosystem impacts related to handling, stockpiling, and transport of contaminated soil (including shoreline sediments) and groundwater would be reduced to less-than-significant levels.

Impact of Hunters Point Shipyard Phase II

Impact HZ-14b **Construction at HPS Phase II would not expose ecological receptors to unacceptable levels of hazardous materials as a result of the disturbance of soil, sediment, and/or groundwater that may contain with contaminants from historic uses. (Less than Significant with Mitigation)** ***[Criteria K.b and K.d]***

This impact focuses on the potential for soil disturbance and associated stockpiling and on-site soil movement during general site construction activities to create potential pathways through which fish and wildlife species could be exposed contaminants in HPS Phase II site soils. The potential for development of Project elements such as the Yosemite Slough bridge and shoreline improvements to disturb contaminated soils or sediment is evaluated separately in Impact HZ-9 and Impact HZ-10, respectively. Impact BI-4a, Impact BI-4b, and Impact BI-4c-in Section III.N describe potential biological resources impacts associated with development of specific Project shoreline improvements. Potential water quality

impacts associated with shoreline improvements are evaluated in Impact HY-1a, Impact HY-1b, and Impact HY-1 in Section III.M.

Site preparation would include deep excavations for large structures such as residential towers, installation of foundation piles; trenching for utility lines; grading and compaction; and other earth-disturbing activities. These construction activities would involve grading, trenching, compacting, and excavating, which would result in soil and/or fill being handled, stockpiled, and moved on site.

Section III.N (Biological Resources) identifies the fish and wildlife species that could be affected by Project construction. These species include a broad range of resident and migratory fish and wildlife species. Common wildlife includes a number of species of invertebrates, reptiles and amphibians, birds, and mammals (terrestrial and aquatic). Common aquatic resources include many species of fish, shellfish, and mollusks.

As presented in the Setting, the results of comprehensive basewide and parcel-specific investigations have shown that chemicals and radioactive materials are present in soil and groundwater in various locations throughout HPS Phase II at levels that require remediation. The Navy has completed substantial investigation and remediation of the site, and the FFA Signatories overseeing the remediation program have required interim measures to be put in place in areas that still require remediation. Those measures include numerous actions to remove hazardous materials from soil and groundwater at the site, and the cleanup required by the regulatory agencies will continue to be implemented by the Navy regardless of whether or not the Project is implemented. However, full remediation of the entire HPS Phase II site is not anticipated for several years.

Further, as with many sites with former industrial uses, there is the potential to discover previously unidentified contamination or debris, even though all reasonable efforts have been implemented to identify such hazards. There have also been a number of investigations and actions to identify and remove subsurface structures (e.g., USTs, utility lines) at HPS Phase II and to manage identified contamination from those historic uses. Although these efforts have been extensive, the potential still exists for unidentified, old, or abandoned subsurface structures to be present at sites to be developed in HPS Phase II; in particular, it has not always been feasible to conduct physical investigation or comprehensive soil testing to determine the presence of USTs or the extent, if any, of soil contamination underneath existing buildings and structures.

As described previously, given the substantial amount of earthwork that would occur in HPS Phase II, there may be situations in which it may be feasible and more cost-effective to perform some soil remedial actions in conjunction with installation of utilities or other redevelopment activities in HPS Phase II. For example, the "Combined Plan for Candlestick Point and Hunters Point Shipyard" suggests that remediation work could be implemented at the proposed stadium site in Parcel G as part of site preparation.[331]

[331] San Francisco Redevelopment Agency, Hunters Point Shipyard Preliminary Hazardous Materials Remediation Plan, http://www.hunterspointcommunity.com/docs/pdfs/Exhibit_D_Preliminary_Hazardous_Materials_Remediation_Plan.pdf (accessed July 2009).

The primary environmental mechanisms for ecological exposure during soil disturbance would be (1) direct species contact with the fill or soil containing contaminants (e.g., birds landing on or rodents burrowing into stockpiled materials); (2) stormwater runoff from exposed soils or fill, or soils spilled onto roads during transport, which could carry contaminants into aquatic environments, where fish and benthic invertebrate species could be affected; or (3) windblown dust, which could be inhaled by terrestrial and avian species, or that could be deposited on surface water, where aquatic organisms could be affected.

There are controls and mitigation measures identified in this EIR that would reduce potential impacts on human populations, which would also help reduce the impact on ecological systems, as explained below. In addition, there are environmental conditions that would also reduce the potential for adverse impacts.

For example, the site mitigation plans prepared pursuant to Article 31-equivalent requirements, and risk management plans prepared pursuant to CERCLA documents (refer to Impact HZ-1b) would incorporate measures, such as covering stockpiles, which would minimize the potential for avian and terrestrial species to have direct contact with soil. Implementation of measures to control stormwater runoff during construction would control discharge of potential chemicals adhered to soil in the runoff. Mitigation measures MM HY-1a.1 and MM HY-1a.2 would require preparation of a SWPPP would be required to identify the specific measures and BMPs that are applicable to HPS Phase II construction activities in the event of a spill of construction materials or exposure of hazardous materials. This would reduce the likelihood of contaminants being conveyed to near-shore and offshore environments, which would reduce the risk to the aquatic environment and species that rely on that habitat (e.g., birds and mammals). Mitigation measure MM HZ-10b would also minimize the potential for sediments disturbed during shoreline improvements to pose a hazard to near-shore and aquatic species.

As explained in Impact HZ-10b, mitigation measures identified in Section III.N would also reduce impacts on ecological receptors. The general requirements of mitigation measures MM BI-4a.1 and MM BI-4a.2 (described in Section III.N) would reduce the effects of construction-related activities on aquatic habitat by requiring that appropriate permits be obtained from the USACE, SFRWQCB, BCDC, and other agencies as applicable (MM BI-4a.1) and implementing construction BMPs to reduce and/or prevent impacts to waters of the United States, including aquatic habitats (MM BI-4a.2). Mitigation measure MM BI-12b.1 identifies additional sediment management controls to reduce the effects of construction-related activities on aquatic species.

As described, dust control measures are required both by local ordinance and by BAAQMD. Implementation of dust control measures (mitigation measure MM HZ-15) would effectively reduce the potential for windborne dust that could affect fish and wildlife species. However, natural environmental conditions would also be a factor in minimizing the potential for contaminated dusts to adversely affect ecological systems. Avian species could be exposed to windblown dust through inhalation and ingestion during preening and prey consumption. Although various avian species use Candlestick Point for nesting and foraging, the mobility of the bird species results in their use of a relatively large home range and foraging range. Due to this mobility, avian species would not be present in one foraging area for an extended period of time in which they could receive substantial exposure to contaminants in dust. Windblown dust deposited onto water bodies could result in direct exposure to filter-feeding mollusks and other aquatic species. Additionally, excessive deposition of dust onto surface water, such as the Bay,

could increase turbidity, which could, in turn, decrease light penetration into water and available oxygen. Even if dust control measures were not implemented, dusts generated by wind during construction would be dispersed over a relatively large area, with no single area receiving a sufficient volume of dust to generate a significant exposure to species.

Ponded water in open excavations and trenches (if contaminants were present and if standing water remained) could also present an ecological risk. However, because dewatering would be necessary to ensure proper construction conditions, groundwater would be removed routinely and frequently. Groundwater would either be pumped into the sewage system or to the Bay in accordance with the Industrial Waste Ordinance of the *Public Works Code*. The sewage system is a closed system, with end of the line treatment, so there would be no direct exposure pathway to fish or wildlife. If shallow groundwater were to be pumped directly into the Bay as a necessary by-product of construction dewatering, the discharger would be required to notify and obtain approval of the RWQCB, as described in Section III.M (mitigation measure MM HY-1a.3). Any groundwater proposed for discharge from the Project site into the Bay must meet strict water quality standards established by the San Francisco Bay Basin Plan as defined by the RWQCB, and may have to be treated before discharge into the Bay to avoid potential degradation of the Bay's water quality. Furthermore, dischargers are required to meet stringent monitoring standards established by the RWQCB (and, as applicable, the State Water Resources Control Board) to ensure compliance under this permitting system. The requirements for construction dewatering would be specified in the ICs and RMPs for HPS Phase II. This would ensure potential aquatic impacts are minimized.

As explained in Impact HZ-10a, mitigation measures identified in Section III.N would also reduce impacts on ecological receptors. The general requirements of mitigation measures MM BI-4a.1 and MM BI-4a.2 (described in Section III.N) would reduce the effects of construction-related activities on aquatic habitat by requiring that appropriate permits be obtained from the USACE, SFRWQCB, BCDC, and other agencies as applicable (MM BI-4a.1) and implementing construction BMPs (MM BI-4a.2) to reduce and/or prevent impacts to waters of the United States, including aquatic habitats.

As described in Impact HZ-6b, restrictions on handling, stockpiling and transport of soil during construction activities at HPS Phase II will be a centerpiece of the legally-enforceable restrictions on uses and activities at the Project site described above (refer to the "Management of Hazardous Materials Contamination Risks During Development" section) and under which the Navy, US EPA, DTSC, RWQCB, and CDPH will, independent of this EIR, require to be in place before any Project development activity occurs at HPS Phase II.

Mitigation measures MM HZ-1a, MM HZ-1b, MM HZ-10b, and MM HZ-12 require construction activities require construction and grading activities and remediation activities conducted in conjunction with development at early transfer parcels to comply with all restrictions imposed pursuant to a CERCLA ROD, Petroleum Corrective Action Plan, FOST, FOSET FOSL, or an Administrative Order on Consent applicable to early transfer parcels, including restrictions imposed in Deeds, Covenants, Leases, and LIFOCs, and requirements set forth in Land Use Control Remedial Design Documents, and Risk Management Plans. Under the applicable requirements of CERCLA, RCRA, and the equivalent state cleanup requirements, ecological risk assessments have been conducted to determine the potential impact of hazardous material releases on ecological receptors such as fish and wildlife species as

described in the current conditions discussion in this Section. Under CERCLA RCRA and the equivalent state cleanup requirements and other applicable laws and regulations, impacts to the environment, including impacts to ecological receptors such as fish and wildlife species, must be taken into account in establishing these restrictions applicable to actions that disturb known or potential contaminants in soil, sediment, or water.

The general requirements of mitigation measures MM HZ-1b, MM HZ-9, MM HZ-10b, and MM HZ-12 would require that activities be conducted only after approval of a workplan by the Navy, and if required, by the other FFA Signatories. This mitigation measure would also require activities be conducted in accordance with any other documents or plans required under applicable law or laws.

Compliance with the procedures described above would ensure that soil handling, stockpiling, and movement within HPS Phase II would not present a significant risk to the ecological environment. Therefore, with implementation of mitigation measures MM HZ-1a, MM HZ-1b, MM HZ-9, MM HZ-10b, MM HZ-12, MM HZ-15, MM HY-1a.1, MM HY-1a.2, MM HY-1a.3, MM BI-4a.1, MM BI-4a.2, and MM BI-12b.1, potential construction ecosystem impacts related to handling, stockpiling, and transport of contaminated soil (including shoreline sediments) and groundwater would be reduced to less-than-significant levels.

