CHAPTER II Project Description

II.A PROJECT OVERVIEW

The Candlestick Point–Hunters Point Shipyard Phase II Development Plan Project (Project) is located on approximately 702-acre area east of US-101 in the southeast area of the City and County of San Francisco (City). It occupies the waterfront area from south of India Basin to Candlestick Cove. Figure II-1 (Project Location) illustrates the regional location of the Project and the location of the Project within the City.

The Project proposed by Lennar Urban includes a mixed-use community with a wide range of residential, retail, office, research and development, civic and community uses, and parks and recreational open space. A major component would be a new stadium for the San Francisco 49ers National Football League (NFL) team. Additionally, new transportation and utility infrastructure would serve the Project including a bridge across Yosemite Slough. The description of the Project is organized under two major sub-components: Candlestick Point (CP) and Hunters Point Shipyard Phase II (HPS Phase II).

II.B PROJECT LOCATION

II.B.1 Regional Location

Candlestick Point and HPS Phase II are located on approximately 702 acres in the southeastern portion of San Francisco; taken together, they are bordered by major features such as India Basin on the north; the Executive Park area and San Mateo County line on the south; Bayview Hill, the BVHP neighborhood, Yosemite Slough, and Hunters Point Hill on the west; and San Francisco Bay on the north and the east. Figure II-2 (Project Site and Context) illustrates the Project boundaries. Table II-1 (Project Site Areas) presents the acreage of the Project site.

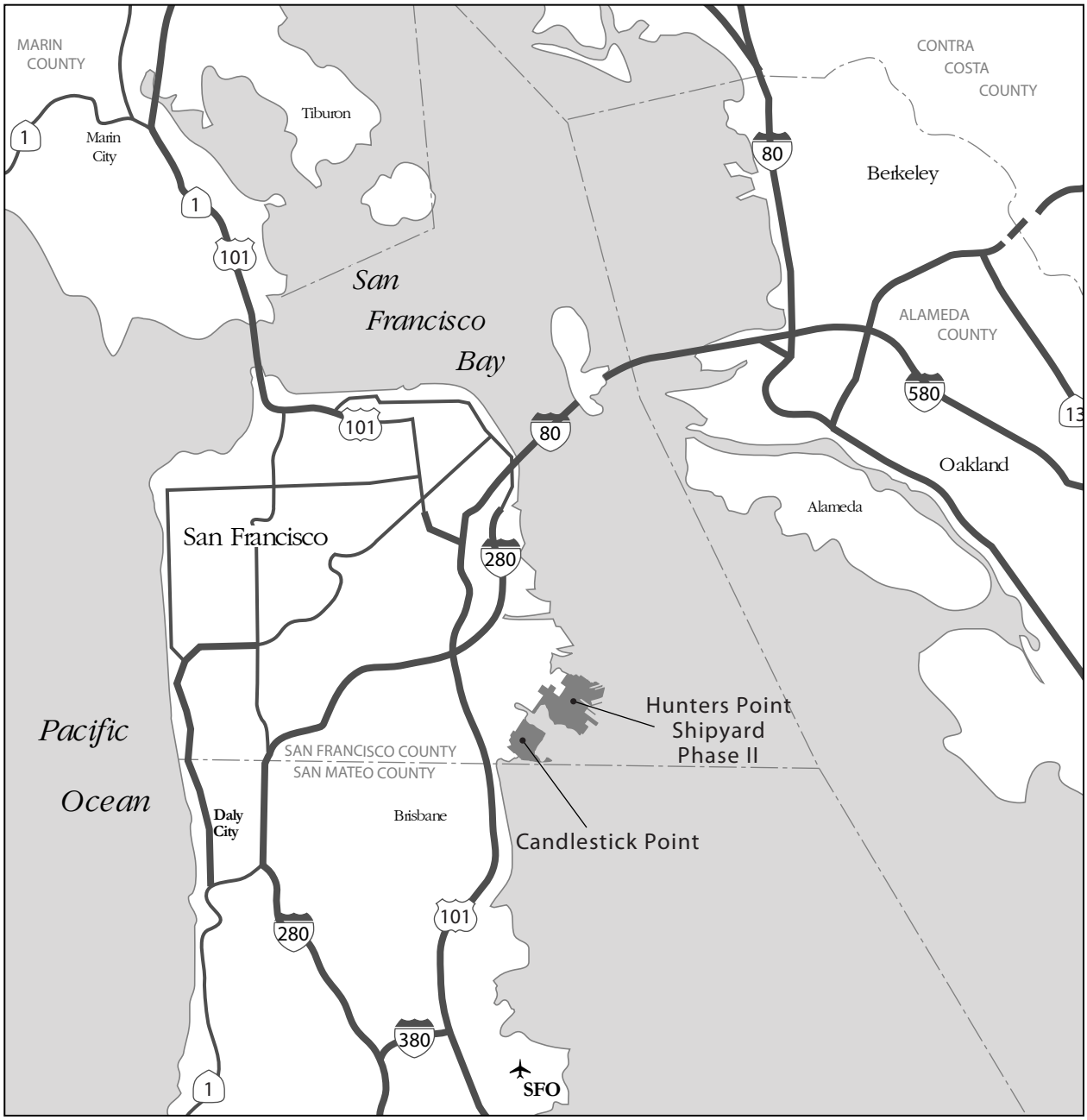
Table II-1 Project Site Areas

Development Area	*Acres*
Candlestick Point	281
Hunters Point Shipyard Phase II	421
Total	***702***

SOURCE: Lennar Urban, 2009.
Candlestick Point includes the approximately 120.2 Candlestick Point State Recreation Area.

II.B.2 Candlestick Point

Candlestick Point is immediately east of Executive Park, with the BVHP neighborhood to the north, HPS Phase II to the northeast, and the Candlestick Point State Recreation Area (CPSRA) along the Bay frontage generally to the east, as shown in Figure II-2. Candlestick Point is generally bounded by Hawes



SOURCE: Clement Designs, 2008.

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Candlestick Point — Hunters Point Shipyard Phase II EIR

FIGURE II-1

PROJECT LOCATION

SOURCE: San Francisco Redevelopment Agency, Lennar Urban, 2009.

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FIGURE II-2 Candlestick Point — Hunters Point Shipyard Phase II EIR

PROJECT SITE AND CONTEXT

Street to the northwest and Harney Way to the southwest, and the Candlestick Cove and South Basin areas of the Bay area to the south and east, respectively.

II.B.3 Hunters Point Shipyard Phase II

HPS Phase II is located to the southeast of the Bayview Hunters Point (BVHP) neighborhood. As shown in Figure II-2, the HPS Phase II portion of the Project site is generally bounded by San Francisco Bay to the north, east, and south. The south end of the western boundary extends from Yosemite Slough along Arelious Walker Drive to approximately Crisp Road[15] where the boundary is adjacent to the HPS Phase I site. The northernmost end of HPS Phase II is contiguous with Earl Street.

II.C PROJECT SETTING

II.C.1 Candlestick Point

The Candlestick Point portion of the Project site comprises approximately 281 acres. Current land uses in Candlestick Point include Candlestick Park stadium, owned by the City and County of San Francisco and leased by the San Francisco 49ers, and associated parking lots and access roadways. The stadium and parking lot areas immediately surrounding the stadium are under the jurisdiction of the San Francisco Recreation and Park Department. Additional parking is provided on adjacent CPSRA. Candlestick Point also includes the Alice Griffith public housing site (refer to Figure II-2).

The Project site includes several privately owned parcels near Gilman Avenue and Arelious Walker Drive, north of the stadium, and on Jamestown Avenue. The area is primarily vacant and used for stadium parking. A recreational vehicle park occupies a portion of the site on Gilman Avenue. Approximately 1 acre along Harney Way is also included in the Project.

Approximately 120 acres of the 154-acre CPSRA are also included within this portion of the Project site; the CPSRA forms the south and east shoreline boundary. On the southern portion of the CPSRA, existing improvements to the CPSRA include plantings, pathways, a beach, fishing piers, picnic areas, parking, and restrooms. The remaining CPSRA area includes gravel lots used as parking for the 49ers on game day, piles of rubble and debris, and unimproved areas. Some of the rubble and debris has been ground up and used for trails. Refer to Section III.P (Recreation) for a detailed description of the existing conditions at the CPSRA.

II.C.2 Hunters Point Shipyard Phase II

HPS Phase II comprises 421 acres (dry land) on Navy Parcels A, B, C, D, E, and G, as described in the Introduction.

[15] Background documents relevant to this Project variously use the term Crisp Road or Crisp Avenue; irrespective of the use of Road or Avenue, the text and/or graphics are referring to that section of road that travels from Revere Avenue to Spear Avenue.

HPS Phase II currently contains many structures associated with ship repair, piers, dry-docks, ancillary storage, administrative, and other former Navy uses, largely from the World War II era. Most structures are vacant. Several former Navy buildings are currently leased and occupied. Current tenants at HPS Phase II include approximately 300 artists located in studios on Parcels A and B, and a San Francisco Police Department (SFPD) facility on Parcel D-1 in Building 606. The artists on Parcel B are located in Buildings 103, 104, 115, 116, 117, and 125, and the artists on Parcel A are located in Buildings 101 and 110. The artists' work includes painting, sculpting, ceramics, and photography. Twice a year the artist community hosts an "Open Studios" for the general public to both view and purchase artwork.[16]

II.D PROJECT OBJECTIVES

Project objectives are identified to both describe the underlying purpose of the Project and to guide the selection of potential Project alternatives. CEQA Guidelines Section 15126.6(a) requires that an EIR "describe a reasonable range of alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives but would avoid or substantially lessen any of the significant effects of the project." Typically, project objectives represent a combination of both the Lead Agency and the developer's intent and purpose in moving forward with the project.

In May 2007, the Board of Supervisors and the Mayor approved a resolution endorsing a Conceptual Framework for the integrated planning of both Hunters Point Shipyard and Candlestick Point. The Conceptual Framework was the result of a long planning process undertaken by the City and County of San Francisco, acting by and through the Mayor's Office of Economic and Workforce Development, the Redevelopment Agency of the City and County of San Francisco, and Lennar Urban.

The City's overarching goal for the Project is to revitalize the BVHP community by providing increased business and employment opportunities; housing options at a range of affordability levels; improved public recreation and open space amenities; an integrated transportation, transit, and infrastructure plan; and other economic and public benefits, all of which would collectively have no net negative impact on the City's General Fund.

Subsequently, and in response to the Conceptual Framework, the San Francisco voters approved Proposition G in June 2008, which is called the Bayview Jobs, Parks, and Housing Initiative ("the Initiative"). Proposition G repealed Proposition F, which had established a special use district for the Project site; instead, Proposition G proposed that new zoning be established along with a land use program (included as Appendix B [Proposition G] to this EIR). The Initiative states that the Project must be consistent with the following objectives, which are also identified in this EIR as the Project's objectives:

1. The integrated development should produce tangible community benefits for the Bayview and the City, and in so doing should:
   - Improve the CPSRA to enhance public access to the waterfront and enjoyment of the Bay.
   - Create new public recreational and public open spaces in the CP-HPS Development Plan.

[16] The Point, America's Largest Artist Colony Website. http://www.thepointart.com (accessed July 18, 2009).

- Preserve the shoreline of the CP-HPS Development Plan site primarily for public park and public open space uses, including an extension of the Bay Trail along the waterfront.
- Create a range of job and economic development opportunities for local, economically disadvantaged individuals and business enterprises, particularly for residents and businesses located in the Bayview.
- Provide neighborhood-serving retail.
- Subsidize the creation of permanent space in the Shipyard for the existing artists.
- Transform the contaminated portions of the Shipyard Property into economically productive uses or public open space, as appropriate.
- Implement the CP-HPS Development Plan with public benefits, whether or not the 49ers decide to remain in San Francisco, including developing alternate uses for the stadium site on the Shipyard Property that are consistent with the overall CP-HPS Development Plan objectives.

2. The integrated development should re-connect Candlestick Point and the Hunters Point Shipyard site with the larger BVHP neighborhood and should maintain the character of the Bayview for its existing residents, and in so doing should:
   - Foster the creation of strong commercial, institutional, cultural and urban design ties between the development on Candlestick Point and the Hunters Point Shipyard and the Bayview in particular and the City in general.
   - Provide automobile, public transportation, and pedestrian connections between the Shipyard, Candlestick Point, and the larger BVHP neighborhood.
   - Create substantial affordable housing, jobs, and commercial opportunities for existing Bayview residents and businesses.
3. The integrated development should include substantial new housing in a mix of rental and for-sale units, both affordable and market-rate, and encourages the rebuilding of Alice Griffith Housing, and in so doing should:
   - Provide new affordable housing that is targeted to the lower income levels of the Bayview population, including new units that are suitable for families, seniors, and young adults.
   - Include housing at levels dense enough to create a distinctive urban form and at levels sufficient to make the CP-HPS Development Plan financially viable; attract and sustain neighborhood retail services and cultural amenities; create an appealing walkable urban environment served by transit; help pay for transportation and other infrastructure improvements; and achieve economic and public benefits for the Bayview in particular and the City generally.
   - Upon consultation with Alice Griffith Housing residents and the receipt of all required governmental approvals, rebuild Alice Griffith Housing to provide one-for-one replacement units targeted to the same income levels as those of the existing residents and ensure that eligible Alice Griffith Housing residents have the opportunity to move to the new, upgraded units directly from their existing Alice Griffith Housing units without having to relocate to any other area.
   - Include a mix of stacked flats, attached townhomes and—in appropriately selected locations—low-rise, mid-rise, and high-rise towers, to help assure the economic feasibility of the development and provide a varied urban form.

4. The integrated development should incorporate environmental sustainability concepts and practices, and in so doing should:
   - Apply sustainability principles in the design and development of public open spaces, recreation facilities, and infrastructure including wastewater, storm water, utility, and transportation systems.
   - Incorporate green building construction practices.
   - Include energy efficiency and the use of renewable energy.
   - Encourage green development projects, such as green office, research and development, or industrial projects, including a green technology, biotechnology, or digital media campus.
5. The integrated development should encourage the 49ers—an important source of civic pride—to remain in San Francisco by providing a world-class site for a new waterfront stadium and necessary infrastructure, and in so doing should:
   - Provide the parking necessary to operate the stadium.
   - Provide the necessary transportation infrastructure, including automobile, public transit and pedestrian connections between Candlestick Point, Hunters Point Shipyard, and the larger BVHP neighborhood, to facilitate the efficient handling of game day traffic.
6. The integrated development should be fiscally prudent, with or without a new stadium, and in so doing should:
   - Minimize any adverse impact on the General Fund relating to the development of the Project Site by relying to the extent feasible on the development to be self-sufficient.
   - Encourage substantial private capital investment.