Combined Impact of Candlestick Point and Hunters Point Shipyard Phase II

Impact HZ-14 **Construction activities associated with the Project would not expose ecological receptors to unacceptable levels of hazardous materials as a result of the disturbance of soil, sediment, and/or groundwater with contaminants from historic uses. (Less than Significant with Mitigation)** ***[Criteria K.b and K.d]***

Site preparation would include deep excavations for large structures such as residential towers; installation of foundation piles; trenching for utility lines; grading and compaction; and other earth-disturbing activities. Additionally, there would be roadway improvements. These construction activities would involve grading, trenching, compacting, and excavating, which would disturb soil, sediment, and/or groundwater with potential contaminants from historic uses at levels that could expose ecological receptors (fish and wildlife species identified in Section III.N) to hazardous materials. With implementation of mitigation measures MM HZ-1a, MM HZ-1b, MM HZ-2a.1, MM HZ-9, MM HZ-10b, MM HZ-12, MM HY-1a.1, MM HY-1a.2, MM HY-1a.3, MM BI-4a.1, MM BI-4a.2, and MM BI-12b.1, potential construction ecosystem impacts related to handling, stockpiling, and transport of contaminated soil would be reduced to less-than-significant levels.

Impact HZ-15: Exposure to Naturally Occurring Asbestos

Impact HZ-15 **Construction and grading activities associated with the Project would not disturb soil or rock that could be a source of naturally occurring asbestos in a manner that would present a human health hazard. (Less than Significant with Mitigation)** ***[Criterion K.b]***

Background on Naturally Occurring Asbestos Issues in the Project Vicinity

As described above in the Setting section, asbestos is a naturally occurring mineral found in serpentinite rocks. There is no mapped serpentinite within Candlestick Point or locations to the west where proposed roadway improvements could be constructed. As shown in Figure III.L-1 in Section III.L, there is an area of serpentinite mapped in Parcel A, Parcel B, a portion of Parcel C, and a small area in Parcel G. Serpentinite may also underlie proposed roadway segment locations in that area. Previously disturbed serpentinite fragments have also been identified in fill material at HPS Phase II.

The 2000 Final EIR for HPS included a mitigation measure requiring various controls to be in place when working in areas with serpentinite, including complying with BAAQMD regulations.[332] Both to comply with BAAQMD requirements and local requirements in *San Francisco Health Code* Article 31, the Project Applicant of HPS Phase I prepared and implemented an Asbestos Dust Mitigation Plan (ADMP) and a DCP, respectively.

Community concern about the implementation of asbestos and dust control measures was heightened in Summer 2006 after the Phase I Project Applicant self-reported that its former asbestos air monitoring contractor had failed to ensure proper operation of the air monitoring stations for the first several months of grading activities and could not validate the sampling results. The SFDPH, the BAAQMD, US EPA, and independent experts from the University of California at San Francisco, along with the federal Centers for Disease Control (CDC) and the CDC Agency for Toxic Substances and Disease Registry (ATSDR) reviewed the potential health risks from construction dust containing asbestos in HPS Phase I.[333]. The reviews concluded that there was no significant health risk created by the grading activities at the Shipyard.[334] BAAQMD pursued enforcement action against the Project Applicant, who entered into a consent agreement to pay civil penalties for its air-monitoring contractor's failure to properly monitor and for its grading contractor's failure to fully implement components of the

[332] San Francisco Redevelopment Agency and Planning Department, Final Environmental Impact Report, Hunters Point Shipyard Reuse, February 8, 2000. A copy of this document is on file for public review at the San Francisco Redevelopment Agency, One South Van Ness Avenue, Fifth Floor as part of File No. ER06.05.07, or at the Planning Department, 1650 Mission Street, Fourth Floor, San Francisco, CA, 94103 as part of File No. 2007.0946E.

[333] Compiled from various City correspondence and factsheets dated June 1, 2007, October 9, 2007; California Department of Public Health correspondence dated September 10, 2007; United States Environmental Protection Agency correspondence dated February 18, 2009; and US Department of Health and Human Services correspondence dated September 20, 2007. This correspondence is on file for public review at the San Francisco Redevelopment Agency, One South Van Ness Avenue, Fifth Floor as part of File No. ER06.05.07, or at the Planning Department, 1650 Mission Street, Fourth Floor, San Francisco, CA, 94103 as part of File No. 2007.0946E.

[334] Compiled from various City correspondence and factsheets dated June 1, 2007, October 9, 2007; California Department of Public Health correspondence dated September 10, 2007; and US Department of Health and Human Services correspondence dated September 20, 2007. This correspondence is on file for public review at the San Francisco Redevelopment Agency, One South Van Ness Avenue, Fifth Floor as part of File No. ER06.05.07, or at the Planning Department, 1650 Mission Street, Fourth Floor, San Francisco, CA, 94103 as part of File No. 2007.0946E.

BAAQMD-approved asbestos dust-monitoring plan. The City also implemented a number of actions to enforce the requirements of its required DCP in order to minimize the potential for airborne asbestos during grading in HPS Phase I, including issuing several notices of violation requiring corrective action. Since then, the SFDPH has worked with the Project Applicant to improve the dust-monitoring program, and required preparation of a Revised DCP for HPS Phase I, which was implemented in February 2007. BAAQMD has also worked with the Project Applicant to improve the ADMP required by the state Airborne Asbestos Toxics Control Measure. Similarly, US EPA has worked with the Navy to ensure it is implementing asbestos dust control measures with respect to its remediation activities.

Types of Impacts and Control Measures for Naturally Occurring Asbestos

Naturally occurring asbestos is a potential health hazard. If large amounts are inhaled or swallowed over many years, it increases the risk that a person may develop cancer or other health problems. During grading in areas potentially containing naturally occurring asbestos, airborne asbestos could be released to the environment via air emissions that could present an inhalation or ingestion hazard to exposed populations.

These emissions could result from the initial disturbance of previously undisturbed serpentinite, and from handling and/or spreading previously disturbed serpentinite fragments. Construction workers would be the most susceptible to potential risks. However, existing and future on-site and adjacent off-site populations (residents, tenants, visitors, and workers) could also be exposed to airborne asbestos if proper precautions were not fully implemented.

Construction activities disturbing less than one acre of rock containing naturally occurring asbestos in HPS Phase II where serpentinite is present would be required under BAAQMD regulations to implement specific dust mitigation before construction begins, and each measure must be maintained throughout the duration of construction. For construction activities disturbing one acre or greater of rock containing naturally occurring asbestos, BAAQMD requires construction contractors to prepare an ADMP, specifying measures that would be taken to ensure that no visible dust crosses the property boundary during construction. The ADMP must be submitted to and approved by the BAAQMD prior to the beginning of construction, and the site operator must ensure the implementation of all specified dust control measures throughout the construction Project.

Dust control measures would include: applying water during and after grading activities; covering stockpiles and truckloads; "track-out" prevention measures such as wheel washing stations at exits from the grading areas; placing final cover materials over any exposed naturally occurring asbestos at the end of the grading activities. In addition, depending on the location of the grading activity, it is possible that the BAAQMD may require air monitoring to determine if there is off-site migration of asbestos dust during construction activities, and may also require that activities temporarily shut down if the monitors detect specified levels of airborne asbestos.

In addition, the *San Francisco Health Code* Article 22B requires contractors to control dust (regardless of whether the construction activity is in an area with the potential for naturally occurring asbestos). Some of the dust control measures can include: controlling potential sources of emissions; implementing general dust control methods for traffic, grading, crushing, trenching and excavation, loading, stockpiles, foundation work, and post-construction stabilization of disturbed areas; demolition emissions control

methods, monitoring and records, including corrective actions to control visible dust during active construction and times when no work is occurring. In addition, under the ordinance, projects over one half acre in size are required to submit a DCP to SFDPH for approval. Currently, a DCP for all areas of Parcel A HPS Phase I are required to be approved by SFDPH prior to grading pursuant to the current provisions of Article 31. Under Article 22B, SFDPH approval of DCPs are required at HPS Phase II prior to grading areas over one-half acre in size. When Article 31 is revised to encompass the remaining HPS parcels or an equivalent process is established then all areas of HPS Phase II will be required to submit a DCP. The DCPs may include installation of PM10 dust monitors and record keeping.

To reduce impacts related to asbestos exposure during construction activities, the following mitigation measure shall be implemented.

MM HZ-15 *Asbestos Dust Mitigation Plans and Dust Control Plans. Prior to obtaining a grading, excavation, site, building or other permit from the City that includes soil disturbance activities, the Project Applicant shall obtain approval of an Asbestos Dust Mitigation Plan (ADMP) from BAAQMD for areas over 1 acre that potentially contain naturally occurring asbestos and approval of a Dust Control Plan (DCP) from SFDPH for all areas at HPS Phase II and for areas over 0.5 acre at Candlestick Point. Compliance with the ADMP and DCP shall be required as a condition of the permit.*

The ADMP shall be submitted to and approved by the BAAQMD prior to the beginning of construction, and the Project Applicant must ensure the implementation of all specified dust control measures throughout the construction Project. The ADMP shall require compliance with the following specific control measures to the extent deemed necessary by the BAAQMD to meet its standard:

For construction activities disturbing less than one acre of rock containing naturally occurring asbestos, the following specific dust control measures must be implemented in accordance with the asbestos ATCM before construction begins and each measure must be maintained throughout the duration of the construction Project:

- *Limit construction vehicle speed at the work site to 15 miles per hour*
- *Sufficiently wet all ground surfaces prior to disturbance to prevent visible dust emissions from crossing the property line*
- *Keep all graded and excavated areas, around soil improvement operations, visibly dry unpaved roads, parking and staging areas wetted at least three times per shift daily with reclaimed water during construction to prevent visible dust emissions from crossing the property line. Increased watering frequency may be necessary whenever wind speeds exceed 15 miles per hour.*
- *Adequately wet all storage piles, treat with chemical dust suppressants, or cover piles when material is not being added to or removed from the pile*
- *Wash down all equipment before moving from the property onto a paved public road*
- *Clean all visible track out from the paved public road by street sweeping or a HEPA filter equipped vacuum device within 24 hours*

For construction activities disturbing greater than one acre of rock containing naturally occurring asbestos, construction contractors are required to prepare an ADMP specifying measures that will be taken to ensure that no visible dust crosses the property boundary during construction. The plan must specify the following measures, to the extent deemed necessary by the BAAQMD to meet its standard:

- *Prevent and control visible track out from the property onto adjacent paved roads. Sweep with reclaimed water at the end of each day if visible soil material is carried out from property.*
- *Ensure adequate wetting or covering of active storage piles*
- *Hydroseed or apply non-toxic soil stabilizers to disturbed surface areas and storage piles greater than ten cubic yards or 500 square feet of excavated materials, backfill material, import material, gravel, sand, road base, and soil that will remain inactive for seven days or more*
- *Control traffic on on-site unpaved roads, parking lots, and staging areas—including a maximum vehicle speed of 15 miles per hour or less*
- *Provide as much water as necessary to control dust (without creating run-off) in any area of land clearing, earth movement, excavation, drillings, and other dust-generating activity.*
- *Control dust emissions from off-site transport of naturally occurring asbestos containing materials*
- *Stabilize disturbed areas following construction*

If required by the BAAQMD, air monitoring shall be implemented to monitor for off-site migration of asbestos dust during construction activities.