II.E PROJECT CHARACTERISTICS

This section describes the Project's development characteristics. In summary, the Project proposes development of 10,500 residential units with an associated population of 24,465 residents; 885,000 gsf of retail; 150,000 gsf of office; 2.5 million gsf of Research & Development (R&D) uses; a 220-room, 150,000-gsf hotel; 255,000 gsf of artist studio space and an arts center; 100,000 gsf of community services; 240 acres of new parks, sports fields, and waterfront recreation areas, as well as 97 acres of new and improved State parkland; a 69,000-seat 49ers stadium; and a 10,000-seat performance arena. The permanent employee population associated with the Project would be 10,730.

In addition, a 300-slip marina would be provided. Shoreline improvements would also be provided to stabilize the shoreline. The Project would include structured and on-street parking and various infrastructure improvements to support the development.

Table II-2 (Existing and Proposed Uses) identifies the existing and proposed land uses on the Project site, while Table II-3 (Proposed Land Use) provides detailed information about the specific land uses at each of the Candlestick Park and Hunters Point Shipyard Phase II sites.

II.E.1 Land Use Plan

The Project would consist of nine districts: five in Candlestick Point and four in HPS Phase II (refer to Figure II-3 [Proposed Districts]).[17] A variety of land uses are proposed. Table II-3 presents the overall land use distribution and Figure II-4 (Proposed Land Use Plan) illustrates the land use plan. Figure II-5 (Proposed Maximum Building Heights) identifies the maximum height that could be constructed. The maximum heights are intentionally high to provide a conservative (worst-case) scenario

Table II-2 Existing and Proposed Uses

	Existing Uses	*Existing Uses to Be Retained*	*Proposed Uses*	*Total*
Residential (units)				
Public Housing	256	256[a]	0	256
Market-rate	0	0	7,155	7,155
Affordable and below-market	0	0	3,089	3,089
Subtotal Residential	*256*	*256*	*10,244*	*10,500*
Nonresidential				
Retail (gsf)	0	0	885,000	885,000
Office (gsf)	13,500[b]	0	150,000	150,000
Research & Development (gsf)	0	0	2,500,000	2,500,000
Hotel (gsf)	0	0	150,000	150,000
Artists' Studios/Art Center[c]	225,000[c]	225,000	30,000	255,000
Community Services (gsf)	0	0	100,000	100,000
Subtotal Nonresidential	*238,500*	*225,000*	*3,815,000*	*4,040,000*
Performance Venue/Arena (gsf)	0	0	75,000	75,000
Football Stadium (seats)	70,207	0	69,000	Approximately the same
Parks and Open Space (acres)				
State Parkland (acres)	120.2	91.0	5.7	96.7
Dual-Use Parking/Parks[d] (acres)	0	0	91.6	91.6
Parks and Open Space (acres)	0	0	148.1	148.1
Subtotal Parks and Open Space	*120.2*	*91.0*	*245.4*	*336.4*

SOURCE: Lennar, 2009

a. The Project would replace these units.
b. The SFPD leases space on Parcel D-1 in Building 606 as a crime laboratory. Available at: http://www.sfgov.org/site/police_index.asp?id=21356. Building 606 would be demolished.
c. Approximately 300 artists have studios on HPS Phase II. The Project would retain these uses, with approximately 225,000 gsf of new and renovated artists' studios and 30,000 gsf art center uses.
d. Approximately 59.7 acres of the 91.6 acres would be dual-use sports field complex and multi-use lawn as well as stadium parking for 12 game days and 20 other stadium events.

[17] The boundaries of "districts" in the HPS Phase II area do not correspond with the boundaries of the five areas designated Parcels A through E by the Navy.

Table II-3 Proposed Land Use

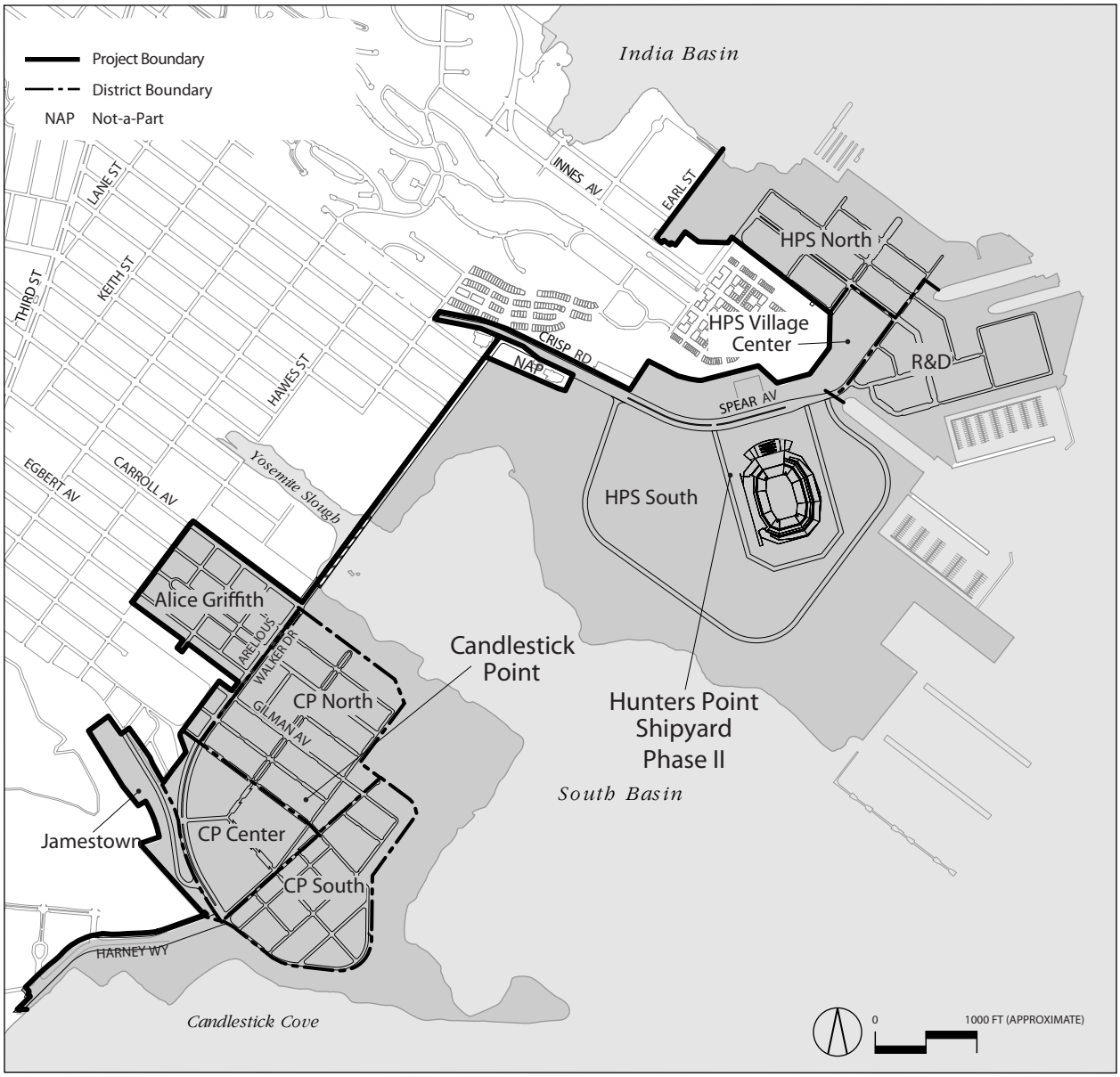
Land Use		Candlestick Point	Hunters Point Shipyard Phase II	Total
Residential				
Residential Density Range I (15 to 75 units per acre)		750	680	1,430
Residential Density Range II (50 to 125 units per acre)		3,215	1,415	4,630
Residential Density Range III (100 to 175 units per acre)		2,445	265	2,710
Residential Density Range IV (175 to 285 units per acre)		1,440	290	1,730
	Total (units)	*7,850*	*2,650*	*10,500*
Retail				
Regional Retail (gsf)		635,000	N/A	635,000
Neighborhood Retail (gsf)		125,000	125,000	250,000
	Total (gsf)	*760,000*	*125,000*	*885,000*
Office (gsf)		150,000	N/A	150,000
Research & Development[a]		N/A	2,500,000	2,500,000
Hotel (gsf)		150,000	N/A	150,000
Rooms		220	N/A	220
Artists' Studios/Art Center (gsf)		N/A	255,000	255,000
Community Services (gsf)[b]		50,000	50,000	100,000[a]
Parks & Open Space				
New Parks (acres)		8.1	140.0	148.1
New Dual-Use Sports Fields/Multi-Use Lawn and Stadium Parking and Waterfront Recreation (acres)		N/A	91.6	91.6
Existing State Parkland Improved (acres)		91.0	N/A	91.0
New State Parkland (acres)		5.7	0	5.7
	Total (acres)	*104.8*	*231.6*	*336.4*
Football Stadium (seats)		N/A	69,000	69,000
Gsf		N/A	1,860,000	1,860,000
Marina (slips)		N/A	300	300
Performance Venue/Arena (gsf)		75,000	N/A	75,000
Seats		10,000	N/A	10,000
Parking (spaces)				
Residential (structured)		7,850	2,650	10,500
Commercial (structured)		2,346	4,028	6,374
General and Commercial (on-street)		1,360	683	2.043
Dedicated Stadium[c]		N/A	12,665	12,665

SOURCE: Lennar Urban, 2009.

a. Research & Development includes office, laboratory, and light industrial uses.

b. A site for a fire station could be provided on R&D land not explicitly dedicated to community facilities. Community facilities parcels are intended to provide the existing Bayview Hunters Point community and the future Project community with dedicated land for uses designed to provide, preserve, and leverage such critical local resources as social services, education, the arts and other community services, including public safety facilities such as fire and police stations and facilities for the benefit of senior citizens. Community facilities may be provided that cumulatively exceed 100,000 square feet. If so, the Project contemplates an equal reduction in retail and/or R&D and/or office use. Total uses would not exceed those amounts identified in this table.

c. On Game Day, an additional 3,750 parking spaces on HPS and 1,000 parking spaces on CP will be dedicated to the 49ers.



SOURCE: San Francisco Redevelopment Agency, Lennar Urban, 2009.

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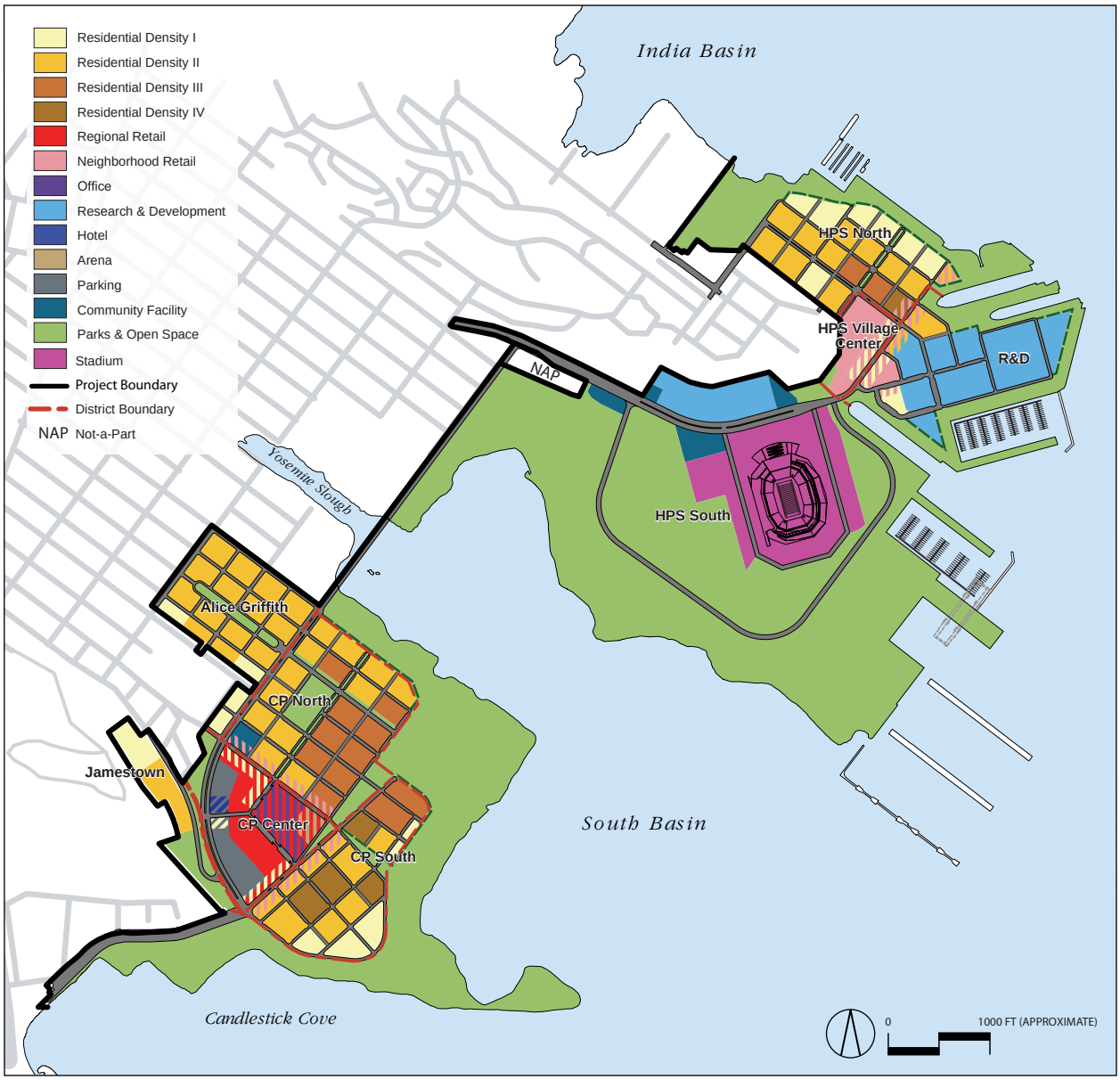
Candlestick Point — Hunters Point Shipyard Phase II EIR

PROPOSED DISTRICTS

FIGURE II-3



SOURCE: Lennar Urban, 2009.

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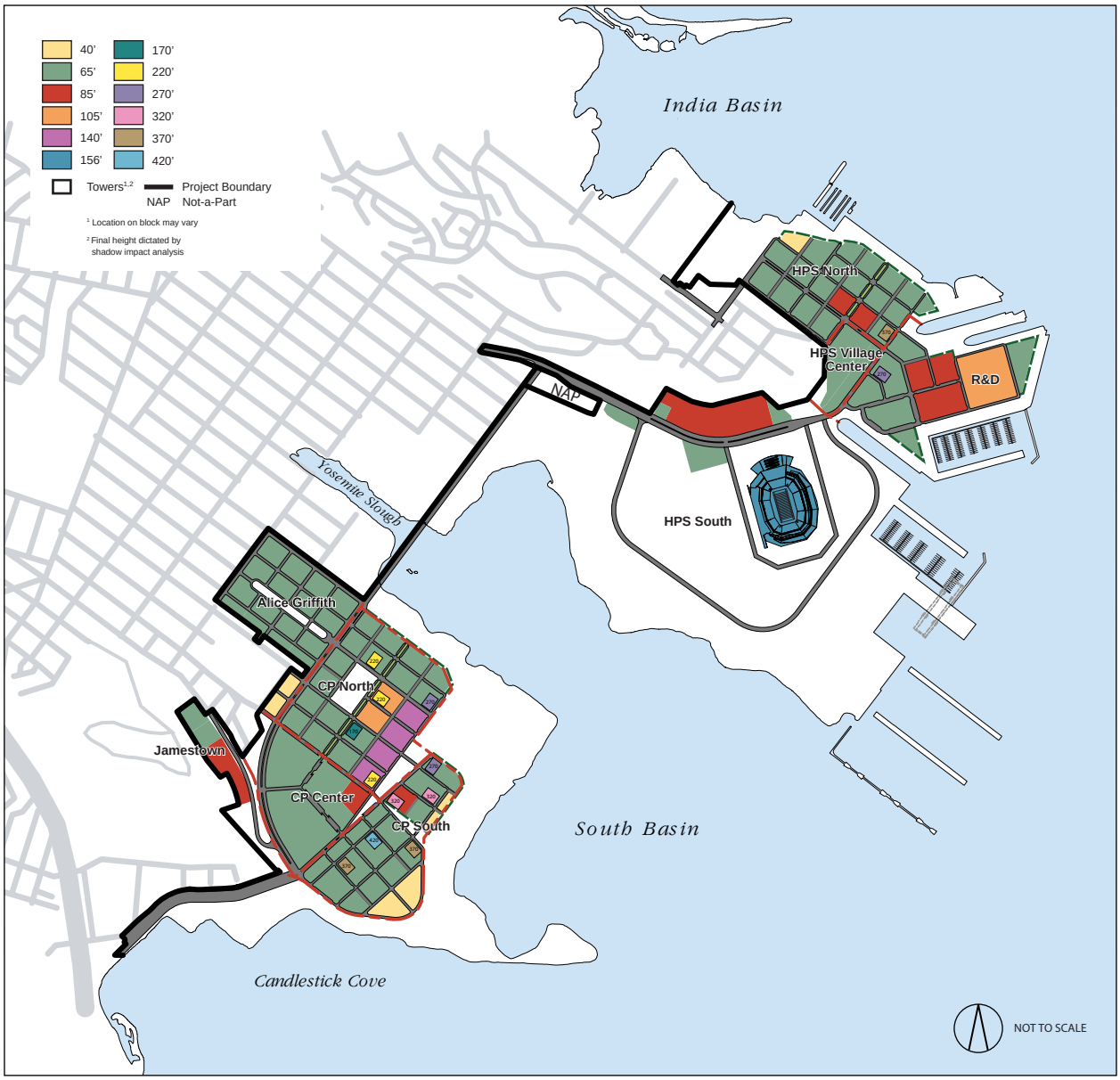
FIGURE II-4 Candlestick Point — Hunters Point Shipyard Phase II EIR

PROPOSED LAND USE PLAN



SOURCE: Lennar Urban, 2009.

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Candlestick Point — Hunters Point Shipyard Phase II EIR

PROPOSED MAXIMUM BUILDING HEIGHTS

FIGURE II-5

for the EIR analysis. Actual building heights would be controlled through Redevelopment Plan documents to minimize shading impacts, among other considerations.

Section II.E.1 (Land Use Plan) describes the land uses and urban design components of the Project. Section II.E.2 (Parks and Open Space) describes the proposed parks and recreation areas; including the CPSRA; and proposed habitat restoration. Section II.E.3 (Transportation Improvements) describes the transportation network, proposed residential and commercial parking, and bicycle and pedestrian circulation. Section II.E.4 (Infrastructure Plan) describes utility infrastructure improvements. Section II.E.5 (Community Benefits) describes the affordable and below-market housing program, education, and employment and training benefits to the Bayview community. Section II.E.6 (Green Building Concepts) describes the various sustainability and/or green building concepts that would be incorporated into the Project design.

The following provides a detailed discussion of each of the land use types described by Table II-3.

- **Residential:** The Project would consist of 10,500 for-sale and rental residential units, including approximately 7,155 market-rate units and approximately 3,345 affordable and below-market units. The homes would range in size from studios to four bedrooms. Housing types include two- and three-story townhomes over parking, four- to seven-story low-rise flats over podium parking, eight- to 21-story mid-rise flats, and 22- to 42-story high-rise towers. Depending on their location, the lower floors of all residential building types (other than townhomes) could include commercial uses, as well as community services.
  - > Residential Density Range I (15 to 75 units per net acre[18]): Housing types would typically include townhomes, low-rise flats and lofts
  - > Residential Density Range II (50 to 125 units per net acre): Housing types would typically include low-rise flats, and lofts
  - > Residential Density Range III (100 to 175 units per net acre): Housing types would typically include low and mid-rise flats, or low-rise flats and high-rise buildings
  - > Residential Density Range IV (175 to 285 units per net acre): Housing types would typically include low-rise and mid-rise flats and high-rise buildings
- **Regional Retail:** A regional retail center of up to 635,000 gross square feet (gsf) is proposed on Candlestick Point. Retailers could include a variety of general merchandise, apparel, furniture and home furnishings, food service and restaurants, and entertainment related businesses to serve the regional market. Commercial services may also be allowed on sites designated for regional retail uses.
- **Neighborhood Retail:** Neighborhood retail sites are designated at both Candlestick Point and Hunters Point Shipyard, and in addition, small-scale neighborhood retail uses could be established throughout the Project site depending on demand. Up to 250,000 gsf of neighborhood retail could include convenience goods (e.g., food, drugs and groceries) and personal services (e.g., laundry, dry cleaning, barbering, and shoe repair) for daily needs of the immediate neighborhood. This could also include a fire station site and/or other community services.
- **Office:** Up to 150,000 gsf of office uses on Candlestick Point could include but not be limited to professional offices, real estate offices, financial services, and community services.

[18] The density ranges are measured against net acres on a block-by-block basis.

- **Research and Development:** Hunters Point Shipyard Phase II would be the site of up to 2,500,000 gsf of a possible wide range of office, laboratory, and light industrial uses including, but not limited to, emerging industries and technologies such as green technology and biotechnology. This could also include a fire station site.
- **Hotel:** A 220-room hotel is proposed at Candlestick Point.
- **Artists' Studios/Arts Center:** Up to 225,000 gsf of artists' studios is proposed on Hunters Point Shipyard and 30,000 gsf would be dedicated for the construction of an arts center.
- **Community Services:** Community serving uses are proposed at sites on both Candlestick Point (50,000 gsf) and HPS Phase II (50,000 gsf). Proposed uses include a fire station on 0.5 acre at HPS Phase II and 6,000 square feet for police facilities. In addition, uses may include, but are not necessarily limited to, healthcare, day-care, senior centers, library, recreation centers, and community centers. Facilities may be provided that cumulatively exceed 100,000 square feet. If so, the Project contemplates an equal reduction in retail and/or research and development and/or office use.
- **Parks and Open Space:** The Project would include an estimated 239.7 acres of new public parks, sports fields, and new open space at the Project site. The 59.7 acres of the Dual-Use Sports Field Complex and Multi-Use Lawn would also be used as stadium parking for 12 game days and 20 other stadium events per year. The CPSRA would be improved on 96.7 acres.
- **Stadium:** A 69,000-seat stadium is proposed for the San Francisco 49ers and up to 20 additional events per year including but not limited to college bowl games, motor-cross, concerts, and antique shows.
- **Marina:** A 300-slip marina is proposed at Hunters Point Shipyard. A marina could include utilities at each slip and a sewage pump-out. Landside amenities could include a classroom facility to teach sailing, restrooms, and showers.
- **Performance Venue/Arena:** A 10,000-seat venue for theatre productions, concerts, speaking engagements, educational events, or sporting events is proposed at Candlestick Point. Approximately 150 events at about 50 percent capacity could occur each year.
- **Parking:** Parking would be provided as structured parking for residential uses, as structured and on-street parking for commercial uses, for dedicated stadium use, and as general parking.

Candlestick Point

Development on Candlestick Point would include demolition and replacement of 256 public housing units, demolition of the 70,207-seat 49ers stadium, and a net reduction of 23.5 acres of CPSRA land.

Candlestick Point would consist of five districts encompassing approximately 110 net acres. Table II-4 (Candlestick Point Proposed Land Use Summary) presents the land use distribution for Candlestick Point and Figure II-4 illustrates the proposed Candlestick Point land use plan. Site preparation at Candlestick Point would involve demolition activities including removal of Candlestick Park stadium. Section II.F.2 (Site Preparation) provides additional information regarding site preparation activities at Candlestick Point.

Table II-4 Candlestick Point Proposed Land Use Summary

District	Net Acres[a]	Number of Residential Units[b]	Density	Regional Retail (gsf)	Neighborhood Retail (gsf)	Hotel (gsf)	Office (gsf)	Arena (gsf)	Community Services (gsf)	Total Commercial (gsf)	Parks (acres)
Alice Griffith	19.71	1,210	I, II	0	0	0	0	0	0	0	1.4
Candlestick Point North	31.15	3,070	II, III	0	70,000	0	0	0	50,000	120,000	4.2
Jamestown	6.80	325	I, II	0	0	0	0	0	0	0	0
Candlestick Point Center	21.07	275	I	635,000	0	150,000	150,000	75,000	0	1,010,000	0
Candlestick Point South	26.35	2,970	I, II, III, IV	0	55,000	0	0	0	0	55,000	2.5
Total	***105.08***	***7,850***	***NA***	***635,000***	***125,000***	***150,000***	***150,000***	***75,000***	***50,000[c]***	***1,185,000***	***8.1***

SOURCE: Lennar Urban, 2009.

a. Net Acreage excludes the street network within the district. Also note that CPSRA area includes 120.2 acres.

b. 750 Residential Density Range I (15 to 75 units per net acre)
3,215 Residential Density Range II (50 to 125 units per net acre)
2,445 Residential Density Range III (100 to 175 units per net acre)
1,440 Residential Density Range IV (175 to 285 units per net acre)
7,850 Total Units

c. This includes approximately 1.0 acre of community services area.

Alice Griffith

Development in the Alice Griffith district would include up to 1,210 new homes on approximately 20 net acres and include redevelopment of the San Francisco Housing Authority (SFHA) Alice Griffith public housing site along with development of adjacent non-SFHA property. Housing would include one-for-one replacement of 256 public housing units currently on the site, and 954 market-rate and below-market for-sale and rental units. Residential uses are proposed at Densities I and II with maximum building heights up to 65 feet. The homes would include townhomes, stacked townhomes, and four- to five-story stacked flats. A new 1.4-acre Alice Griffith Neighborhood Park would extend for several blocks near the center of the neighborhood parallel with Egbert Avenue (refer to Figure II-4). Redevelopment of the Alice Griffith public housing site would proceed in phases and would not displace existing residents. The initial phases would develop current vacant portions of the Alice Griffith district, and existing residents would then occupy public housing replacement units before demolition of existing structures in subsequent phases.

Existing 256 public housing units would be demolished on the existing SFHA site and 844 new homes would be constructed in their place along with neighborhood serving retail and services, open space and new streets. The 844 new homes would include a mix of market-rate, affordable and below-market rental and homeownership and public housing replacement units.

Candlestick Point North

Candlestick Point North district would include 3,070 residential units, community services, neighborhood retail uses, and neighborhood parks on approximately 32 net acres (refer to Figure II-4).[19] Residential uses are proposed at Densities II, and III, and include townhomes, low- and mid-rise flats, and five towers from 170 feet to 270 feet. The ground floors of the residential units along the southern edge of the district have been designated for up to 70,000 gsf of neighborhood retail uses. A site for 50,000 gsf of Community Facilities is also included in this district. As described below, Candlestick Point North would include a 3.1-acre Candlestick Point Neighborhood Park in the center of the district and 2.5-acre Bayview Gardens/Wedge Park along its southeastern edge.

Jamestown

The Jamestown district would include 325 residential units on the west side of Jamestown Avenue on approximately 7 net acres (refer to Figure II-4). The Jamestown district would include units at residential Density I on the north end of the district, with a maximum height up to 65 feet. The southern portion of the district would have residential uses at Density Range II with a maximum height up to 85 feet.

Candlestick Point Center

Candlestick Point Center district would include regional retail, office, hotel, entertainment, and residential uses at the west end of Candlestick Point on approximately 21 net acres, on three large blocks (refer to Figure II-4).

[19] The number of residential units in each district may be adjusted depending on market demand; however, the sum totals of housing units for Candlestick Point will not exceed 7,850 units.

The proposed 635,000 gsf of regional retail is anticipated to include entertainment uses such as a movie theatre and clubs with live music, restaurants, a hotel, and large format retail lined with smaller stores fronting onto the neighborhood streets. The Center would also include a 75,000 gsf, 10,000-seat performance venue/arena that would be used for performing arts, dance, sporting events, and music. Most events would take place on weekday evenings and weekends. The Center would have about 150,000 gsf of office uses on the floors above the retail and entertainment uses (refer to Figure II-4). Candlestick Point Center would include 275 residential units at Density Range I along the perimeter of the blocks, above base floors containing commercial uses and parking areas. The 150,000 gsf, 220-room hotel would be at the western edge of the district.

Candlestick Point Center would include buildings up to 65 and 85 feet in height (refer to Figure II-5). Parking structures would be interior to blocks and consist of up to four floors including up to one sub-grade level.

Candlestick Point South

Candlestick Point South district would include residential and retail development on approximately 26 net acres (refer to Figure II-4). The district would provide approximately 2,970 residential units and 55,000 gsf of neighborhood retail space. Neighborhood retail uses would be within the lower floors of buildings facing Candlestick Point Center district.

Residential uses would include Density Ranges I though IV. Two residential towers on the south half of the district would have maximum heights up to 370 feet. An additional residential tower on the south half of the district would be up to 420 feet tall. The north half of the district would have three residential towers, one with maximum height up to 270 feet and two with maximum heights up to 320 feet (refer to Figure II-5). Residential uses at Density Range I would be along the south and southeast portions of the district adjacent to parks and open space areas. As described below, Candlestick Point South would include a 1.1 acre Mini-Wedge Park bisecting the district from east to west (refer to Figure II-4).