The DCP shall be submitted to and approved by the SFDPH prior to the beginning of construction, and the Project Applicant must ensure the implementation of all specified dust control measures throughout the construction Project. The DCP shall require compliance with the following specific mitigation measures to the extent deemed necessary by the SFDPH to achieve no visible dust at the property boundary:

- *Submission of a map to the Director of Health showing all sensitive receptors within 1,000 feet of the site.*
- *Keep all graded and excavated areas, areas around soil improvement operations, visibly dry unpaved roads, parking and staging areas wetted at least three times per shift daily with reclaimed water during construction to prevent visible dust emissions from crossing the property line. Increased watering frequency may be necessary whenever wind speeds exceed 15 miles per hour.*
- *Analysis of wind direction and placement of upwind and downwind particulate dust monitors.*
- *Record keeping for particulate monitoring results.*
- *Requirements for shutdown conditions based on wind, dust migration, or if dust is contained within the property boundary but not controlled after a specified number of minutes.*
- *Establishing a hotline for surrounding community members who may be potentially affected by Project-related dust. Contact person shall respond and take corrective action within 48 hours. Post publicly visible signs around the site with the hotline number as well as the phone number of the BAAQMD and make sure the numbers are given to adjacent residents, schools, and businesses.*
- *Limiting the area subject to construction activities at any one time.*
- *Installing dust curtains and windbreaks on windward and downwind sides of the property lines, as necessary. Windbreaks on windward side should have no more than 50% air porosity.*
- *Limiting the amount of soil in trucks hauling soil around the job site to the size of the truck bed and securing with a tarpaulin or ensuring the soil contains adequate moisture to minimize or prevent dust generation during transportation.*
- *Enforcing a 15 mph speed limit for vehicles entering and exiting construction areas.*
- *Sweeping affected streets with water sweepers at the end of the day.*

- *Installing and using wheel washers to clean truck tires.*
- *Halting all construction activities during periods of sustained strong winds, hourly average wind speeds of 25 miles per hour.*
- *Applying soil stabilization methods to inactive areas.*
- *Sweeping off adjacent streets to reduce particulate emissions.*
- *Hiring an independent third party to conduct inspections for visible dust and keeping records of those inspections.*
- *Minimizing the amount of excavated material or waste materials stored at the site.*
- *Prevent visible track out from the property onto adjacent paved roads. Sweep with reclaimed water at the end of each day if visible soil material is carried out from property.*

For all areas, this measure shall be implemented through Article 22B (areas over one half acre) or for HPS Phase II through a requirement in the potential additions to Article 31 imposing requirements to parcels other than Parcel A or through an equivalent process established by the City or Agency.

Although the ADMP and DCP requirements described above would be required independent of this EIR, to ensure redundant protection, implementation of mitigation measure MM HZ-15 would require the preparation of an ADMP approved by BAAQMD and a DCP approved by SFDPH before commencing grading activities and any other activity that could disturb potential sources of naturally-occurring asbestos (including Bay Fill areas with the potential to contain previously-disturbed serpentinite fragments). The mitigation measure would also require implementation of all the mitigation measures, and compliance with all the requirements, set forth in the ADMP and DCP. Implementation of this mitigation measure would reduce impacts related to naturally occurring asbestos exposure during construction activities to a less-than-significant level.

Impact HZ-16: Exposure to Hazardous Materials in Building and Structures

Impact of Candlestick Point

Impact HZ-16a **Construction at Candlestick Point would not result in a health hazard to construction workers, the public, or the environment as a result of the demolition or renovation of existing structures that could include asbestos-containing materials, lead-based paint, PCBs, or fluorescent lights containing mercury. (Less than Significant)** ***[Criterion K.b]***

The Project would include demolition of existing structures at Candlestick Point. Hazardous building materials are likely to be present in older structures including Candlestick Park stadium completed in 1960. Building materials could include asbestos-containing materials, lead-based paint, PCBs, and fluorescent lights containing mercury vapors. Demolition or renovation of existing structures could result in potential exposure of workers or the community to hazardous building materials during construction, without proper abatement procedures, and future building occupants could be exposed if hazardous building materials are left in place and not properly contained. Soil around a structure could also become contaminated by hazardous building materials if these materials were inadvertently released to the environment.

Inadvertent releases of friable asbestos, lead, or PCBs contained in materials or items removed during demolition activities could expose construction workers, occupants, or visitors to these hazardous materials, which could result in various adverse health effects if exposures were of sufficient quantity and length. In addition, some of the debris may meet criteria for hazardous waste and must be disposed of properly. To reduce potential human exposures to acceptable levels and to protect the environment, the Project would comply with several regulations and guidelines, discussed above, pertaining to abatement of and protection from exposure to asbestos and lead, as discussed under Section III.K.3, as appropriate (e.g., Cal/OSHA has regulations on worker exposure to both chemicals). Items containing PCBs, mercury, or other hazardous substances that are intended for disposal must be managed as hazardous waste and must be handled in accordance with OSHA worker protection requirements.

Implementation of applicable regulations and standards would ensure that potential health and environmental hazards associated with asbestos, lead, or PCBs in buildings and structures to be demolished would be minimized to the extent required by law. Therefore, impacts would be less than significant. No mitigation is required.

Impact of Hunters Point Shipyard Phase II

Impact HZ-16b **Construction at HPS Phase II would not result in a health hazard to construction workers, the public, or the environment as a result of the demolition or renovation of existing structures that could include asbestos-containing materials, lead-based paint, PCBs, or fluorescent lights containing mercury. (Less than Significant)** ***[Criterion K.b]***

Existing buildings in HPS Phase II would be demolished to accommodate new development. The potential hazards related to chemical contaminants in structures and facilities, and how those hazards would be managed to minimize the risk to human health and the environment would be as described for Candlestick Point. Further, any actions the Navy undertakes prior to or during development of the proposed land uses in HPS Phase II to abate hazardous building materials would also be subject to Navy procedures and reporting. Department of Defense policy states that all property containing asbestos will be conveyed, leased, or otherwise disposed of as-is through the BRAC process. Department of Defense policy regarding lead-based paint in existing residential areas is to manage it in a manner protective of human health and the environment, and to comply with all applicable laws and regulations. Pursuant to Department of Defense, Navy and US EPA policy, these deeds will contain restrictions that mandate compliance with certain federal policies and laws related to handling ACBM and lead.

The existing regulatory environmental framework and approval process would avoid potential hazards from demolition of buildings. Impacts would be less than significant. No mitigation is required.

Combined Impact of Candlestick Point and Hunters Point Shipyard Phase II

Impact HZ-16 **Construction activities associated with the Project would not result in a health hazard to construction workers, the public, or the environment as a result of the demolition or renovation of existing structures that could include asbestos-containing materials, lead-based paint, PCBs, or fluorescent lights containing mercury. (Less than Significant)** ***[Criterion K.b]***

The Project would include demolition of existing structures at Candlestick Point and HPS Phase II. Building materials could include asbestos-containing materials, lead-based paint, PCBs, and fluorescent lights containing mercury vapors. Demolition or renovation of existing structures could result in potential exposure of workers or the community to hazardous building materials during construction, without proper abatement procedures, and future building occupants could be exposed if hazardous building materials are left in place and not properly contained. Implementation of applicable regulations and standards would ensure that potential health and environmental hazards associated with asbestos, lead, or PCBs in buildings and structures to be demolished would be minimized to the extent required by law. The existing regulatory environmental framework and approval process would avoid potential hazards from demolition. With the implementation of existing regulations, impacts would be less than significant. No mitigation is required.

Impact HZ-17: Worker Safety—Exposure to Hazardous Materials

Impact of Candlestick Point

Impact HZ-17a **Construction at Candlestick Point would not expose construction workers to unacceptable levels of hazardous materials in soil or groundwater in a manner which would present a human health risk. (Less than Significant with Mitigation)** ***[Criterion K.b]***

Potential worker health and safety impacts associated with site investigations, site remediation, underground storage tank removal, excavation, dewatering, and construction of improvements at locations in Candlestick Point could occur where these areas have been affected by hazardous materials. Such impacts would be minimized by implementing legally required health and safety precautions. For hazardous waste workers, federal and Cal/OSHA regulations mandate an initial training course and subsequent annual training. Site-specific training may also be required for some workers.

Although worker safety regulations would require the preparation and implementation of a site-specific HASP independent of this EIR, mitigation measure MM HZ-2a.2 would impose the requirement to prepare such a plan in compliance with applicable federal and state OSHA requirements and other applicable laws. The plan would include identification of chemicals of concern, potential hazards, personal protection clothing and devices, and emergency response procedures. Implementation of this mitigation measure would reduce impacts to less-than-significant levels.

Impact of Hunters Point Shipyard Phase II

Impact HZ-17b **Construction at HPS Phase II would not expose construction workers to unacceptable levels of hazardous materials in soil, sediment, or groundwater in a manner which would present a human health risk. (Less than Significant with Mitigation)** ***[Criteria K.b and K.d]***

Potential worker health and safety impacts from exposure to hazardous materials could occur during excavation, dewatering, construction of improvements, site investigations, site remediation, and underground storage tank removal at HPS Phase II. The potential for these impacts to occur would be minimized by implementing legally required health and safety precautions. For workers at sites where they would encounter hazardous waste, federal and Cal/OSHA regulations mandate an initial training course and subsequent annual training. Site-specific training may also be required for some workers.

Although existing worker safety regulations would require preparation and implementation of a HASP independent of this EIR and work would be conducted in accordance with RMPs, to ensure compliance with these requirements, mitigation measure MM HZ-2a.2 would require a permit applicant to prepare, submit to SFDPH and implement a site-specific HASP for any affected location in compliance with applicable federal and state OSHA requirements and other applicable laws to minimize impacts to public health and the environment. The plan would include identification of chemicals of concern, potential hazards, personal protective equipment and devices, and emergency response procedures. Implementation of this mitigation measure would reduce impacts to less-than-significant levels.

Combined Impact of Candlestick Point and Hunters Point Shipyard Phase II

Impact HZ-17 **Construction activities associated with the Project would not expose construction workers to unacceptable levels of hazardous materials in soil, sediment, or groundwater in a manner which would present a human health risk. (Less than Significant with Mitigation)** ***[Criteria K.b and K.d]***

Potential worker health and safety impacts associated with site investigations, site remediation, underground storage tank removal, excavation, dewatering, and construction of improvements at locations in the Project site could occur where these areas have been affected by hazardous materials. Although worker safety regulations would require the preparation and implementation of a site-specific HASP independent of this EIR and work would be conducted in accordance with RMPs, mitigation measure MM HZ-2a.2 would impose the requirement to prepare such a plan in compliance with applicable federal and Cal/OSHA requirements and other applicable laws. The plan would include identification of chemicals of concern, potential hazards, personal protection clothing and devices, and emergency response procedures. Implementation of this mitigation measure would reduce impacts to less-than-significant levels.