■ Hunters Point Shipyard Phase II

Development on HPS Phase II would include demolition and replacement of studios for approximately 300 artists. In addition, all of the vacant, and some leased, Navy buildings would be demolished, with the exception of historic Drydocks Nos. 2 and 3 and Buildings 140, 204, 205, and 207 as discussed in Section III.J (Cultural and Paleontological Resources).

HPS Phase II would consist of four districts on approximately 76 net acres: Hunters Point Shipyard North, Hunters Point Shipyard Village Center, Research and Development, and Hunters Point Shipyard South. Table II-5 (Hunters Point Shipyard Phase II Proposed Land Use Summary) presents the land use summary for HPS Phase II and Figure II-4 illustrates the proposed HPS Phase II land use plan. (Table II-5 does not include the stadium use.) Development of Hunters Point Shipyard South includes the new stadium and related open space and parking facilities. Site preparation of HPS Phase II would involve demolition and abatement activities including removal of existing structures and infrastructure. Section II.F.2 (Site Preparation) provides additional information regarding site preparation activities at HPS Phase II.

Table II-5 Hunters Point Shipyard Phase II Proposed Land Use Summary

District	*Net Acres*[a]	*Dwelling Units*[b]	*Density*	*Neighborhood Retail (gsf)*	*Artist Space (gsf)*	*R & D (gsf)*	*Community Services (gsf)* [c]	*Total Commercial (gsf)*	*Football Stadium (Seats)*	*City Parks (acres)*
Hunters Point Shipyard North	27.30	2,085	I, II, III, IV	25,000	0	0	0	25,000	0	19.9
Hunters Point Shipyard Village Center	7.55	125	I	25,000	255,000	0	0	280,000	0	15.6
Research & Development	26.22	440	I, II	75,000	0	2,000,000	0	2,075,000	0	25.3
Hunters Point Shipyard South	14.86 (32.26 acres with the stadium)	0	N/A	0	0	500,000	50,000	550,000	69,000	170.8
Total	***75.93***	***2,650***	***N/A***	***125,000***	***255,000***	***2,500,000***	***50,000***	***2,930,000***	***69,000***	***231.6***

SOURCE: Lennar Urban, 2009

a. Net Acreage excludes the street network.

b. 680 Residential Density Range I (15 to 75 units per net acre)
1,415 Residential Density Range II (50 to 125 units per net acre)
265 Residential Density Range III (100 to 175 units per net acre)
290 Residential Density Range IV (175 to 285 units per net acre)
2,650 Total Units

c. These uses would be constructed on 5.3 acres in HPS Phase II.

Hunters Point Shipyard North

The HPS North district would include residential and neighborhood retail uses on approximately 27 net acres.[20] A new street grid would create approximately 10 blocks (refer to Figure II-4). The district would include 2,085 residential units. The majority of residential uses would be at Density Ranges I, II, III, and IV with maximum heights ranging from 40 to 85 feet. One residential tower at Density Range IV with a maximum height up to 370 feet would be at the southeast corner of the district, adjacent to HPS Village Center. As described below, the district would include the 12.8-acre Northside Park, and 25,000 gsf of neighborhood retail uses.

Hunters Point Shipyard Village Center

The HPS Village Center district would include redevelopment of the existing artist studios, and new residential and neighborhood retail uses with development on approximately 7.6 net acres (refer to Figure II-4). The existing artist studio space throughout HPS Phase II is approximately 225,000 gsf and is located in Shipyard Buildings 101, 103, 104, 110, 115, 116, 117, and 125. With the exception of Building 101, those existing buildings would be demolished. New studios in a renovated Building 101 and other new buildings, including an Art Center, would provide space dedicated for artists and arts-related uses of 255,000 gsf. New buildings would have a height limit of up to 65 feet. The Village Center would provide about 25,000 gsf of neighborhood retail uses and 125 residential units at Density Range I along the southeast edge of the district. The residential space would be located above the retail uses in a building with a height limit up to 65 feet (refer to Figure II-5). As described below, the Hunters Point Village Center district would also include the 15.6-acre Heritage Park.

Research and Development

The research and development (R&D) district would include 2,000,000 gsf of research and development, office, and light industrial space, which would be marketed to attract emerging technologies—with a particular focus on green technology businesses. A grid street pattern would create approximately 10 blocks with development covering approximately 26 net acres (refer to Figure II-4).

The R&D district would also include approximately 440 residential units at Density Ranges I and II near the west end of the district. The R&D district would include about 75,000 gsf of neighborhood retail uses east of the retail uses of HPS Village Center district. Maximum heights of the retail with residential above buildings would be 65 feet and at Density Range II, with the exception of one high-rise tower in the north west at 270 feet. Structures in the center of the district would range from 85 to 105 feet tall. Parking structures would be internal to a block. As described below, the 29.5-acre Waterfront Promenade would begin at HPS North district and continue along the edge of the R&D district and Village Center district and terminate at HPS South district.

[20] The number of residential units in each district may be adjusted depending on market demand; however, the sum totals of housing units for Hunters Point Shipyard will not exceed 2,650 units.

Hunters Point Shipyard South

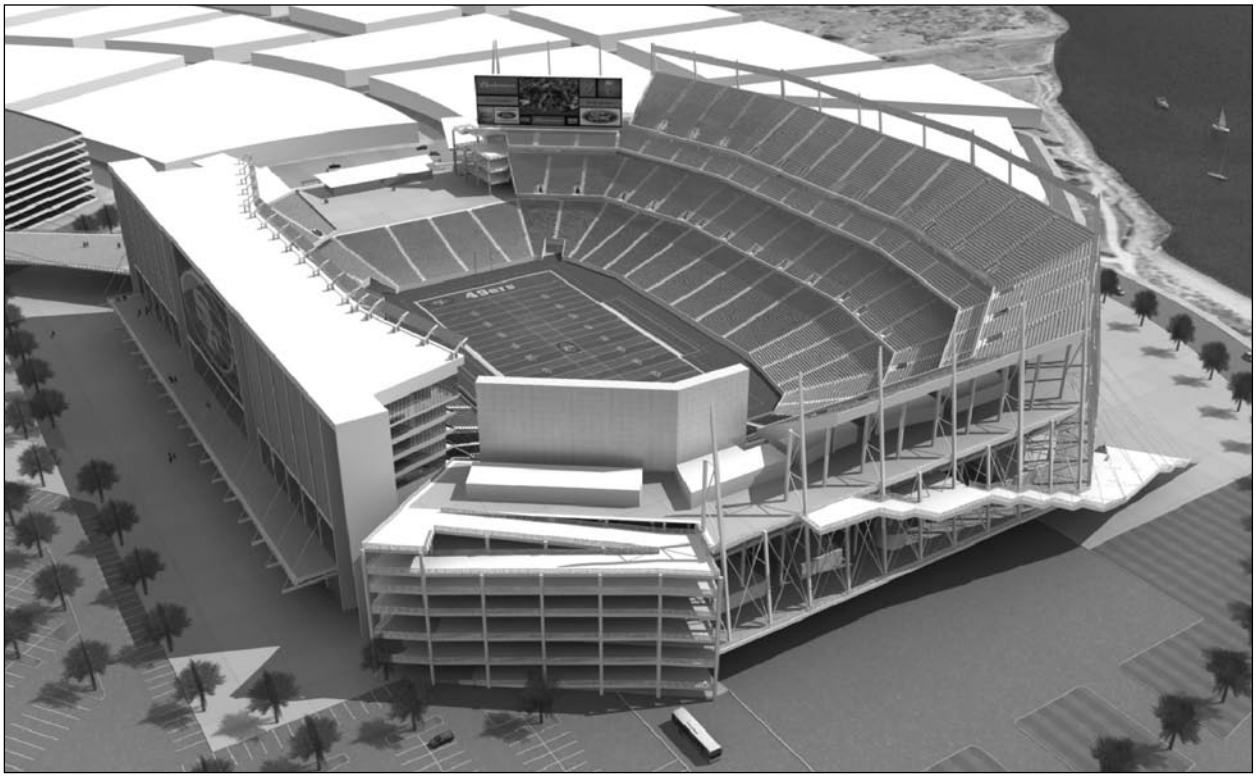
The HPS South district would include 500,000 gsf of R&D space, office, and light industrial uses on approximately 15 net acres. These uses could be located north of Crisp Road, northwest of the proposed new stadium. Maximum heights of the R&D structures would be 85 feet. In addition, this district would include 50,000 gsf of community service uses located on three sites along Crisp Road to the north and west of the stadium. HPS South district would be the site of a new 69,000-seat San Francisco 49ers stadium. The stadium would include about 1,860,000 gsf, with seating, ramps and stairs, team offices and administrative space, food service and retail areas, and access facilities for stadium visitors, players, and staff on 17.4 acres. The stadium would be five levels on the north, east, and south sides, and nine levels on the west (referred to as the Suite Tower). The top row of seating would be at an elevation of approximately 156 feet above the playing field; the top of the stadium light towers would be at an approximate elevation of 192 feet. The event level of the stadium would include the playing field, locker rooms, main commissary, grounds keeping facilities, operations space (including management, janitorial, and security), loading docks, and facilities for other support functions. Press facilities would be located on the top level on the west side of the stadium. The box-office, 49ers team store, stadium offices, and other stadium-related commercial space would be on the ground level of the west side. Figure II-6 (49ers Stadium Conceptual Design Plan) and Figure II-7 (49ers Stadium Conceptual Elevations) illustrate the proposed stadium.

National Football League teams typically play half of all pre-season and regular season games at home. In one season, the San Francisco 49ers could play up to two pre-season, eight regular season, and two post-season games at home.[21] The preseason begins in August and the regular season extends through December. In addition to pre-season and regular season games, there is also a possibility that the 49ers would host up to two post-season games each year. It would also be likely that San Francisco would be asked to host a Super Bowl game. The Super Bowl is considered an extraordinary event and would likely occur in San Francisco approximately once every five to 10 years. In addition to San Francisco 49ers football, other major events could occur at the stadium, including college football games, soccer games, concerts, festivals, antique and car shows, or other events. These additional events would be limited to 20 total occurrences per year.

The parking areas surrounding the 49ers Stadium would serve stadium-related events. The Dual-Use Sports Field Complex and Multi-Use Lawn adjacent to the proposed stadium and permanent parking areas would serve as recreation and athletic fields when not used as parking for stadium events. The surface of the fields would be seeded grass above top soil with synthetic fibers and other base materials to support vehicle parking. The permanent parking area and dual-use areas would provide approximately 12,665 parking spaces for games and events[22]. When not needed for games or events, the dual-use areas would be available to serve recreation and related events.

[21] Each NFL team typically plays four preseason games. The NFL has a 17-week regular season. Each season, all NFL teams have one bye week (week off) where the team does not play. Therefore, each team plays 16 regular season games during the 17-week period.

[22] An additional 3,750 parking spaces are available for evening and weekend stadium events on the R&D sites.



SOURCE: HNTB Architects, 2007.

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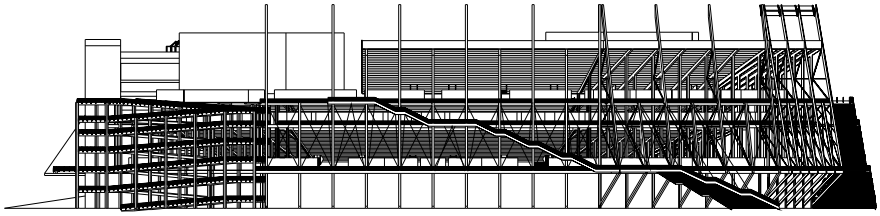
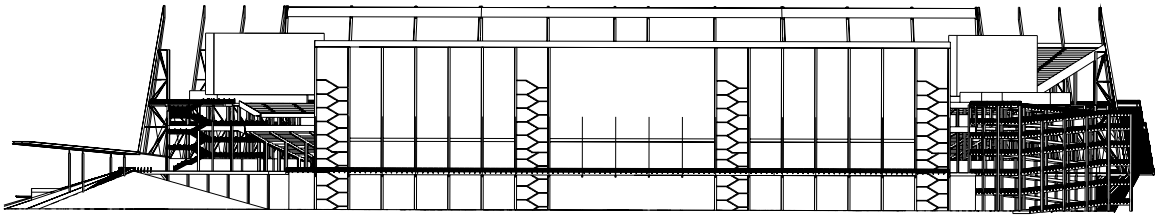
FIGURE II-6

Candlestick Point — Hunters Point Shipyard Phase II EIR

49ERS STADIUM CONCEPTUAL DESIGN PLAN



South Elevation



West Elevation—Suite Tower

SOURCE: HNTB Architects, 2007.

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FIGURE II-7

Candlestick Point — Hunters Point Shipyard Phase II EIR

49ERS STADIUM CONCEPTUAL ELEVATIONS

Hunters Point Shipyard Piers, Drydocks, and Waterside Uses

Piers and Drydocks

The Shipyard currently includes seven piers and six drydocks along the shoreline (refer to Figure II-2). As part of the base closure and conveyance process described in Chapter I (Introduction), the Navy will remove Piers B and C and timber portions (concrete walls would remain) of Drydocks 5, 6, and 7 prior to conveyance of HPS Phase II to the City and County of San Francisco. Drydocks 2 and 3 and four supporting buildings (Buildings 140, 204, 205, and 207) were previously identified as historic resources eligible for listing in the National Register of Historic Places.[23] Heritage Park is proposed at Drydocks 2 and 3 and would display interpretive elements related to the history of HPS. Drydocks 4, 5, 6 and 7 and the Re-Gunning Pier and crane would remain. Piers 1, 2, and 3 consist of long, narrow concrete piers in the southeastern portion of HPS Phase II. These pier structures would remain in place, but portions of the pier would be removed to prevent public access for safety reasons. The Re-Gunning Pier would be reconfigured for wildlife habitat uses. Some pier areas would require cleaning and repaving. The North and South Piers would be the sites of the proposed marina, discussed below.

Marina

The Project would include an approximately 300-slip marina along the east shoreline of HPS Phase II, north of the Re-Gunning Pier (refer to Figure II-4). The marina slips are proposed along the North and South Piers.

The marina would include up to 300 slips accessed by a series of gangways and floating docks. Guide piles would horizontally restrain the floating docks. Each slip would include potable water, electrical, cable television, and telephone connections. The marina would provide sewage pump-out stations at each slip or at a central pull-up station. Landside improvements adjacent to the marina could include parking, restroom facilities, a classroom to teach sailing, and a harbormaster's office.

The marina would require installation of two breakwaters approximately 1300 to 1650 feet in total length, split up into two to three sections (ranging between 300 and 650 feet in length) [24].The breakwaters would create two 10.7- to 11.3-acre basins. The footprint of the breakwaters will cover approximately 0.05 to 0.1 acre of bay bottom. The existing North and South piers would remains and provide protection to the marina basins by acting as breakwaters. Breakwaters would be constructed using concrete sheet pile supported by batter piles and installed using water-based equipment.