Impact HZ-18: Construction Activities with Potential to Generate Hazardous Air Emissions within One-Quarter Mile of a School

Impact of Candlestick Point

Impact HZ-18a **Construction at Candlestick Point would not result in a human health risk involving the disturbance of naturally occurring asbestos, demolition of buildings that could contain hazardous substances in building materials, or possible disturbance of contaminated soils or groundwater within one-quarter mile of an existing school. (Less than Significant with Mitigation)** ***[Criterion K.c]***

The Bret Harte Elementary School is immediately west of Alice Griffith Public Housing site on Gilman Street and northwest of the proposed Candlestick Point North district (refer to Figure III.O-2 [Southeast San Francisco Schools and Libraries]).

As described under Impact HZ-17a, hazardous building materials are likely to be present in older structures within the Alice Griffith public housing site and could include asbestos-containing materials, lead-based paint, PCBs, and fluorescent lights containing mercury vapors. Demolition or renovation of existing structures could result in potential exposure of students, teachers, staff, and visitors at the school to hazardous building materials during construction, without proper abatement procedures. Soil around a structure could also become contaminated by hazardous building materials if these materials were released to the environment. To reduce the potential for the school site to be exposed to hazardous air emissions, the Project would comply with regulations and guidelines pertaining to abatement of and protection from exposure to asbestos and lead, as discussed under Section III.K.3 (Regulatory Framework) would be complied with, as appropriate. Implementation of applicable regulations and standards would ensure that hazardous air emissions from structures to be demolished would be minimized. Therefore, impacts would be less than significant, and no additional mitigation is required.

Some locations in Candlestick Point are known to contain low levels of contaminants in soil from historic uses; however, there are currently no sites within Candlestick Point requiring remediation. As explained in Impact AQ-3a, Impact AQ-3b, and Impact AQ-3 in Section III.H carcinogenic and noncarcinogenic health risks posed by contaminants bound to soil dust during construction activities associated with development of Candlestick Point would be below established thresholds. Therefore, the potential for contaminated dust to become airborne during construction that could cause hazardous emissions within is minimal. Nonetheless, if a contaminated site is identified during construction and testing under Article 22A, mitigation measure MM HZ-1a identified the location as requiring risk management, and if that location is within one-quarter mile of the school, the required Unknown Contaminant Contingency Plan (mitigation measure MM HZ-2a.1) would specify the necessary dust control requirements, and the Health and Safety Plan (mitigation measure MM HZ-2.a.2) would specify procedures to be protective of workers, which would also help minimize risks to off-site locations. This impact would be reduced to a less-than-significant level through implementation of Article 22A, where applicable, or mitigation measures MM HZ-1a, MM HZ-2a.1, and MM HZ-2a.2.

There are no rock formations containing naturally occurring asbestos in Candlestick Point, but there is fill material present that could contain rock fragments derived from locations elsewhere in the City in

which asbestos could be present. This impact would be reduced to a less-than-significant level through implementation of mitigation measure MM HZ-15. Under MM HZ-15, construction activities disturbing less than one acre of rock containing naturally occurring asbestos would be required under BAAQMD regulations to implement specific dust mitigation before construction begins, and each measure must be maintained throughout the duration of construction. For construction activities disturbing one acre or greater of rock containing naturally occurring asbestos, BAAQMD requires construction contractors to prepare an ADMP, specifying measures that would be taken to ensure that no visible dust crosses the property boundary during construction. The ADMP must be submitted to and approved by the BAAQMD prior to the beginning of construction, and the site operator must ensure the implementation of all specified dust control measures throughout construction.

The school is more than one-quarter mile from portions of HPS Phase II, where there is known naturally occurring asbestos that could be disturbed and could be a source of airborne emissions (see below). However, mitigation measure MM HZ-15 is also required for construction in HPS Phase II, which would reduce impacts associated with development activities in HPS Phase II that, although unlikely, could affect locations in Candlestick Point.

Impact of Hunters Point Shipyard Phase II

Impact HZ-18b **Construction at HPS Phase II would not result in a human health risk involving the disturbance of naturally occurring asbestos, demolition of buildings that could contain hazardous substances in building materials, or possible disturbance of contaminated soils or groundwater within one-quarter mile of an existing school. (Less than Significant with Mitigation)** ***[Criterion K.c]***

Muhammad University of Islam, a year-round elementary school, is located adjacent to the Hillside portion of HPS Phase I development. No schools are proposed in HPS Phase II.

As shown in Figure III.L-1, there is an area of serpentinite mapped in Parcel A, Parcel B, a portion of Parcel C, and a small area in Parcel G. Serpentinite may also underlie proposed roadway segment locations in that area. Previously disturbed serpentinite fragments have also been identified in fill material at HPS Phase II. Therefore, construction within HPS Phase II would involve disturbance of naturally occurring asbestos, which could be a source of hazardous air emissions within one-quarter mile of a school.

An enhanced dust control program would be in place in accordance with the City's Dust Ordinance, which would be implemented under mitigation measure MM HZ-15. In addition, implementation of mitigation measures MM HZ-2a.1 and MM HZ-2a.2 for development in HPS Phase II would also help control dust emissions at HPS Phase II boundary, which would ensure airborne asbestos emissions do not present a health risk to the off-site school.

Demolition or renovation of existing structures in HPS Phase II could result in potential exposure of students, teachers, staff, and visitors at MUI to hazardous building materials during construction, without proper abatement procedures. Soil around a structure could also become contaminated by hazardous building materials if these materials were released to the environment. The Navy must adhere to regulations and guidelines pertaining to abatement of and protection from exposure to asbestos and lead,

as discussed in Impact HZ-17b. Implementation of applicable regulations and standards would reduce impacts to a less-than-significant level. This would ensure that hazardous air emissions from structures to be demolished that could affect the school site would be minimized.

Construction activities in HPS Phase II would involve extensive construction to accommodate new development within that area. Site preparation activities could disturb known or previously unidentified contaminants in soil or groundwater that could be a source of hazardous emissions within one-quarter mile of MUI. However, as explained in Impact AQ-3a, Impact AQ-3b, and Impact AQ-3 in Section III.H (Air Quality), carcinogenic and noncarcinogenic health risks posed by contaminants bound to soil dust during construction activities associated with development of HPS Phase II would be below established thresholds. Nonetheless, because there would be hazardous emissions, this impact would be reduced to a less-than-significant level through implementation of mitigation measures MM HZ-1b, MM HZ-2a.1, MM HZ-2a.2, and MM HZ-15, as explained below.

For construction activities at HPS Phase II, mitigation measure MM HZ-1b would require SFDPH to verify, before all development activities at HPS Phase II that disturb soil or groundwater occur, that the activities would be done in compliance with all applicable restrictions pursuant to a CERCLA ROD, Petroleum Corrective Action Plan, FOST, FOSET or FOSL, or License Agreement, including restrictions imposed in deeds, covenants, leases, and LIFOCs, and requirements set forth in Land Use Control Remedial Design Documents, Risk Management Plans and health and safety plans. Implementation of those measures would ensure that potential adverse effects on the school site from exposure to known subsurface hazards from construction activities would be reduced to a less-than-significant level.

The disturbance of soil or groundwater containing previously unidentified contamination could also be a source of emissions that could affect the school site. If a previously unknown contaminated site is identified during construction, and if that location is within one-quarter mile of the school, the required Unknown Contaminant Contingency Plan (mitigation measure MM HZ-2a.1) would specify the necessary requirements and the dust control requirements required under a DCP (mitigation measure MM HZ-15) and the Health and Safety Plan (mitigation measure MM HZ-2.a.2) would specify procedures to be protective of workers, which would also help minimize risks to off-site locations. This impact would be reduced to a less-than-significant level through implementation of mitigation measures MM HZ-1b, MM HZ-2a.1, MM HZ-2a.2, and MM HZ-15.

Combined Impact of Candlestick Point and Hunters Point Shipyard Phase II

Impact HZ-18 **Construction activities associated with the Project would not result in a human health risk involving the disturbance of naturally occurring asbestos, demolition of buildings that could contain hazardous substances in building materials, or possible disturbance of contaminated soils or groundwater within one-quarter mile of an existing school. (Less than Significant with Mitigation)** ***[Criterion K.c]***

Construction within the Project site would involve disturbance of naturally occurring asbestos, demolition of buildings that could contain hazardous substances in building materials, and possible disturbance of contaminated soils or groundwater, each of which could be a source of hazardous air

emissions within one-quarter mile of a school. The Bret Harte Elementary School is immediately west of Alice Griffith public housing site on Gilman Street and northwest of the proposed Candlestick Point North district. The Muhammad University of Islam is within one-quarter mile of HPS Phase II.

The results of a health risk assessment that evaluated the potential for contaminants bound to soil disturbed during construction are presented in Impact AQ-3a, Impact AQ-3b, and Impact AQ-3. The results indicate that carcinogenic and noncarcinogenic health risks posed by contaminants bound to soil dust during construction activities would be below established thresholds. Nonetheless, because hazardous air emissions could occur and could affect school sites, this impact at Candlestick Point would be reduced to a less-than-significant level through implementation of Article 22A, where applicable, or mitigation measures MM HZ-1a and MM HZ-2a.1. Implementation of mitigation measure MM HZ-1b would reduce impacts for HPS Phase II development. In addition, implementation of mitigation measures MM HZ-2a.1, MM HZ-2a.2, and MM HZ-15 would also help control dust emissions at the Project site boundary, which would ensure airborne asbestos emissions do not present a health risk off site.

Impact HZ-19: Potential Projectwide Impacts during Project Construction

Impact HZ-19 **Simultaneous construction activities at the Project site would not pose a human health risk from the release of contaminants from historic uses or fill. (Less than Significant with Mitigation)** ***[Criteria K.b and K.d]***

Construction impacts associated with the potential to encounter hazardous materials or hazardous conditions during construction anywhere in the Project site, whether at Candlestick Point or HPS Phase II would for the most part be site specific and not additive because development activities at one site would be localized and would not combine with activities at another site to create a greater, combined effect. In addition, development would be sequenced, so only portions of each area would be expected to be under development at the same time. For example, in the early stages of development, it is anticipated that on Candlestick Point, construction of replacement units for current residents of Alice Griffith public housing would occur first. On HPS Phase II, stadium construction is expected to begin first, followed by development of the mixed-use area planned in the Parcel B area. The Project would be sequenced as described in Chapter II and is anticipated to be complete by 2029. Some off-site roadway improvements would be done as part of the Project, but these would be of a limited nature, largely involving streetscape improvements and would be developed over time. On Candlestick Point and HPS Phase II, the development of both areas is expected to continue through approximately 2021, with only portions of each area under development at any one time.