The current water depths of up to 16 feet of the proposed marina basin would be adequate for recreation craft, and the basin would not require initial dredging. However, maintenance dredging would be required in the future to maintain adequate clearance.

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[23] City and County of San Francisco and San Francisco Redevelopment Agency, Final Environmental Impact Report for the Reuse of Hunters Point Shipyard, February 8, 2000. 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.

[24] Devick, Christopher, Moffat-Nichol email to Therese Brekke of Lennar Urban and Terri Vitar of PBS&J regarding length of marina breakwater, dated July 23, 2009.

II.E.2 Parks and Open Space Plan

Figure II-8 (Existing and Approved Parks and Open Space) illustrates the locations of various existing parks and open space on the Project site and in the nearby vicinity, including the CPSRA.

The Project would involve the creation of new parks and recreational opportunities, provide park improvements, and create new access to the shoreline. New parks would include destination parks, neighborhood parks, a sports field complex and multi-use lawn, the waterfront promenade, the waterfront recreation area, and the extension of the Bay Trail through the Project site. Approximately 10,000 net new trees would be planted at the Project site and in the community, along with shrubs and native habitat restoration. A detailed description of the proposed new and improved parks, including improvements to the CPSRA, is provided in Section III.P (Recreation), while a description of the Applicant's Draft Parks, Open Space, and Habitat Concept Plan is discussed in Section III.N (Biological Resources).

In total approximately 336.4 acres of open space would be provided (this includes a net reduction of 23.5 acres of CPSRA). Candlestick Point would include approximately 104.8 acres of parks and open space, including the CPSRA, and HPS Phase II would include approximately 231.6 acres of parks and open space.

Table II-6 (Proposed Parks and Open Space) presents the proposed park and open space in the Project. Figure II-9 (Proposed Parks and Open Space) illustrates the location of the proposed parks and open space and changes to the CPSRA. A brief description of the CPSRA, new parks and open space facilities, and the Bay Trail is provided below.

Candlestick Point State Recreation Area

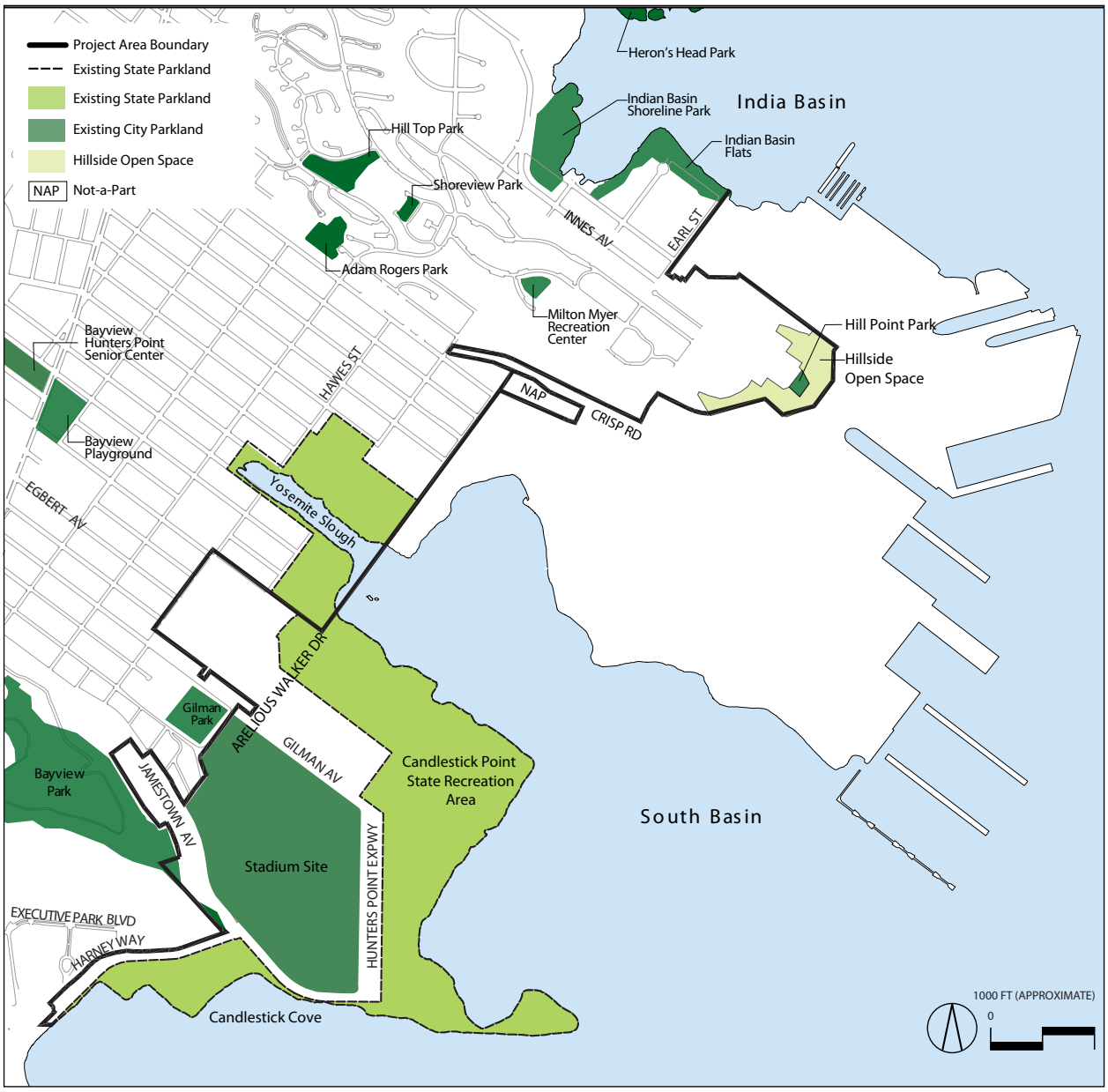
The Project includes the reconfiguration of the boundaries of CPSRA, as well as park improvements and an ongoing source of funding for park operation and maintenance. Table II-7 (Candlestick Point Proposed State Parks Reconfiguration) presents the proposed acreage of the areas proposed to be added to or removed from the Park, as required by Senate Bill 792 (SB 792). SB 792 was signed by the Governor on October 11, 2009, and is codified as Chapter 203 of the Statutes of 2009. SB 792 repeals the *Hunters Point Shipyard Conversion Act of 2002,* the *Hunters Point Shipyard Public Trust Exchange Act,* and *Public Resources Code* Section 5006.8, and consolidates the key provisions of those statutes into a statute covering both the Candlestick Point area and HPS. The statute authorizes a reconfiguration of CPSRA coupled with improvements within the park and the provision of an ongoing source of park operation and maintenance funding. The proposed reconfiguration would remove about 29.2 acres from the current boundaries of CPSRA to be used for urban development, but would add about 5.7 acres not currently included in the CPSRA to The Neck, The Heart of the Park, and The Last Port areas of the CPSRA. In total, the area of the CPSRA (excluding the Yosemite Slough) would decrease by about 23.5 acres at the Candlestick Point site, from 120.2 acres to 96.7 acres.

Table II-6 Proposed Parks and Open Space

		Acres
CANDLESTICK POINT		
New Parks		
Alice Griffith Neighborhood Park		1.4
Candlestick Point Neighborhood Park		3.1
Bayview Gardens/Wedge Park		2.5
Mini-Wedge Park		1.1
	Subtotal	*8.1*
State Park Land		
The Last Port (includes new State Parkland)		14.6
The Neck (includes new State Parkland)		4.9
The Heart of the Park (includes new State Parkland)		15.4
The Point		6.1
Wind Meadow		11.4
The Last Rubble		24.5
Bayview Gardens North		9.5
Grasslands South		10.3
	Subtotal	*96.7*
	Total	***104.8***
HUNTERS POINT SHIPYARD PHASE II		
New Parks		
Northside Park		12.8
Waterfront Promenade		29.5
Heritage Park		15.6
Grasslands Ecology Park at Parcel E		44.9
Grasslands Ecology Park at Parcel E-2		37.2
	Subtotal	*140.0*
New Sports Fields and Active Urban Recreation		
Dual-Use Sports Field Complex / Game Day and Stadium Event Parking		59.7
Waterfront Recreation Area		6.7
Dual-Use Multi-Use Lawn/Game Day and Stadium Event Parking		25.2
	Subtotal	*91.6*
	Total	***231.6***
TOTAL PARKS AND OPEN SPACE		
New Parks		**148.1**
New Dual-Use Sports Fields/Multi-Use Lawn and Active Urban Recreation		91.6
Existing State Parkland Improved (including 23.7 net loss of CPSRA)		96.7
	Total	***336.4***

SOURCE: Lennar Urban, 2009.

a. The 120.2-acre CPSRA would be reduced by 29.2 acres, and increased by 5.7 acres for a net reduction of 23.5 acres. The Neck, The Heart of the Park, and The Last Port are the three locations where new State Park Land would be added.



SOURCE: Lennar Urban, RHAA, 2009.

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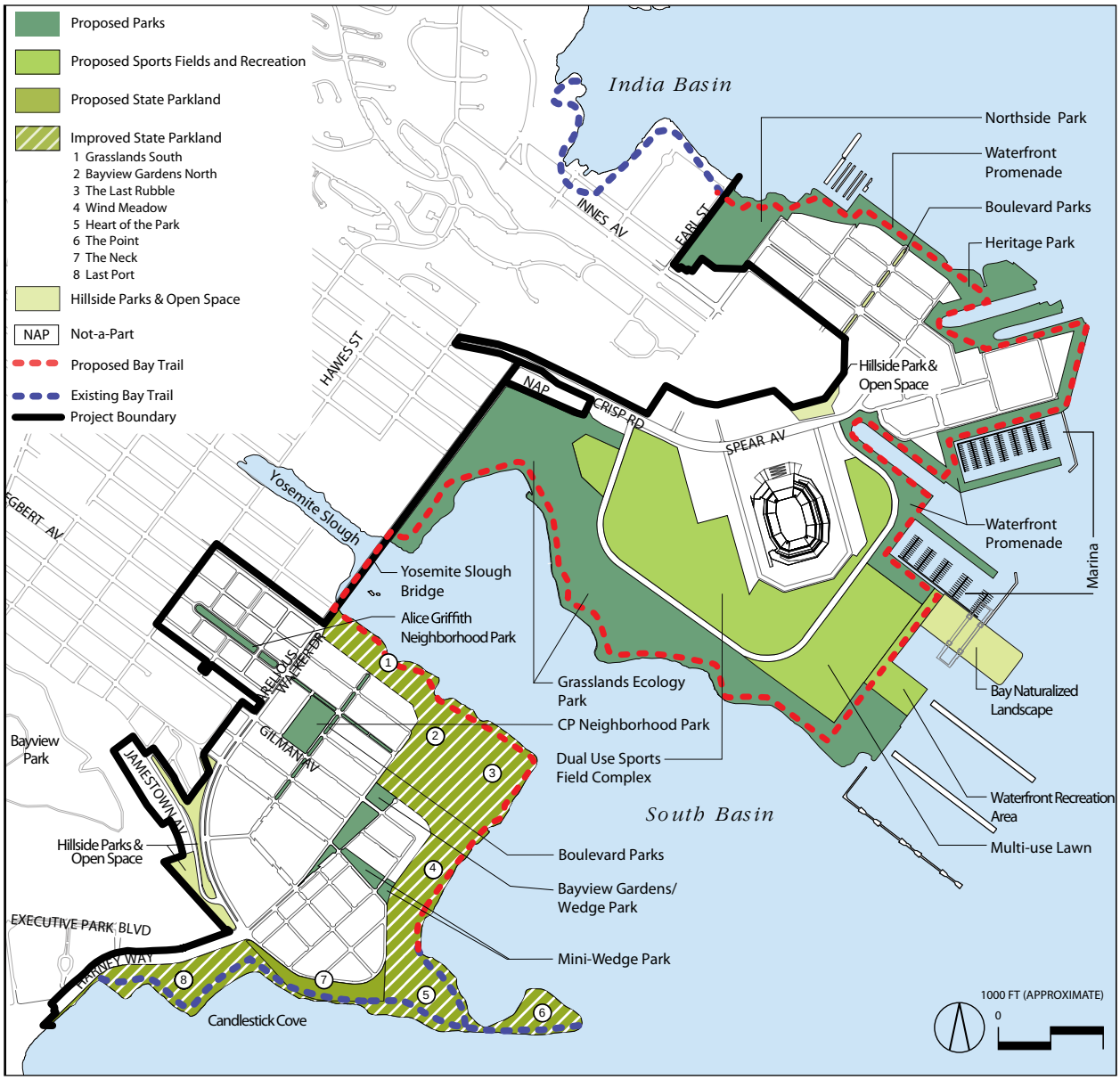
Candlestick Point — Hunters Point Shipyard Phase II EIR

EXISTING AND APPROVED PARKS AND OPEN SPACE

FIGURE II-8



SOURCE: Lennar Urban, RHAA, 2009.

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Candlestick Point — Hunters Point Shipyard Phase II EIR

PROPOSED PARKS AND OPEN SPACE

FIGURE II-9

Table II-7 Candlestick Point State Parks Reconfiguration

	Candlestick Point (acres)
Existing State Park land at Candlestick Point	120.2
Area removed from State Park land	(29.2)
Area added to State Park land	5.7
Proposed State Park land at Candlestick Point	***96.7***

SOURCE: Lennar Urban, 2009.

The current *Candlestick Point State Recreation Area General Plan* was approved in 1978 and amended in 1987 and directs the long-range development and management of the recreation area.[25] Prior to construction of park improvements, the California Department of Parks and Recreation (CDPR) must undertake a community planning process and complete an update to the general plan.

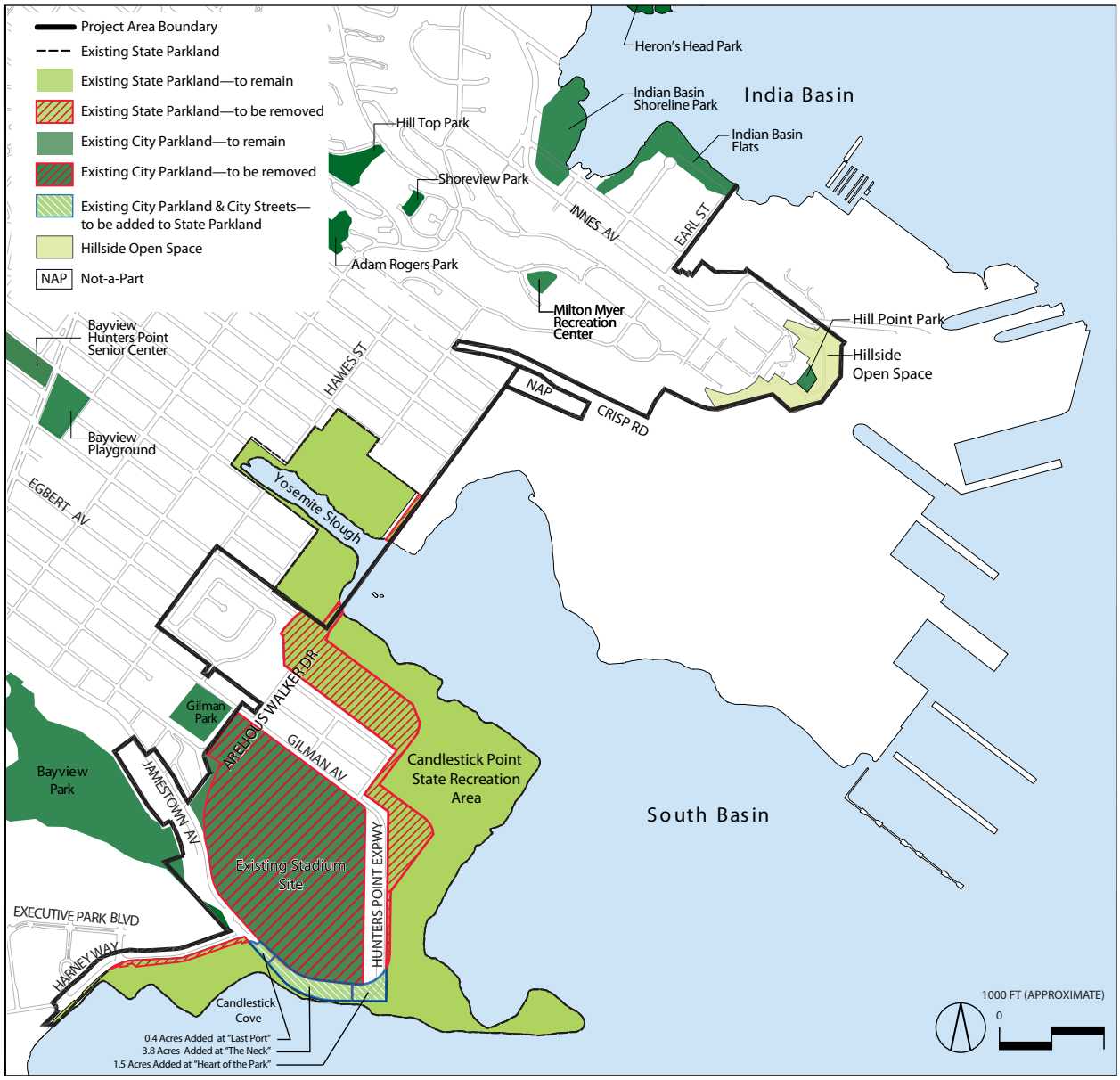
Consistent with the current CPSRA General Plan and the CDPR mission, the CPSRA would primarily contain areas of passive uses and minimal formal landscaping. The portion of the park that is currently undeveloped or used for Candlestick Park stadium parking would be substantially improved to enhance overall park aesthetics and landscape ecology; reconnect visitors to the bay shoreline; and provide direct access to the bay for swimming, fishing, kayaking, and windsurfing. Proposed improvements include revegetation and landscaping, shoreline restoration and stabilization, infrastructure improvements (such as trails, pathways, and visitor facilities), a biofiltration pond to cleanse stormwater, the provision of habitat and opportunities for environmental education, 'Eco-Gardens,' and salt-marsh restoration. Although there would be a net decrease in the total area of the CPSRA, the recreational value of the new land and the improvements the area's overall value would increase.

The proposed improvement of the CPSRA would complete a continuous publicly accessible shoreline from Candlestick Point to HPS Phase II. Figure II-8 illustrates the locations of the current CPSRA, and Figure II-10 (Proposed CPSRA Reconfiguration) shows the proposed areas that would be added or removed. As shown in Figure II-9, the CPSRA open space would provide connections with other Project open space. CPSRA lands, whether improved or new, would be subject to the jurisdiction of the CDPR. Refer to Section III.P (Recreation) for a detailed discussion of the CPSRA.

New Parks

Overall, the Project would provide a substantial increase in the amount of developed, useable, high-quality parks, recreational facilities, and open space within the Project site. The Project would create a continuous network of interconnected recreational opportunities, promoting the use of the existing parks, such as the CPSRA, as well as the 239.7 acres of new parks, sports fields, and active urban recreation uses. The Project would provide a network of pedestrian and bike pathways that would

[25] 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.



SOURCE: Lennar Urban, RHAA, 2009.

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Candlestick Point — Hunters Point Shipyard Phase II EIR

PROPOSED CPSRA RECONFIGURATION

FIGURE II-10

connect Project uses to the adjacent neighborhoods and would ensure unrestricted public access to the parks and open space on the Project site and the Bay shoreline. Enhanced connectivity of on-site and off-site facilities and new neighborhood parks would allow integration of new and existing facilities into the citywide park network. The proposed bicycle and pedestrian pathways would facilitate dispersal of future demand, which would help to reduce the potential for localized physical deterioration. The improved connectivity would also direct regional users to proposed "destination" parks, parks designed to accommodate regional demand. In addition, the Project would provide a continuous series of waterfront parks from the northernmost part of HPS Phase II to the southernmost part of Candlestick Point.

In addition, proposed recreational facilities, such as paved athletic courts, plazas, and picnic areas, would also support a large number of users within a relatively small area. Recreational facilities proposed for the Project site also include a Sports Field Complex that would provide soccer/football, baseball, and volleyball fields, as well as warm-up fields, restrooms, and food concessions. The parking area for the Sports Field Complex would support parking during stadium events, but would be covered with specially engineered soils and turf to allow dual-use of the parking lot for athletic fields. Recreational facilities would also include a mix of active and passive areas of open lawns, dog runs, play areas, community gardens, and court games. Moreover, improved park facilities would provide a waterfront promenade, ecological open space areas, concessions, restrooms, and other uses that would allow the site to support a large service population.

The discussion below identifies the specific new facilities that are planned within Candlestick Point and HPS Phase II. These facilities are also identified in Table II-6, above, and shown on Figure II-9. Some features, such as the Bay Trail improvements, span both areas of the Project site.

Candlestick Point

Candlestick Point would include an extensive network of parks, ranging from the CPSRA to smaller parks distributed throughout the neighborhood. The Candlestick Point parks would be connected to other neighborhoods and open spaces by way of pedestrian-friendly green streets.

- The 1.4-acre Alice Griffith Neighborhood Park would extend for several blocks near the center of the neighborhood as an extension of Egbert Avenue.
- Candlestick Point North would include a 3.1-acre Candlestick Point Neighborhood Park in the center of the district.
- The Bayview Gardens/Wedge Park (2.5 acres) would serve as the 'commons' for the Candlestick Point development and link the residences to the CPSRA through an expansive view corridor. Specific programming would include an ecological garden, a main plaza, passive lawns, bioswale stormwater retention, and tot lots.
- The 1.1-acre Mini-Wedge Park in the Candlestick Point South district would serve as a primary connector between Candlestick Point and the CPSRA beach area.

These parks would be connected to other neighborhoods and open spaces within the community by way of pedestrian-friendly green streets.

Other Parks and Open Space

- Boulevard Parks within the Project site. A hybrid of street and park, the Boulevard Park Streets bring broad fingers of green space into the urban neighborhoods, linking interior parks with bay-front parks. These streets have a strong pedestrian scale and quality, and serve as public 'front yards' for the neighborhoods. Broad landscaped medians or sidewalks (30-40' wide) are designed as mini-parks with garden seating areas. Boulevard Parks link the Alice Griffith and Central Candlestick communities with the CPSRA.
- Hillside Parks and Open Space within the Project site. The hillside parks and open space include the eastern 'tail' of Bayview Park and other hillside areas below Jamestown Road. The steeper areas will be maintained in a more natural state, while the flatter portion of Bayview Hill may be further developed as a neighborhood-serving park space.
- Yosemite Slough. While not located within the Project site, the Yosemite Slough is located directly adjacent to the Project site and is planned for restoration by the California State Parks and the California State Parks Foundation. The restoration will focus on providing new wetland habitat and environmental education opportunities.

HPS Phase II

As with Candlestick Point, HPS Phase II would also include an extensive network of parks distributed throughout this portion of the Project site.

- Northside Park (12.8 acres), which would be located on the north shore of HPS Phase II, would offer a full suite of passive and active uses. The most active park uses are located at the southwestern portion of the park. This area includes community gardens, basketball, tennis, and volleyball courts and shade pavilion, children's playground, and restroom. The open-air African Marketplace would form an east-west promenade crossing the park, with looped pathways around the multi-use lawns providing additional multi-use space. To the northeast, the park takes on a more natural and passive character, with picnic/barbeque areas and shade shelters, and waterfront pathways.
- The Waterfront Promenade (29.5 acres) begins at the northern edge of the site and continues along the shoreline until terminating at the Waterfront Recreation Area described below. The promenade would provide evidence of the historic qualities of the industrial waterfront, which would be incorporated into tree bisques, seating areas, lawn panels, artworks, and interpretive gardens.
- Heritage Park (15.6 acres) would retain and reuse historic resources and materials as much as possible while utilizing modern design with industrial character. Children's play areas and areas of open lawn would be provided.
- Grasslands Ecology Park at Parcel E (44.9 acres) would contain native Eco-Gardens, passive lawns, native grasslands, windbreak groves, and landforms offering views of the bay and shoreline habitats. Site features could include group picnic areas, overlooks, a visitor/interpretive center, restrooms, and parking.
- Grasslands Ecology Park at E-2 (37.2 acres) would provide an open space area that includes picnic areas, grassy bird watching knolls, and overlooks. This passive recreation park would focus on views toward the Yosemite Slough Wetland Restoration area and provide opportunities for environmental education. The 44.9-acre Grasslands Ecology Park at Parcel E and the 37.2-acre

Grasslands Ecology Park at Parcel E-2 on HPS Phase II are contiguous to CPSRA and may be offered to the CDPR by the Agency.

- The Sports Field Complex would include soccer/football, baseball, and volleyball fields, as well as warm-up fields, restrooms, and food concessions. The Sports Field Complex would be used for sporting events during day- and night-time hours. The surface of the fields would be seeded grass above top soil with synthetic fibers and other base materials to support vehicle parking and tailgating for 49ers fans on game days. To prevent rutting and damage to the fields, the design will employ a fiber-reinforcement system that is incorporated into fast-draining, sandy soils.
- A Multi-Use Lawn area would provide event-day parking for events at the stadium. At other times, this large open space would provide for informal recreational activities, sporting, and other events as needed.
- The Waterfront Recreation Area would provide a flexible waterfront open space focused on small boat access could include education and interpretive facilities focused on San Francisco Bay.

The Sports Field Complex and the Multi-Use Lawn both surround the proposed 49ers Stadium, providing parking for stadium-related events, as well as open space that would support a range of recreational activities, as described above. The surface of the fields would be seeded grass above top soil with synthetic fibers and other base materials to support vehicle parking.

Other Parks and Open Space

- Boulevard Parks within the Project site. A hybrid of street and park, the Boulevard Park Streets bring broad fingers of green space into the urban neighborhoods, linking interior parks with bay-front parks. These streets have a strong pedestrian scale and quality, and serve as public 'front yards' for the neighborhoods. Broad landscaped medians or sidewalks (30-40' wide) are designed as mini-parks with garden seating areas. Boulevard Park Streets connect the Hunters Point Hilltop community with Waterfront Park.
- Hillside Parks and Open Space Connection. A relatively small portion of the Hillside Park and Open Space located within HPS Phase II north of Crisp Road would provide a connection to the existing Hillside Parks and Open Space constructed in the Hunters Point Phase I project.
- Historic Landmark and Bay Naturalized Landscape within the Project site. The landmark Re-Gunning Crane will be retained, providing a dramatic juxtaposition of the site's industrial history with the resurgence of nature at the Bay's edge. Trails and boardwalks would lead to overlook points providing visitors with opportunities to view Bay wildlife.

Summary

Overall, the Project would provide a substantial increase in the amount of developed, useable, high-quality parks, recreational facilities, and open space within the Project site. The Project would create a continuous network of interconnected recreational opportunities, promoting the use of the existing parks, such as the CPSRA, as well as the 239.7 acres of new parks, sports fields, and active urban recreation uses. The Project would provide a network of pedestrian and bike pathways that would connect Project uses to the adjacent neighborhoods and would ensure unrestricted public access to the parks and open space on the Project site and the Bay shoreline. Enhanced connectivity of on-site and off-site facilities and new neighborhood parks would allow integration of new and existing facilities into the citywide park network. The proposed bicycle and pedestrian pathways would facilitate dispersal of future demand, which would help to reduce the potential for localized physical deterioration. The

improved connectivity would also direct regional users to proposed "destination" parks, parks designed to accommodate regional demand. In addition, the Project would provide a continuous series of waterfront parks from the northernmost part of HPS Phase II to the southernmost part of Candlestick Point.

In addition, proposed recreational facilities, such as paved athletic courts, plazas, and picnic areas, would also support a large number of users within a relatively small area. Recreational facilities proposed for the Project site also include a Sports Field Complex that would provide soccer/football, baseball, and volleyball fields, as well as warm-up fields, restrooms, and food concessions. The parking area for the Sports Field Complex would support parking during stadium events, but would be covered with specially engineered soils and turf to allow dual-use of the parking lot for athletic fields. Recreational facilities would also include a mix of active and passive areas of open lawns, dog runs, play areas, community gardens, and court games. Moreover, improved park facilities would provide a waterfront promenade, ecological open space areas, concessions, restrooms, and other uses that would allow the site to support a large service population.

The Bay Trail

The Bay Trail is a planned recreational corridor that, when complete, will encircle San Francisco Bay and San Pablo Bay with a continuous 500-mile network of bicycling and hiking trails. The Project would include the construction of the Bay Trail in the southeastern portion of San Francisco and ultimately connect to the existing trail along the India Basin shoreline. Trail improvements would include a pedestrian and bicycle trail along the shoreline with connections to the existing and new parks, from the western boundary of Candlestick Point near the Harney Way/US-101 interchange, through the CPSRA, Yosemite Slough, and HPS Phase II shoreline to India Basin. The Bay Trail would be incorporated into the design of the parks described above. Figure II-9 illustrates the proposed Bay Trail.

Ecological Enhancement of Parks and Open Space Areas

The Project would provide opportunities for enhancing the ecological functions and values of the parks and open space areas. The following ecological enhancement measure would be implemented in open space areas outside the CPSRA. At the CPSRA, ecological enhancements would be identified during the CDPR community planning process and CPSRA general plan update described above and could include the enlisted measures or other measures. The Project would implement these measures in open space areas outside the CPSRA. Refer also to Section III.N (Biological Resources).