One activity that could affect areas outside of the immediate work area is movement of soil from one location to another. The possible export of soil from off of the immediate construction site is discussed under Impact HZ-3a and Impact HZ-3b, and in Impact HZ-6a and Impact HZ-6b. As discussed in these sections, at Candlestick Point soil is expected to be reused within those areas or, if not hazardous waste and otherwise allowed under the environmental remediation program, to be reused at HPS Phase II. Soil excavated from Candlestick Point could be transported to and reused at HPS Phase II only if (1) the soil were not characterized as hazardous waste under state or federal hazardous waste management regulations; and (2) the soil were to comply with any applicable soil import requirements related to what

type of soil can be placed into particular areas of the site, imposed as part of the remediation program overseen by the FFA Signatories and/or by a RMP and/or by local ordinance. Excavated soil removed at HPS Phase II may be used as fill elsewhere at HPS Phase II, to the extent permissible under the restrictions imposed through ICs and transfer documents (mitigation measure MM HZ-1b) and Navy-approved workplans (mitigation measure MM HZ-9). If nonhazardous soil is moved off site, it would be subject to laws concerning nonhazardous soil transport. Most soil is expected to remain in the Project site. However, if soil that is hazardous waste must be disposed of off site, the hauling and disposal would be subject to a number of existing environmental laws regulating these activities. If soils containing hazardous materials are allowed to be moved within a site, any movement would be subject to a variety of federal, state, and local environmental regulatory controls as detailed previously. Mitigation measures MM HZ-1a, MM HZ-1b, MM HZ-9, and MM HZ-15 would ensure that before development occurs within the Project site and vicinity that appropriate soil management plans and DCPs have been developed to address both soil movement and reuse within the Project site and off-site reuse and disposal. Under the mitigation measures, compliance with the requirements of these plans is a condition of development. With the implementation of these mitigation measures, impacts from soil movements within and outside of the entire Project site would be reduced to a less-than-significant level.

Impact HZ-20: Routine Use, Storage, Transportation, and Disposal of Hazardous Materials

Impact HZ-20 **Construction activities associated with the Project would not result in adverse impacts to construction workers, visitors, or the environment from the routine use, storage, transportation, and disposal of hazardous materials. (Less than Significant)** ***[Criterion K.a]***

Construction activities related to the proposed project would require the use and transportation of hazardous materials (e.g., fuels, cement products, lubricants, paints, adhesives, and solvents). In addition, construction vehicles would be used on-site that could accidentally release hazardous materials such as oils, grease or fuels. These hazardous materials and vehicles would remain on the Project site during the period of construction activities. Accidental releases of hazardous materials during demolition and construction activities could impact soil and/or groundwater quality, which could result in adverse health effects to construction workers, the public, and the environment. However, the contractor's compliance with requirements related to DPH's HMUPA certificate of storage for hazardous materials during construction would reduce these potential impacts related to inadvertent release of hazardous materials to less-than-significant levels. In addition, the Project contractors would be required to comply with the requirements of Article 4.1 of the San Francisco Public Works Code, which requires preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) (described in the Hydrology and Water Quality section), which would further reduce potential impacts related to inadvertent release of hazardous materials during construction.

Compliance with the SWPPP and HMUPA requirements would ensure that potential releases from the transport and use or disposal of hazardous materials during project construction activities would be reduced to a less-than-significant level. No mitigation is required.

Operational Impacts

After Project development and occupancy, operation of infrastructure and land uses could involve the use of products that could contain hazardous materials. In addition, maintenance activities could disturb site soils that contain hazardous materials.

Impact HZ-21: Routine Maintenance of Properties

Impact of Candlestick Point

Impact HZ-21a **Implementation of the Project at Candlestick Point would not result in adverse impacts to residents, visitors, or the environment from periodic maintenance requiring excavation of site soils to maintain or replace utilities, repair foundations, or make other subsurface repairs. (Less than Significant with Mitigation)** ***[Criteria K.b and K.d]***

After Project occupancy, it is likely that the City or others would from time to time need to excavate site soils to maintain or replace utilities, repair foundations, or make other subsurface repairs. Prior to occupancy, sites for which soil remediation would be necessary would either be remediated by excavation, in-situ treatment, or capping with impervious surfaces or pavement. Deed restrictions and covenants would indicate the depths to which clean fill has been placed. Therefore, contact with unremediated soil by construction workers, or inhalation of soils by workers or the public, would not be expected to pose a substantial human health risk. However, the restrictive covenants and any incorporated implementation documents would dictate the circumstances under which regulatory oversight agencies would allow work in unremediated soil and the conditions that would be attached to such work. In addition, implementation of mitigation measures MM HZ-1a, MM HZ-2a.1, and MM HZ-2a.2 would ensure risks to human health and the environment would be reduced to a less-than-significant level.

Impact of Hunters Point Shipyard Phase II

Impact HZ-21b **Implementation of the Project at HPS Phase II would not result in adverse impacts to residents, visitors, or the environment from periodic maintenance requiring excavation of site soils to maintain or replace utilities, repair foundations, or make other subsurface repairs. (Less than Significant with Mitigation)** ***[Criteria K.b and K.d]***

During occupancy, it is likely that the City or others would from time to time need to excavate site soils to maintain or replace utilities, repair foundations, or make other subsurface repairs. Prior to occupancy, sites for which soil remediation would be necessary would either be remediated by excavation, in-situ treatment, or capping with impervious surfaces or pavement. Deed restrictions and covenants would indicate the depths to which clean fill has been placed. Therefore, contact with unremediated soil by construction workers, or inhalation of soils by workers or the public, is not expected to pose a substantial human health risk. However, the restrictive covenants and any incorporated implementation documents would dictate the circumstances under which regulatory oversight agencies would allow work in unremediated soil and the conditions that would be attached to such work. This would ensure risks to human populations are minimized.

The proposed 300-slip marina along the east shoreline of HPS Phase II, north of the Gun Mole Pier would require creation of a 34-acre basin. The current water depths of the proposed basin are adequate for recreation craft. The basins would not require initial dredging, but maintenance dredging would be required in the future. The proposed marina is in Parcel F, adjacent to Parcel C; however, this area is not identified as an investigation/remediation subarea in which sediments are known to be contaminated

Implementation of mitigation measures MM HZ-1b, MM HZ-2a.1, MM HZ-2a.2, MM HZ-9, and MM HZ-12 would require compliance with restrictions set forth in ICs, transfer documents, and the AOC and requiring the preparation and implementation of a unknown contaminant contingency plan and HASP would ensure that impacts during occupancy from these routine maintenance activities would be reduced to a less-than-significant level.

Combined Impact of Candlestick Point and Hunters Point Shipyard Phase II

Impact HZ-21 **Implementation of the Project would not result in adverse impacts to residents, visitors, or the environment from periodic maintenance requiring excavation of site soils to maintain or replace utilities, repair foundations, or make other subsurface repairs. (Less than Significant with Mitigation)** ***[Criteria K.b and K.d]***

During occupancy, it is likely that the City or others would from time to time need to excavate site soils to maintain or replace utilities, repair foundations, or make other subsurface repairs. Prior to occupancy, sites for which soil remediation would be necessary would either be remediated by excavation, in-situ treatment, or capping with impervious surfaces or pavement. Deed restrictions and covenants would indicate the depths to which clean fill has been placed. Therefore, contact with unremediated soil by construction workers, or inhalation of soils by workers or the public, is not expected to pose a substantial human health risk. However, implementation of mitigation measures MM HZ-1a, MM HZ-1b, MM HZ-2a.1, MM HZ-2a.2, MM HZ-9, and MM HZ-12 would require compliance existing regulations and restrictions set forth in ICs, transfer documents, and the AOC and requiring the preparation and implementation of a soil management contingency plan and HASP would ensure that impacts during occupancy from these routine maintenance activities would be reduced to a less-than-significant level.

Impact HZ-22: Routine Use, Storage, Transport, or Disposal of Hazardous Materials

Impact HZ-22 **Implementation of the Project would not result in a significant impact involving the routine use, storage, transportation, and disposal of hazardous materials. (Less than Significant)** ***[Criterion K.a]***

Nearly all Project uses would involve the presence of hazardous materials (or products containing hazardous materials) at varying levels, and this would represent an increase in hazardous materials use compared to existing conditions. It would also increase the number people who could be exposed to potential health and safety risks associated with routine use. The following summarizes the general types of hazardous materials that would be expected in the Project, based on the proposed land use designations.

Households and certain businesses (e.g., retail stores, restaurants, hotel, entertainment venues, artists studios, office-based commercial businesses) would use relatively small quantities of hazardous materials. Typical products containing hazardous materials would consist mostly of household-type cleaning products as well as maintenance products (e.g., paints, solvents, cleaning products), fuels and other petroleum products, refrigerants associated with building mechanical and heating, ventilation and air conditioning (HVAC) systems, and some media used by artists. Grounds and landscape maintenance within the development area could also use a wide variety of commercial products formulated with hazardous materials, including fuels, cleaners and degreasers, solvents, paints, lubricants, adhesives, sealers, and pesticides/herbicides. Under the proposed stadium option, a similar range of maintenance products containing hazardous materials would routinely be used.

If cooling towers are used as part of stadium operations in conjunction with an air conditioning system, they may involve the use of a few chemicals to inhibit rust or corrosion in the storage units. However, the types and amounts would be limited, and their use would be subject to established laws and regulations.

The proposed R&D land uses are likely to include businesses and facilities supporting "green" technologies, in which some laboratory-based activities would be reasonably anticipated. Some R&D operations could involve "dry" laboratories (or operations), where relatively small or negligible quantities of hazardous materials would be used because the space would typically be used for office-based research, software development, and so on. In those cases, the types of hazardous materials would be limited to such items as cleaning and maintenance materials, and office products such as adhesives and glues. "Wet" research lab functions, on the other hand, could involve a broad spectrum of activities involving hazardous materials, which would be used in controlled environments (e.g., fume hoods and special rooms). The types and volumes of hazardous materials that would be used in wet research is difficult to predict because the specific businesses that could operate R&D facilities are not known, and because hazardous materials use is subject to continuous change as technologies evolve and as businesses change. However, it is reasonably foreseeable that hazardous materials would be used routinely. R&D businesses would be subject to more intense regulation and oversight than businesses (and households) that handle smaller quantities of more common materials. Employees performing wet laboratory work would be required (by law) to receive specific training, which is intended to protect the workplace as well as to minimize the potential for spills or inadvertent releases that could adversely affect the environment through air emissions or releases to sewers, storm drains, or land.

Additionally, the types of hazardous materials that are typically used at marinas include fuel, oil, and maintenance products for boats. Therefore, underground fuel storage tanks and waste oil drums could be present at the Project site during operation of the marina.

If medical-related establishments (i.e., doctor/dentist offices, medical laboratories, or pharmacies) operate within the commercial areas of the Project site, small amounts of laboratory-type chemicals, compressed gases, pharmaceuticals, and radiological materials would be used and stored. Medical, biohazardous, and low-level radioactive wastes would be produced from these activities.

Wherever hazardous materials are used or stored, there is the potential for human exposure, and, under certain conditions, potential releases to the environment. In each situation, the potential hazards and the

risks they would pose to people or the environment would depend on what materials would be used, where the materials would be used and stored, how they would be used, and who would use them. The routes through which these individuals could be exposed include inhalation, ingestion, dermal (skin and eye) contact, and other accidents.

For the Project, there are no large-scale manufacturing or processing facilities proposed that would store and use large quantities of hazardous materials that would present a substantial risk to people. However, there would be numerous locations where smaller quantities of hazardous materials would be present. The potential risks associated with hazardous materials handling and storage would generally be limited to the immediate area where the materials would be located, because this is where exposure would be most likely. For this reason, the individuals most at risk would be employees or others in the immediate vicinity of the hazardous materials, rather than residents or visitors. For the most part, the health and safety procedures that protect workers and other individuals in the immediate vicinity of hazardous materials would also protect the adjacent community and environment. The pathways through which the community or the environment (e.g., local air quality and biota) could be exposed to hazardous materials include air emissions, transport of hazardous materials to or from the site, waste disposal, human contact, and accidents. However, the only primary potential pathway for public exposure to hazardous materials would be airborne emissions under normal operations or upset conditions, such as those caused by diesel particular matter, toxic air contaminants, or traffic-related PM2.5 emissions. These impacts are addressed in Section III.H in Impact AQ-2a, Impact AQ-2b, Impact AQ-2c, Impact AQ-2, Impact AQ-6, and Impact AQ-7.

Hazardous materials would routinely be transported to, from, and within the Project, and small amounts of hazardous waste would be removed and transported off site to licensed disposal facilities. The precise increase in the amount of hazardous materials transported to or from the Project site as a result of implementation of the Project cannot be definitively predicted due to the pending selection of tenants for the future retail-commercial stores. But it is reasonable to assume with the addition of new land uses involving hazardous materials use, there would be an increase in transportation relative to current conditions. Such transportation would be provided by vendors licensed for such transport, and appropriate documentation for all hazardous materials and wastes would be required for compliance with the existing hazardous materials regulations.

As indicated in the Regulatory Framework, there is an established, comprehensive framework independent of the CEQA process, which is intended to reduce the risks associated with hazardous materials use (and generation of hazardous waste). The San Francisco Department of Public Health (DPH), Hazardous Materials Unified Program Agency (HMUPA) has been granted authority by the State to enforce most regulations pertaining to hazardous materials in the City, including permitting for hazardous materials storage, underground storage tanks, and hazardous waste generation under the DPH Certificate of Registration Program.

Facilities where hazardous materials would be used during Project operation would be constructed in accordance with current laws and regulations, which require storage that minimizes exposure to people or the environment, and the potential for inadvertent releases. In addition, these materials would be labeled to inform users of potential risks and to instruct them in appropriate storage, handling, and disposal procedures. Employers are required by law (Cal/OSHA) to ensure employee safety by properly

identifying hazardous materials and adequately training workers. The use of hazardous materials and generation of wastes would continue to be regulated under the authority of the DPH HMUPA under a compliance certificate, with additional oversight by other agencies (RHB, CDHS). Transporters of hazardous materials and wastes are required to comply with federal laws and regulations that are monitored and enforced by the CHP.

SFDPH HMUPA would continue to conduct periodic inspections to ensure that hazardous materials and wastes are being used and stored properly. For these reasons, hazardous materials uses and waste generation for project operations would not pose a substantial public health or safety hazard to the surrounding area. Impacts from the routine transport, use or disposal of hazardous materials (including radiological, hazardous and medical wastes) from operation of the proposed project would therefore be less than significant. No mitigation is required.

Impact HZ-23: Exposure to Hazardous Materials Via Upset and Accident Conditions

Impact HZ-23 **Implementation of the Project would not pose a human health risk and/or result in an adverse effect on the environment from reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. (Less than Significant)** ***[Criterion K.a]***

Potential hazards from routine use, storage, transport, or disposal of hazardous materials are addressed in Impact HZ-22, above. Therefore, the following discussion focuses on risks to the public from exposure to accidental releases of hazardous materials through reasonably foreseeable upset and accident conditions during operation of the Project.

With increased routine use of hazardous materials compared to existing conditions, exposure of future occupants, visitors, and employees to hazardous materials could occur by improper handling or use of hazardous materials or hazardous wastes during operation of the Project, particularly by untrained personnel, environmentally unsound disposal methods, or fire, explosion, or other emergencies, all of which could result in adverse health effects. Accidents involving the transportation of hazardous materials to, from, or within the Project could also occur.

In general, the types and amounts of hazardous materials would not pose any greater risk of upset or accident compared to other similar development elsewhere in the City. No industrial manufacturing or processing activities using large amounts of hazardous materials or acutely hazardous materials, which typically pose a greater accident or upset risk, are proposed. Major hazardous materials accidents associated with retail-commercial uses, including restaurants, theaters, and stores are extremely infrequent. Moreover, as described in Impact HZ-22, releases, if any, present a greater, although manageable, risk to immediately exposed individuals rather than the population at large. The San Francisco Fire Department (SFFD) responds to hazardous materials incidents within the City, and additional emergency response capabilities are not anticipated to be necessary to respond to the potential incremental increase in the number of incidents that could result from operation of the Project.

Potential impacts from upset and accident conditions involving the release of hazardous materials and wastes would also be less than significant, because the project would be required to comply with DPH

requirements for hazardous materials and waste management, which are described in Impact HZ-22, above. This includes preparation of required emergency response plans for facilities subject to HMBP requirements and permitting for hazardous materials storage, underground storage tanks, and hazardous waste generation under the DPH Certificate of Registration Program.

As described in the Section III.K.3 and as summarized in Impact HZ-22, the transportation of hazardous materials is required to comply with federal and state laws and regulations. These regulations identify proper labeling and packaging, transfer, and documentation requirements. State law prescribes requirements for through-transport of hazardous materials on roadways under state control.

There is a comprehensive and ongoing hazardous materials emergency response program in the city. San Francisco has an Emergency Response Plan (ERP) that was developed to ensure allocation of and coordination of resources in the event of an emergency in the City and County of San Francisco. The ERP describes at a high level what the City's actions will be during an emergency response.[335] A separate Hazard Mitigation Plan (HMP) assesses risks posed by natural and human-caused hazards and set forth a mitigation strategy for reducing the City's risks.[336] The specific departmental responsibilities for responding to hazardous materials incidents in the City are outlined in the "Emergency Support Function #10 Oil and Hazardous Materials Response Annex" to the ERP.[337] San Francisco Fire Department (SFFD) is the first responder in responding to hazardous materials emergencies for the city and county. This is less than significant. No mitigation is required.

Impact HZ-24: Facilities with Hazardous Air Emissions within One-Quarter Mile of a School

Impact HZ-24 **Areas designated for research and development uses within HPS Phase II would not pose a human health risk as a result of hazardous air emissions within one-quarter mile of a school. (Less than Significant with Mitigation)** ***[Criterion K.c]***

Impact AQ-6 in Section III.H, evaluates toxic air contaminant (TAC) emissions associated with R&D uses in HPS Phase II. The impact is summarized here as it relates to proximity to schools within one-quarter mile of the HPS Phase II site (Muhammad University of Islam). The reader is referred to Section III.I for detailed information about assumptions and analysis results.

335 City and County of San Francisco, Emergency Response Plan, an Element of the CCSF Emergency Management Program, April 2008. A copy of this document is on file for public review at the San Francisco Redevelopment Agency, One South Van Ness Avenue, Fifth Floor as part of File No. ER06.05.07, or at the Planning Department, 1650 Mission Street, Fourth Floor, San Francisco, CA, 94103 as part of File No. 2007.0946E.

336 City and County of San Francisco, Emergency Response Plan, Emergency Support Function #10 Oil and Hazardous Materials Response Annex. A copy of this document is on file for public review at the San Francisco Redevelopment Agency, One South Van Ness Avenue, Fifth Floor as part of File No. ER06.05.07, or at the Planning Department, 1650 Mission Street, Fourth Floor, San Francisco, CA, 94103 as part of File No. 2007.0946E.

337 City and County of San Francisco, Emergency Response Plan, an Element of the CCSF Emergency Management Program, April 2008. A copy of this document is on file for public review at the San Francisco Redevelopment Agency, One South Van Ness Avenue, Fifth Floor as part of File No. ER06.05.07, or at the Planning Department, 1650 Mission Street, Fourth Floor, San Francisco, CA, 94103 as part of File No. 2007.0946E.

For the purposes of the analysis in Impact AQ-6, a conservative scenario of potential TAC emissions from each potential future source of TACs was modeled to estimate the potential health impact on residential receptor locations within HPS Phase II. It was assumed that each allowable location for TAC emissions would emit chemicals at the maximum allowable rate, when, in fact, the TAC emissions at some of these locations within the R&D area would be below the maximum rate (for example, office building emissions for TAC would be zero or close to zero). Receptors evaluated in the analysis included (1) receptors on the boundary of each individual TAC emission source spaced 20 meters apart along the boundary ("boundary receptors") and (2) grid receptors placed over surrounding receptor locations, both on site (i.e., within the Project boundaries) and off site, spaced at 50 meters ("grid receptors").

The health risk assessment for R&D uses estimated the excess lifetime cancer risk and chronic noncancer hazard index resulting from the combined TAC emissions from the R&D areas at any surrounding receptor location within HPS Phase II. The estimated excess lifetime cancer risks and hazard indices within areas designated for residential use were found not to exceed the BAAQMD's current significance thresholds for carcinogenic and noncarcinogenic health risks with the Project.

Because BAAQMD's significance thresholds would not be exceeded for the most sensitive use within the Project (residential), the estimated numerical risk values would be further reduced, and thresholds would not be exceeded for off-site locations as well. In addition, mitigation measures MM AQ-6.1 and MM AQ-6.2 identify steps that would be taken to ensure numerical thresholds are not exceeded. Impacts would be less than significant for the MUI school site.

There are no potential sources of operational hazardous air emissions within Candlestick Point that could affect the Bret Harte Elementary School.

Impact HZ-25: Conflict with Airport Land Use Plans

Impact HZ-25 **The Project site is not within the San Francisco Airport Land Use Policy Plan and the Project would not result in a safety hazard for people residing or working in the Project site. (No Impact).** ***[Criterion K.e]***

The Project site is approximately six miles north of the San Francisco International Airport. The Project site is not located within any of the "restricted zones."[338] There would be no impact related to safety hazards for people residing or working in the Project site. No mitigation is required.

Impact HZ-26: Proximity to Private Air Strips

Impact HZ-26 **Implementation of the Project would not occur within the vicinity of a private airstrip and would not result in a safety hazard for people residing or working in the Project site. (No Impact).** ***[Criterion K.f]***

No private airstrips exist in the Project site or vicinity. There would be no impact related to safety hazards for people residing or working in the Project site. No mitigation is required.

[338] City and County Associations of Governments of San Mateo County, San Mateo County Comprehensive Airport Land Use Plan: San Francisco International Airport Land Use Plan, December 1996.