- **Control of non-native invasive species**—Non-native species would be removed during initial habitat enhancement efforts. Monitoring and ongoing removal/control would be implemented to ensure against the re-establishment and spread of these species on the site.
- **Incorporation of grasslands**—Native grasslands would be established on the site to support associated wildlife species.
- **Increase in tree/shrub cover**—Trees and shrubs would be planted throughout the Project site. Native vegetation would be favored, however, site-appropriate non-native trees and shrubs would also be considered.

- **Maintenance of habitat connectivity**—Parks and open space areas would be designed and maintained to maintain connectivity for less mobile animals including mammals, reptiles, and amphibians. Examples include maintenance of a vegetated band along the shoreline, and planting of vegetative cover that provides refuge for dispersing animals.
- **Creation of stormwater wetlands**—Stormwater treatment wetlands and biofiltration ponds would be incorporated into open space areas and would serve the dual functions of treating runoff while providing habitat for a variety of wildlife species.
- **Maintenance of refuge areas for waterbirds**—Park and open space facilities would create areas for waterbirds to roost at high tide that are somewhat removed from trails or other shoreline access points for humans. In addition, removal of landside portions of the three piers in the southeastern corner of HPS Phase II would prevent mammals from accessing those piers. The piers would be left in place to provide roosting sites for gulls, cormorants, pelicans, and terns.
- **Provision of nest boxes**—Nest boxes for birds would be placed in appropriate locations throughout parks and open space areas.

II.E.3 Transportation Improvements

The proposed Transportation Plan would serve travel needs of future residents, employees, and visitors at the Project. The Transportation Plan presents goals, principles, and strategies to fulfill the transportation and related sustainability objectives of the Project (refer to Section II.D [Project Objectives]). Major Transportation Plan principles include integration of new transportation networks with existing systems, and integrating land use patterns with multimodal street networks that would facilitate walking and cycling for internal trips and transit for trips of greater distance. The goals, principles, and strategies of the Transportation Plan would be supported by investment in infrastructure and services that would provide multiple alternatives to private auto travel. Some of the transportation improvements would require property acquisition.

Section III.D (Transportation and Circulation) describes the Transportation Plan in further detail; with a summary below.

Transportation Demand Management Plan

A Transportation Demand Management Plan (TDM) would be implemented to reduce automobile and light truck vehicle miles travelled and encourage residents, employees, and visitors to use alternative modes of travel, such as transit, walking, and bicycling. In addition, the TDM plan would include measures to reduce the demand for travel during peak times. The TDM plan would include the following strategies.

- **Transportation Coordinator and Website.** An on-site Transportation Coordinator would provide residents, employers, employees, and visitors with information regarding available transportation alternatives. The Transportation Coordinator would be responsible for implementing, monitoring, and improving the measures of the TDM plan. A website would include transportation-related data and real-time transit information
- **Employee TDM Programs.** Employers of 20 or more employees in the Project site would be required to participate in TDM programs that would encourage the use of transit and facilitate walking and bicycling by their employees.

- **Carpool/Vanpools.** The TDM would offer carpool and vanpool services. Designated spaces in parking facilities would be provided free to vanpools. The transit centers would have designated signed areas for informal carpooling.
- **Carshare Services.** Local carshare organizations would provide carshare vehicles throughout the Project site. Carshare services allow members to use vehicles when needed, paying based on how much they drive.
- **Other Strategies**
  - > Homeowner's dues would include the cost of transit passes for all households
  - > Information outreach would be provided to residents, employees and visitors on transit options
  - > Residential parking would be "unbundled" and sold or leased separately from the residential units
  - > Non-residential parking charges would vary according to market rates
  - > Exclusive bike lanes and frequent bus rapid transit (BRT) service would operate in dedicated lanes and with signal priority
  - > Regular periodic monitoring of Transportation Demand Management programs intended to encourage transit use and other alternative modes would be required, to measure effectiveness and to adjust programs to improve effectiveness

Roadway Network

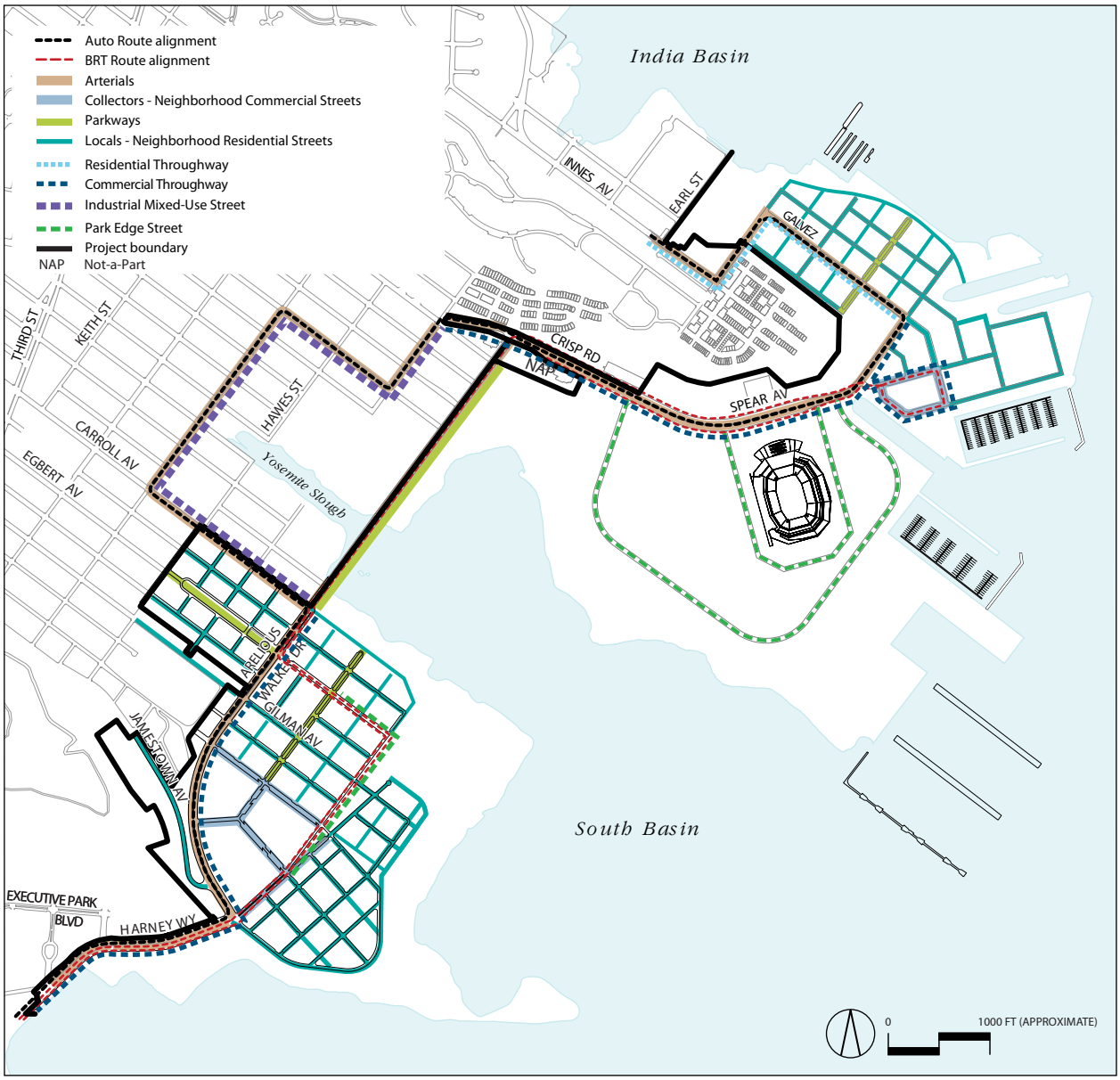
The proposed street network would extend the existing grid of the adjacent BVHP neighborhood into the Project site. The internal street network would be composed of seven types of streets consistent with and classified by the *San Francisco Better Streets Plan* (Draft for Public Review, June 2008), including: Commercial Throughway; Residential Throughway, Neighborhood Commercial Street, Neighborhood Residential Street, Parkway, Park Edge Street and Alley. The proposed street network, including proposed off-site improvements, is illustrated in Figure II-11 (Proposed Street Network).

Roadway Improvements

The Project would improve existing roadways to serve Candlestick Point and Hunters Point Shipyard Phase II and surrounding Bayview and Hunters Point neighborhoods. Improvements would be within the Project boundaries, and off site as shown in Figure II-12 (Proposed Roadway Improvements).

Proposed roadway improvements, shown on Figure II-12 would include the following:

1. **Harney Way widening.** The existing four-lane Harney Way would widened to the north and south of its existing alignment, and would be rebuilt to contain between two and three travel lanes in each direction, turn pockets, two BRT-only lanes, Class I and Class II bicycle facilities, new sidewalks, as well as landscaped area. Initially, the roadway would be rebuilt as a new five-lane roadway (with right-of-way reserved for additional lane(s) to be built in the future as needed for increased traffic levels). A Class II bicycle lane would be provided on the north side of the roadway, and a Class I bicycle path would be provided on the south side of the roadway. Two



SOURCE: Lennar Urban, Fehr & Peers, 2009.

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Candlestick Point — Hunters Point Shipyard Phase II EIR

PROPOSED STREET NETWORK

FIGURE II-11

SOURCE: Fehr & Peers; AECOM, 2009.

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FIGURE II-12

Candlestick Point — Hunters Point Shipyard Phase II EIR

PROPOSED ROADWAY IMPROVEMENTS

exclusive Bus Rapid Transit (BRT)[26] lanes would be constructed adjacent to the roadway on its north side. After games at the new 49ers stadium, left turns would be prohibited at the two Harney Way intersections with Thomas Mellon Drive and Executive Park Boulevard for a period to allow for the configuration of the roadway to change to four westbound auto lanes and one eastbound auto lane. Under the final configuration, a portion of the landscaped area installed as part of the initial widening would be rebuilt to provide lanes from the proposed Harney Interchange east to Arelious Walker Drive, if necessary.

2. **New roadway through Candlestick Point.** A new five-lane arterial roadway generally following the current alignment of Giants Drive and Arelious Walker Drive would serve Candlestick Point, with upgraded sidewalks, curb ramps, and street lights. The roadway would have a 13-foot-wide median to accommodate 11-foot-wide left-turn lanes at major intersections. The roadway would include new traffic signals at the intersections of Harney Way and Jamestown, Ingerson, Gilman, and Carroll Avenues.
3. **New and improved roadways on Crisp Road, Griffith Street, Thomas Avenue, Ingalls Street, and Arelious Walker Drive.** A four-lane roadway would connect Hunters Point to Candlestick Point. The roadway would begin at Hunters Point with the extension of Crisp Road to Griffith Street at Palou Avenue. The roadway would then continue on Griffith Street to Thomas Avenue and then on Thomas Avenue to Ingalls Street where it would proceed along Ingalls Street to Carroll Avenue. The new section of Crisp Road, Griffith Street, and Thomas Avenue would include four auto lanes and sidewalks, with on-street parking on Thomas Avenue. Ingalls Street would remain an industrial mixed-use street with two auto lanes and parking and loading zones on its northern and southern sides. The width of sidewalks on the portion of Ingalls Street from Carroll Avenue to Yosemite Avenue would be decreased to be consistent with the sidewalks north of Yosemite Avenue to accommodate this change. A new traffic signal would be installed at the intersection of Thomas Avenue and Ingalls Street. The Project also proposes to connect Arelious Walker Drive to Crisp Road.
4. **Streetscape improvements.** Innes, Palou, and Gilman Avenues would serve as primary access corridors from the north for pedestrians, bicyclists, transit vehicles, and automobiles. Streetscape improvements, extending to Third Street on Palou and Gilman Avenues, and to Jennings Street on Innes Avenue, would include street trees, sidewalk plantings, furnishings, and paving treatments. Ingerson and Jamestown Avenues would be repaved and restriped from the Project site to Third Street.
5. **Yosemite Slough Bridge.** A new Yosemite Slough bridge would extend Arelious Walker Drive from Candlestick Point to Hunters Point Shipyard. The 81-foot-wide, seven-lane bridge would cross the slough at its narrowest point and would primarily function for transit, bicycle, and pedestrian use. Figure II-12 illustrates the bridge location. The bridge and its approach streets would have two dedicated 11-foot-wide BRT lanes and a separate 12-foot-wide Class I bicycle and pedestrian facility, which would be open at all times. The bridge would also have a 40-foot-wide greenway, which would be converted to four peak direction auto travel lanes on 49ers game days only. Those four lanes would be open on game days to vehicle traffic in the peak direction of travel. The roadway would be planted with grass and would serve as an open space amenity on all non-game days. Two-foot-tall barriers would separate the BRT lanes from the bicycle/pedestrian plaza and the vehicle lanes.

[26] Bus Rapid Transit (BRT) is an integrated system of facilities, services, and amenities that collectively improves the speed, reliability, and identity of bus rapid transit. BRT combines stations, vehicles, services, running ways (e.g., curb bus lanes, median busways, mixed-flow lanes), and Intelligent Transportation Systems (ITS) elements into an integrated system.

The 81-foot-wide span across Yosemite Slough would be approximately 902 feet long with abutments on the north and south ends connecting the bridge to land. Eight piers, with two columns each, would support the bridge. The columns of the three southernmost piers would rest on bedrock. Ten sets of steel piles would be driven to support the columns of the five piers to the north. Section II.F.2 (Site Preparation) provides additional information regarding bridge construction.

Section III.D describes the bridge design further. Section III.E (Aesthetics) includes visual simulations of the bridge.

6. **Transportation Management System.** A transportation management system would be implemented for use during 49ers Game Days and special events held at the stadium. The system would include the installation and coordination of signals at over 30 intersections in the Project and surrounding area using fiber-optic technology. Several variable message signs and lane use control signals would be installed on roadways with reversible lanes. Variable message signs would convey messages to Game Day or event patrons in private vehicles. A traffic control center near the 49ers Stadium would operate the system, connected to the larger SFMTA program.

Transit Services

Supported by Project revenues and infrastructure, the San Francisco Municipal Transportation Agency proposes the following transit services:

- Extending existing Muni bus routes to better serve the Project site
- Increasing frequencies on existing routes to provide more capacity
- Complementing existing routes with new transit facilities and routes that would serve the Project's proposed land use program and transit demand
- Connecting to regional transit with BRT

The Transportation Plan would propose new direct transit service to serve employment trips to and from downtown San Francisco. Connections to the regional transit network (BART and Caltrain) would serve employment centers in the South Bay. The proposed transit improvements are illustrated in Figure II-13 (Proposed Transit Improvements) and described below:

A. **Extended bus routes and new bus routes.** Existing Muni routes 24-Divisadero, 44-O-Shaughnessy, and 48-Quintara-24th Street would be extended to HPS Phase II; route 29 would terminate at Candlestick Point. Service frequencies on these lines would be increased. New Downtown Express routes would connect both Candlestick Point and HPS Phase II with the Financial District.