Impact HZ-27: Fire Hazards, Emergency Response, and Evacuation Plans

Impact HZ-27 **Implementation of the Project would not expose people or structures to a significant risk of loss, injury, or death involving fires or conflict with emergency response or evacuation plans. (Less than Significant)** ***[Criteria K.g and K.h]***

Development of the Project would increase numbers of residents and employees in the Project site who, in turn, could result in congestion in the event of an emergency evacuation. San Francisco ensures fire safety primarily through provisions of the *San Francisco Building Code* and *San Francisco Fire Code*. Existing buildings are required to meet standards contained in these codes. In addition, the building plans for any new residential project greater than two units are reviewed by the SFFD and DBI in order to ensure conformance with these provisions. Project buildings and structures would be required to conform to these standards, which (depending on building type) may also include development of an emergency procedure manual and an exit drill plan.

In addition, hazardous materials are required to be stored in designated areas designed to prevent accidental release to the environment. And *Hazardous Materials Management Act* requires that businesses handling or storing certain amounts of hazardous materials prepare a Hazardous Materials Business Plan (HMBP), which includes an inventory of hazardous materials stored on site (above specified quantities), an emergency response plan, and an employee-training program. The information required under the HMBP is available to fire and hazardous materials incident responders. Facilities where hazardous materials would be used during Project operation would be constructed in accordance with current laws and regulations, which require storage that minimizes exposure to people or the environment, and the potential for inadvertent releases that would require emergency response. The use of hazardous materials and generation of wastes would continue to be regulated under the authority of the DPH HMUPA under a compliance certificate, with additional oversight by other agencies (RHB, CDHS). Transporters of hazardous materials and wastes are required to comply with federal laws and regulations that are monitored and enforced by the CHP.

The existing street grid provides ample access for emergency responders and egress for residents and workers, and the Project would neither directly nor indirectly alter that situation to any substantial degree. All new development at would be built to *San Francisco Fire Code* standards, which would help to minimize demand for future fire protection services. All development, including high-rise residential buildings up to forty stories, would meet standards for emergency access, sprinkler and other water systems, and other requirements specified in the *San Francisco Fire Code*. Standards pertaining to equipment access would also be met. Plan review for structures at Candlestick Point for compliance with *San Francisco Fire Code* requirements, to be completed by DBI and the SFFD, would minimize fire-related emergency dispatches, reducing the demand for fire protection services at the Project site. Therefore, the Project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. Finally, for the reasons just set forth, the Project would not directly or indirectly result in any additional exposure of residents or workers to fire risk, as the Project site is in a fully urbanized area that lacks the "urban-wildland interface" that tends to place new development at risk in undeveloped areas of California. The Project would also include expansion of the Auxiliary Water Supply System (AWSS), to provide water for firefighting services. Expansion of the AWSS would make the Project site

more defensible against fire and reduce the need for fire protection services. Therefore, the Project would not expose people or structures to a significant risk of loss, injury, or death involving fires.

Compliance with the *San Francisco Building Code* and *San Francisco Fire Code* through the City's ongoing permit review process would ensure that potential fire hazards related to redevelopment activities (including those associated with hillside development, hydrant water pressure, and emergency access) would be minimized during the permit review process and that future projects would not interfere with an existing emergency response or emergency evacuation plan. Therefore, this impact would be less than significant. No mitigation is required.

Cumulative Impacts

Risks associated with hazardous materials impacts are generally localized and site-specific, with the exception of those resulting from transportation of hazardous materials. Since these risks are generally site-specific, the cumulative context for this analysis varies, depending on the threshold being analyzed. For example, cumulative impacts associated with the transportation of hazardous materials would be analyzed for projects along the transportation route, while the context for the use of hazardous materials would be limited to the area immediately surrounding the Project site. Cumulative impacts associated with the accidental release of hazardous materials into the environment would also be limited to the Project site and the immediately surrounding properties. Cumulative impacts associated with emergency response would be limited to development in the vicinity of emergency access routes. Cumulative impacts associated with air emissions are analyzed in Section III.H.

Routine Transport, Use, and Disposal of Hazardous Materials

The geographic context for the analysis of cumulative impacts related to the routine transport of hazardous materials is the major access routes for the Project, which would include Innes Avenue, Cargo Way, Evans Avenue, Arelious Walker Drive, portions of Jamestown Avenue, and Harney Way. Cumulative development in this geographic area would include all past and present development as generally described in the Setting section of this chapter, representing the baseline conditions for evaluation of cumulative impacts. Reasonably foreseeable development in this area would consist of Executive Park, Jamestown, Hunters View, India Basin Shoreline, and Hunters Point Shipyard Phase I.

The cumulative context for an analysis of impacts related to use and disposal of hazardous materials would include all development in the Project vicinity, defined as the area bounded by US-101 on the west and south, the Islais Creek Channel on the north, and the Bay on the east. Cumulative development in this geographic area would include all past and present development as generally described in the Setting section of this chapter, representing the baseline conditions for evaluation of cumulative impacts. Reasonably foreseeable development in this area would consist of Executive Park, Jamestown, Hunters View, India Basin Shoreline, and Hunters Point Shipyard Phase I.

Cumulative projects could result in generation of hazardous wastes such as asbestos from friable building materials, lead-based paint on building surfaces, and lighting fixtures. In addition, previously unknown contamination, possibly the result of improper disposal or housekeeping activities, may be discovered as structures are demolished. Cumulative development could expose construction workers to health or safety risks through exposure to hazardous materials, although the individual workers potentially affected

would vary from project to project. At the state level, DTSC administers laws and regulations related to hazardous waste and hazardous substances pursuant to Division 20, Chapters 6.5 and 6.8 of the *California Health and Safety Code* and CCR Title 22, which are the state equivalents of RCRA and CERCLA, respectively. The RWQCB enforces laws and regulations governing releases of hazardous substances and petroleum pursuant to pursuant to Division 20, Chapters 6.7, 6.75, and 6.8 of the *California Health and Safety Code* (Sections 25100, 25200 and 25300 et seq.), and the *Porter Cologne Water Quality Control Act* (Division 7, Section 13100 et seq. of the *California Water Code*) and CCR Title 23. In particular, the RWQCB focuses on all petroleum releases and those hazardous substance releases that may impact groundwater or surface water. In addition, the CDPH is responsible for ensuring facilities that use, store, or dispose of radiological materials are properly investigated, decontaminated, and decommissioned or licensed (or properly issued an exemption from such requirements) in accordance with state and federal laws and regulations, including the state Radiation Control Law (*California Health and Safety Code* Section 114960 et seq. and CCR Title 17, Division 1, Chapter 5. These regulations have been in place for many years. Consequently many past projects have and all present and reasonably foreseeable future projects would be required to comply with applicable federal, state, and local regulations. Compliance with applicable regulations and guidelines pertaining to hazardous materials would ensure that cumulative impacts from construction activities would be less than significant.

The Project Description identifies proposed land uses, but the specific businesses or activities that could operate in the Project are not known at this time. The analysis assumes nearly all Project uses would involve the routine use of hazardous materials at varying levels and that there is the potential that such use could result in a release of hazardous materials. In each case, the potential hazards and the risks they would pose to people or the environment would depend on what materials would be used, where the materials would be used and stored, how they would be used, and who would use them. Uses proposed under the Project would include R&D, for which a wide variety of hazardous materials would be used, facilities such as the proposed stadium, where fuels and maintenance products would comprise the majority of hazardous materials, and smaller-scale users, such as artists' studios and households, where only routine household types of chemicals would be used. Medical or dental offices could generate small quantities of medical waste that would be considered biohazardous, such as sharps, and would be required to comply with all code requirements related to disposal of these hazardous materials. No large-quantity waste generators would be developed as part of the Project. The Project would be required to comply with all local, state, and federal regulations pertaining to the use, handling, and disposal of hazardous materials.

Although existing, proposed, and reasonably foreseeable development could have potentially unique hazardous materials considerations, all such existing and potential users have and present and reasonably foreseeable future projects would comply with the range of federal, state, and local statutes and regulations applicable to the use, transport and disposal of hazardous materials, and would be required to comply with existing and future programs of enforcement by the appropriate regulatory agencies. Compliance with these federal, state, and local laws and regulations pertaining to hazardous materials management would be sufficient to minimize health and safety risks, because these laws and regulations have been designed to protect health and safety and are enforced by state and local agencies. For these reasons, potential cumulative impacts resulting from the use, transport, and disposal of hazardous materials would not be significant. Moreover, the Project would comply with all applicable statutes and

regulations, which would ensure that the Project would not result in significant hazards as a result of hazardous materials use, transport, or disposal. Therefore, the Project's cumulative impact would be less than significant.

Reasonably Foreseeable Risk of Upset or Accident

The cumulative context for an analysis of impacts related to risk of upset or accident is the Project vicinity, defined as the area bounded by US-101 on the west and south, the Islais Creek Channel on the north, and the Bay on the east. Cumulative development in this geographic area would include all past and present development as generally described in the Setting section of this chapter, representing the baseline conditions for evaluation of cumulative impacts. Reasonably foreseeable development in this area would consist of Executive Park, Jamestown, Hunters View, India Basin Shoreline, and Hunters Point Shipyard Phase I.

Cumulative development in this geographic area could handle or dispose of hazardous materials in such a way as to pose a risk from upset or accident. It is possible that cumulative development could expose residents and construction workers to contaminated soil or groundwater. There is known soil contamination at HPS, which would be remediated either by the Navy, as discussed above, or by the Project. Additional unknown soil or groundwater contamination could exist in the Project vicinity that could be released by development of the cumulative projects. *San Francisco Health Code* Article 22A, requires an investigation of the potential presence of hazardous wastes that may be present in soil within historic fill areas at construction sites as a prerequisite for certain building requirements. Such upsets or accidents, however, are likely to result in site-specific impacts and would not combine with another upset or accident that may occur on another site.

Hazardous waste may be generated from a site during construction and would need to be transported to a facility permitted to accept such waste. Management of specific hazardous wastes is addressed at the federal, state, and local levels. DTSC is authorized by US EPA to enforce the requirements of the federal RCRA. Under the state's Hazardous Waste Control Law, DTSC has adopted extensive regulations governing the generation, transportation, treatment, and disposal of hazardous wastes, which are more stringent than the requirements of RCRA. The state requirements for hazardous waste management specified in the *California Health and Safety Code*, Chapter 6.5, Article 2. The US DOT regulates hazardous materials transportation, including contaminated soil, between states, as described in Title 49 of the *Code of Federal Regulations*, and implemented by Title 13 of the CCR (California Vehicle Code). The California Highway Patrol and Caltrans are the state agencies with primary responsibility for enforcing federal and state regulations related to transportation within California.

Facilities where hazardous materials are used in the city must be constructed in compliance with current laws and regulations, which require hazardous materials storage that minimizes exposure to people or the environment, and the potential for inadvertent releases. In addition, these materials must be labeled to inform users of potential risks and to instruct them in appropriate storage, handling, and disposal procedures. Employers are required by law (Cal/OSHA) to ensure employee safety by properly identifying hazardous materials and adequately training workers. The use of hazardous materials and generation of wastes would continue to be regulated under the authority of the DPH HMUPA under a compliance certificate, with additional oversight by other agencies (RHB, CDHS). Transporters of

hazardous materials and wastes are required to comply with federal laws and regulations that are monitored and enforced by the CHP. SFDPH HMUPA would continue to conduct periodic inspections throughout the City to ensure that hazardous materials and wastes are being used and stored properly. The City's

It is anticipated that all cumulative development projects would adhere to the applicable federal, state, and local laws and regulations that govern underground storage tanks and pesticide use, as well as requirements applicable to disposal and cleanup of contaminants. All cumulative projects would be required to comply with statutes and regulations pertaining to transport, use, handling, and disposal of hazardous materials, as noted, above. The regulatory schemes described above, however, include requirements for responding to such occurrences and ensuring that no health and safety impacts would result.

Cumulative projects could also affect the demand for hazardous materials emergency response services in the City, depending on the types of hazardous materials that would be handled. The likelihood of emergency incidents is more a function of the types of materials used as opposed to the quantities of materials used. Impacts on emergency services (fire, which includes hazmat response, and police) are analyzed in Section III.P (Public Services). The cumulative impact on emergency services was identified as less than significant.

All projects would be required to comply with applicable statutes and regulations, which would ensure that impacts related to the transport, use, and disposal of hazardous materials, would not be significant. Adherence to these regulations would also minimize the risk of upset or accident related to the handling of hazardous materials. For all of these reasons, potential cumulative impacts from the risk of upset or accident would not be significant. Additionally, mitigation measures for the Project have been included that would reduce the Project's impact related to risk of upset or accident to a less-than-significant level. Mitigation measures also require appropriate remediation of any site contamination. A site-specific investigation would be conducted at locations where contaminated soils or groundwater could occur to minimize the exposure of workers to hazardous substances. The Project would be required to comply with all applicable codes and regulations to minimize or avoid risks from hazardous materials. As a result, the Project's cumulative impact would be less than significant.

Handling of Acutely Hazardous Materials within One-Quarter Mile of School

The geographic context for the analysis of this threshold is one-quarter mile of the schools that could be affected by the Project: the Bret Harte Elementary School and the private Muhammad University of Islam. No new schools are proposed within one-quarter mile of the Project. Development of cumulative projects could result in emissions of hazardous materials within one-quarter mile of these schools. As noted, above, hazardous materials are regulated through numerous codes and regulations, with oversight by various local, state, and federal agencies. These regulations are designed to ensure safety and human health. Risks associated with hazardous materials within one-quarter mile of an existing or proposed school would be eliminated or reduced through the requirements to comply with the handling, disposal practices, and/or cleanup procedures contained in these regulatory programs. Further, the Project's contribution to cumulative toxic air contaminant emissions would not exceed adopted BAAQMD

thresholds (refer to Impact AQ-6 in Section III.H). Therefore, the Project's cumulative impact would be less than significant.

Hazardous Materials Release Sites

The cumulative context for an analysis of impacts related to hazardous materials sites is defined as the area bounded by US-101 on the west and south, the Islais Creek Channel on the north, and the Bay on the east. Cumulative development in this geographic area would include all past and present development as generally described in the Setting section of this chapter, representing the baseline conditions for evaluation of cumulative impacts. Reasonably foreseeable development in this area would consist of Executive Park, Jamestown, Hunters View, India Basin Shoreline, and Hunters Point Shipyard Phase I.

Cumulative development in this geographic area may be located on or near a site included on a list of hazardous materials sites compiled pursuant to *Government Code* Section 65962.5. It is anticipated that future development would comply with applicable laws and regulations pertaining to hazardous wastes, and that risks associated with identified hazardous materials sites would be eliminated or reduced through compliance with the requirements for proper handling, disposal practices, and/or cleanup procedures. In many cases, development applications for projects affected by hazardous materials on identified sites would be denied by the City if adequate cleanup or treatment is not completed or feasible. Accordingly, cumulative impacts on the public or environment associated with development on or near hazardous materials sites would not be significant.

In June 2006, MACTEC conducted a Phase I Environmental Site Assessment (ESA) for Candlestick Point; in March 2009, MACTEC updated the assessment to include the proposed Candlestick Point Center, Alice Griffith housing development, the Jamestown Avenue parcels, and the CPSRA. No releases or areas of recognized environmental conditions were observed or noted during these Phase I assessments. The investigation report noted the presence of fill materials and a number of documented underground storage tanks (USTs) throughout Candlestick Point, some of which have been removed along with associated soil remediation. There may still be unknown USTs within Candlestick Point. No potentially significant impacts from exposure to hazardous materials release sites were identified at the portions of Candlestick Point landward of the 1851 high-tide line (i.e., in bedrock areas and/or areas containing soil deposited by natural means), based on publicly available information. However, because there is a potential that previously unidentified (or unknown) contaminated sites could be encountered during development activities (either within the Project site or at off-site improvement locations), this EIR identifies mitigation measures consistent with applicable federal and state regulatory requirements to prevent those activities from adversely affecting human health and the environment.

As described previously, the historic uses at HPS by both the Navy and its tenants resulted in a number of hazardous materials release sites that are presently undergoing remediation by the Navy under federal law under the supervision of federal and state environmental agencies and in accordance with CERCLA. The Navy and regulatory agencies have determined that none of the areas that are accessible to tenants and visitors is a hazard to current tenants and visitors as determined in the 2008 Finding of Suitability to Lease (FOSL) issued by the Navy. All necessary remedial actions at HPS Phase II required by CERCLA, the FFA, or other applicable law must be completed to the satisfaction of the relevant regulatory agencies, and those agencies must determine that the site is suitable for its intended use, whether those

remedial activities take place before or after the Navy transfers ownership of the property. The mitigation measures set forth in this section require the Project to be consistent with any requirements imposed as part of these remediation programs, and the federal, state, and local laws governing those remediation programs. Mitigation measures for the Project describe the required process if previously unidentified soil or groundwater contamination were encountered during construction or operation of the Project on any portion of the site and would ensure proper remediation in accordance with appropriate guidelines and applicable federal, state, and local laws and regulations. As a result, the Project's cumulative impact would be less than significant.

Impair Implementation of Adopted Emergency Response Plans

The geographic context for emergency response is the City and County of San Francisco. The City has an Emergency Response Plan (ERP) that was developed to ensure allocation of and coordination of resources in the event of an emergency in the City and County of San Francisco. Because the ERP is the planning document for the entire city and county, cumulative Project impacts are considered within that planning context.

The ERP describes at a high level what the City's actions will be during an emergency response. Forthcoming annexes and appendices to this plan will describe in more detail response actions and hazards specific to CCSF. While these additional plans are in development, existing departmental plans and hazard-specific annexes remain in effect. Further, this plan describes the role of the Emergency Operations Center (EOC) and the coordination that occurs between the EOC, City departments, and other response agencies. Finally, this plan describes how the EOC serves as the focal point between federal, state, and local governments in times of disaster.[339] A separate Hazard Mitigation Plan (HMP) assesses risks posed by natural and human-caused hazards and set forth a mitigation strategy for reducing the City's risks. Section 5.2.3.3 of the HMP describes the types, location, and probability of hazardous materials incidents. The HMP reports, a hazardous materials event is most likely to occur within the City's industrial area, and along land and water transportation corridors. Trucks and vessels that use these transportation corridors commonly carry a variety of hazardous materials, including gasoline, other petroleum products, and other chemicals known to cause human health problems. The HMP also notes comprehensive information on the probability and magnitude of a hazardous material event along the transportation corridors is not available. Wide variations among the characteristics of hazardous material sources and among the materials themselves make such an evaluation difficult. However, based on previous occurrences, San Francisco can expect, on average, a hazardous material event every 4 years due to a truck accident and 7 times a year due to a large vessel accident as a result of equipment failure or operator error.[340]

---

[339] City and County of San Francisco, Emergency Response Plan, an Element of the CCSF Emergency Management Program, April 2008. A copy of this document is on file for public review at the San Francisco Redevelopment Agency, One South Van Ness Avenue, Fifth Floor as part of File No. ER06.05.07, or at the Planning Department, 1650 Mission Street, Fourth Floor, San Francisco, CA, 94103 as part of File No. 2007.0946E.

[340] City and County of San Francisco, Emergency Response Plan, Emergency Support Function #10 Oil and Hazardous Materials Response Annex. A copy of this document is on file for public review at the San Francisco Redevelopment Agency, One South Van Ness Avenue, Fifth Floor as part of File No. ER06.05.07, or at the Planning Department, 1650 Mission Street, Fourth Floor, San Francisco, CA, 94103 as part of File No. 2007.0946E.

The specific departmental responsibilities for responding to hazardous materials incidents in the City are outlined in the "Emergency Support Function #10 Oil and Hazardous Materials Response Annex" to the ERP.[341] San Francisco Fire Department (SFFD) is the first responder in responding to hazardous materials emergencies for the city and county.

San Francisco ensures fire safety primarily through provisions of the *San Francisco Building Code* and *San Francisco Fire Code*. Many existing buildings are required to meet standards contained in these codes. In addition, the building plans for any new residential project greater than two units are reviewed by the SFFD and DBI in order to ensure conformance with these provisions. All new development would be built to *San Francisco Fire Code* standards and required to meet standards for emergency access, sprinkler and other water systems, and other requirements specified in the *San Francisco Fire Code*. Project buildings and structures would be required to conform to these standards, which (depending on building type) may also include development of an emergency procedure manual and an exit drill plan. Plan review for structures at Candlestick Point for compliance with *San Francisco Fire Code* requirements, to be completed by DBI and the SFFD, would minimize fire-related hazardous materials emergency dispatches, reducing the demand for fire protection services at the Project site. Therefore, the Project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. Finally, for the reasons set forth above, neither the Project nor other cumulative development would directly or indirectly result in any additional exposure of residents or workers to fire risk, as the Project site and the surrounding area are fully urbanized and lack the "urban-wildland interface" that tends to place new development at risk in undeveloped areas of California. The Project would also include expansion of the Auxiliary Water Supply System (AWSS), to provide water for firefighting services. Expansion of the AWSS would make the Project site more defensible against fire and reduce the need for fire protection services. Compliance with the *San Francisco Building Code* and *San Francisco Fire Code* through the City's ongoing permit review process would ensure that potential fire hazards related to redevelopment activities (including those associated with hillside development, hydrant water pressure, and emergency access) would be minimized during the permit review process and that future projects would not interfere with an existing emergency response or emergency evacuation plan. Therefore, because all cumulative development would be required to comply with applicable codes that would ensure effective implementation of the City's existing emergency plans, the Project's cumulative impact would be less than significant.

[341] City and County of San Francisco, Emergency Response Plan, an Element of the CCSF Emergency Management Program, April 2008. A copy of this document is on file for public review at the San Francisco Redevelopment Agency, One South Van Ness Avenue, Fifth Floor as part of File No. ER06.05.07, or at the Planning Department, 1650 Mission Street, Fourth Floor, San Francisco, CA, 94103 as part of File No. 2007.0946E.