B. **Harney/Geneva BRT/Transit Preferential Street.** The Harney Way/Geneva Avenue corridor would have exclusive bus and BRT lanes between Hunters Point Transit Center and Bayshore Boulevard, through Candlestick Point and the Bayshore Caltrain Station.

C. **Hunters Point Transit Center.** Hunters Point Transit Center would serve HPS North and Hunters Point Village Center districts. The transit center would have approximately ten bus bays. Most bus lines serving HPS Phase II would terminate at the transit center.

D. **Bus Rapid Transit Stops.** BRT stops would be at Hunters Point Shipyard Transit Center, at three locations within Candlestick Point, and at two intermediate locations.

SOURCE: Fehr & Peers; AECOM, 2009.

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PROPOSED TRANSIT IMPROVEMENTS

FIGURE II-13

E. **Palou Avenue Transit Preferential Street.** One Muni line (24-Divisadero) would be extended along Palou Avenue to serve Hunters Point Shipyard Transit Center. Transit-priority technology would be installed on Palou Avenue including installation of new traffic signals. This would improve transit travel times and reliability on the 24-Divisadero and also the 23-Monterey and 54-Felton, which would continue to operate on Palou Avenue but would not be extended into the Project.

Many of the proposed transit lines would include transit priority systems, with roadway sensors that would detect approaching transit vehicles and would alter signal timing to improve transit efficiency.

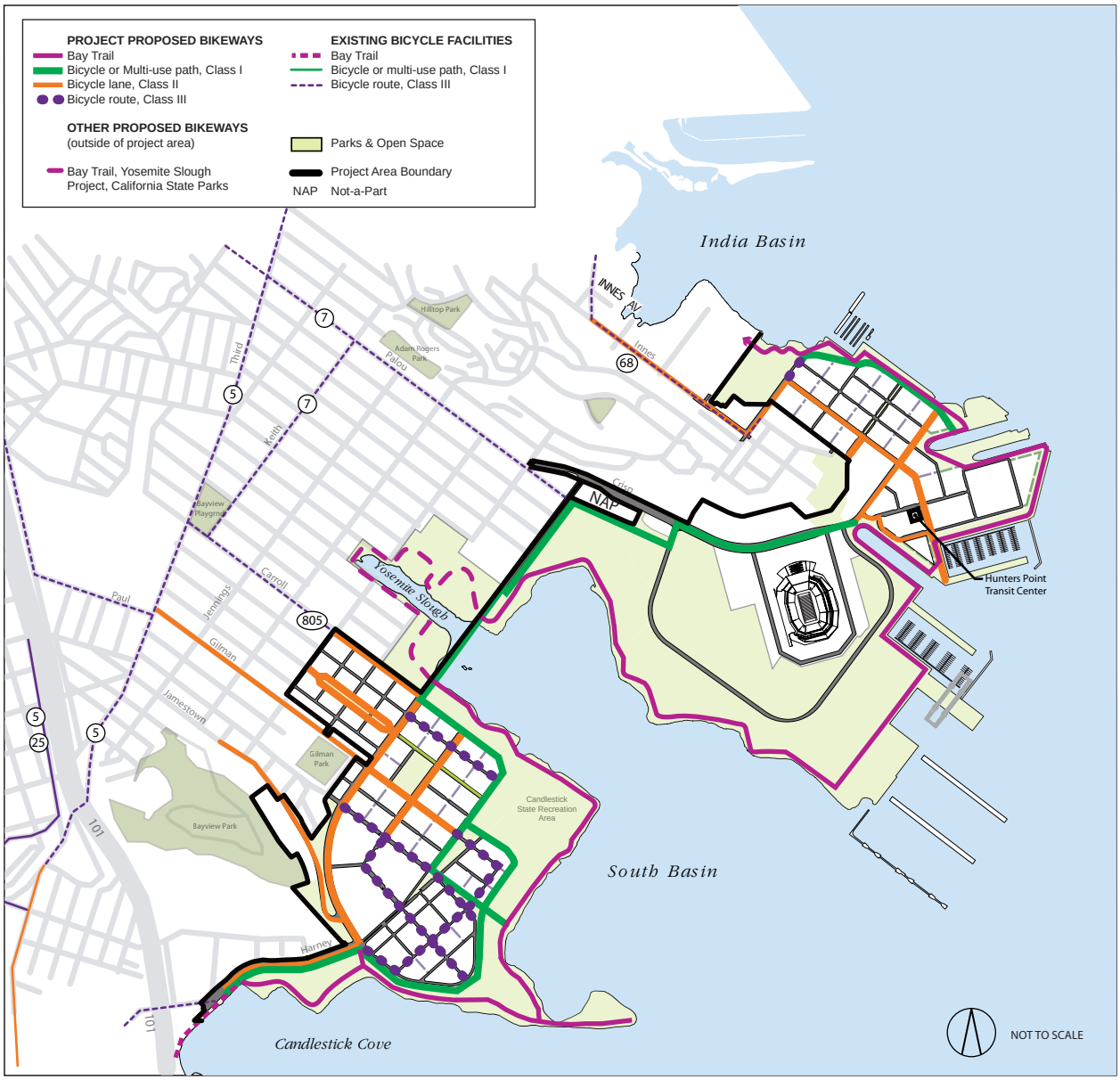
Bicycle Circulation

Bicycle routes would provide connections within the Project site, to the surrounding neighborhoods, and to other parts of the City. Bicycle routes would be located along major roadways, consistent with City guidelines and adopted bicycle plans. As noted above, the Bay Trail, which would accommodate bicycle travel, would be extended along the entire Project waterfront. Secure bicycle parking would be provided in each commercial parking facility and residential garages (Table II-8 [Proposed Bicycle Parking and Shower and Locker Facilities]). New buildings with at least 10,000 gsf of office and community uses would provide locker and shower facilities. Figure II-14 (Proposed Bicycle Routes) illustrates the proposed bicycle route network. Bicycle facilities are described as Class I, which is a separated bicycle path or multi-use trail; Class II, which is a bicycle lane; and Class III, which is a bicycle route.

Table II-8 Proposed Bicycle Parking and Shower and Locker Facilities

Use or Activity	*Parking or Facility*	*Size of Project*
Residential	One Class 1 bicycle space per 2 units	Up to 50 units
	25 Class 1 bicycle spaces plus 1 Class 1 space for every 4 units over 50	Over 50 units
Medical, Office, Institutional, R&D, Theater, Hotel, Artist Space, and Community Use	Three bicycle spaces	10,000 and 20,000 gsf
	Six bicycle spaces	20,001 and 50,000 gsf
	12 bicycle spaces	Greater Than 50,000
Retail, Eating and Drinking Use	Three bicycle spaces	25,000 and 50,000 gsf
	Six bicycle spaces	50,001 and 100,000 gsf
	12 bicycle spaces	Greater Than 100,000
Structured Parking	One secure bicycle space per 20 auto spaces	< 500 parking spaces
	25 bicycle spaces plus 1 additional space for every 20 auto spaces over 500, up to a maximum of 100 bicycle spaces	500 parking spaces or more
Medical, Office, Institutional, R&D, Theater, Artist Space, and Community Use	One shower, two clothes lockers	10,000 and 20,000 gsf
	Two showers, four clothes lockers	20,001 and 50,000 gsf
	Four showers, eight clothes lockers	Greater Than 50,000
Retail, Eating and Drinking Use	One shower, two clothes lockers	25,000 and 50,000 gsf
	Two showers, four clothes lockers	50,001 and 100,000 gsf
	Four showers, eight clothes lockers	Greater Than 100,000

SOURCE: Lennar Urban, August 2009.
Hotel, residential, and live/work are excluded from shower/locker requirements.



SOURCE: Lennar Urban, Fehr & Peers, 2009.

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Candlestick Point — Hunters Point Shipyard Phase II EIR

FIGURE II-14

PROPOSED BICYCLE ROUTES

Pedestrian Circulation

The Project pedestrian network, together with its land use design, would encourage walking as a primary mode of transportation within the Project site. Pedestrian facilities, such as sidewalk and multi-use pathways would allow access to transit facilities and to shopping, schools, and recreation. The interior roadway network would include traffic calming features to facilitate safe pedestrian travel. The streets would be designed to accommodate multi-modal travel, with curb extensions, corner extensions (or bulb-outs), raised crosswalks, comprehensive signage, street trees, narrow roadway lanes, and short blocks and other features to slow vehicle traffic. All pedestrian facilities would meet *Americans with Disabilities Act* (ADA) standards for accessibility and would be designed to conform to San Francisco's "Better Streets Plan" whenever possible.

Parking

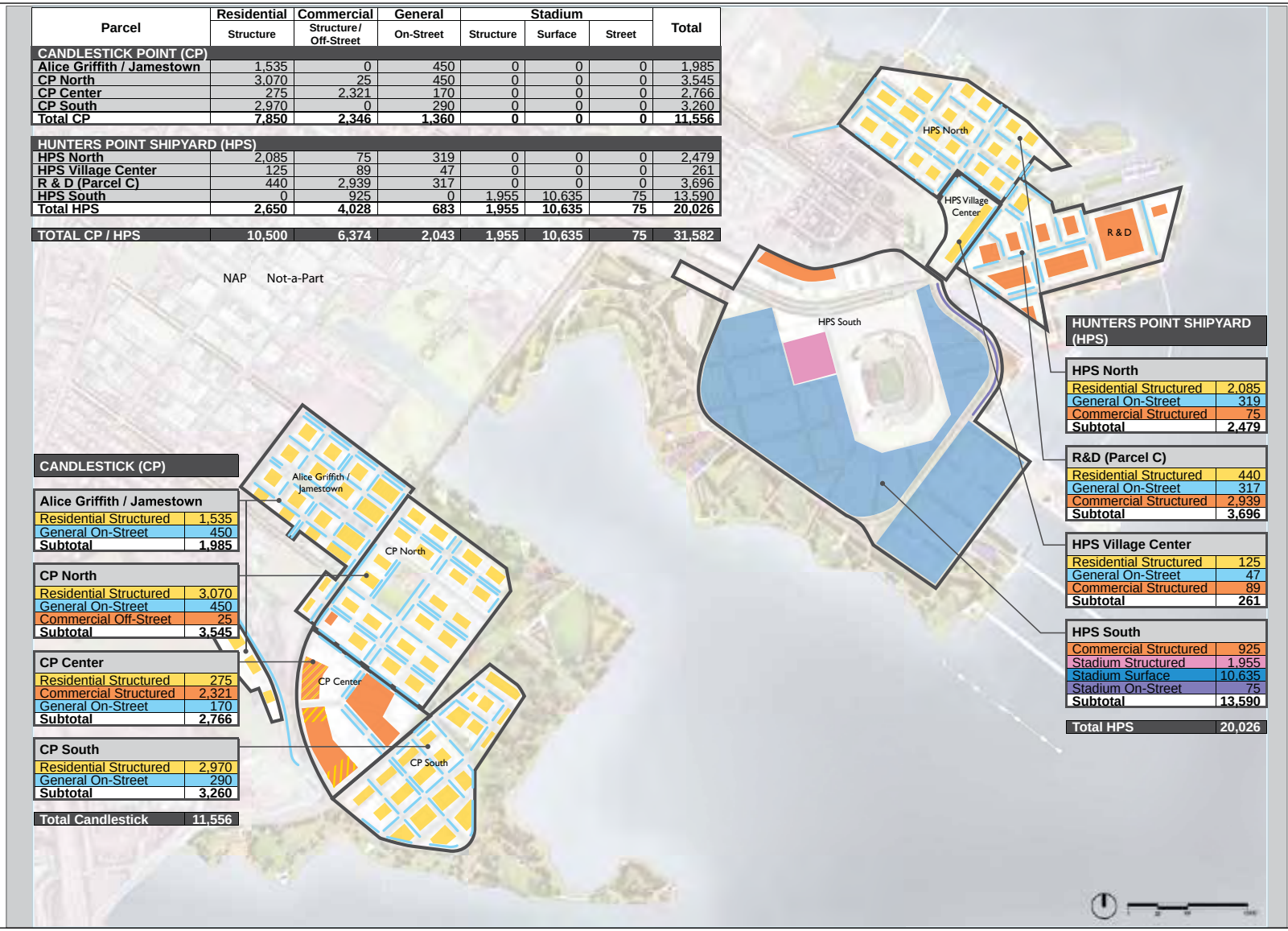
Parking would accommodate residents, employees, and visitors. Table II-9 (Maximum Proposed Parking) and Figure II-15 (Project Parking Supply) present the proposed parking rates and distribution of residential and commercial parking. Residential parking would be provided at a ratio of one space per unit. However, residential parking would be "unbundled" and each parking space sold or leased separately from an individual residential unit. The sale and lease rates would be set at fair market value, which would vary according to market pressures in the City. Commercial and visitor-serving land uses would be served by on- and off-street parking. All commercial parking facilities would be paid parking, with measures to discourage single-occupant automobile use, such as designation of preferred parking areas for bicycles, carpools, vanpools, and carshare vehicles. The performance venue/arena would share parking with proposed retail uses.

Table II-9 Maximum Proposed Parking

Use or Activity	Hunters Point Shipyard Phase II	Candlestick Point
Residential	1 for each dwelling unit	1 for each dwelling unit
Retail (Neighborhood Commercial)	3 for each 1,000 sf of occupied floor area where the floor area exceeds 5000 sf	0
Retail (Regional)	—	2.7 for each 1,000 sf of occupied floor area where the occupied floor area exceeds 5,000 sf
Office	—	1 for each 1,000 sf of occupied floor area
R&D	1.3 for each 1,000 sf of occupied floor area[a]	—
Theater	—	1 for each 8 seats
Hotel	—	0.25 for each guest rooms
Stadium or Sports Arena	—	1 for each 15 seats, if shared
Artist Space	1 for each 2,000 sf of occupied floor area	—
Community Uses (TBD)	1 for each 2,000 sf of occupied floor area	1 for each 2,000 sf of occupied floor area

a. To achieve game day parking requirements if the 49ers stadium is constructed at Hunters Point Shipyard Phase II, R&D for Crisp Road only would be increased to 1.8.

Parcel	Residential	Commercial	General	Stadium			Total
	Structure	Structure/ Off-Street	On-Street	Structure	Surface	Street	
CANDLESTICK POINT (CP)							
Alice Griffith / Jamestown	1,535	0	450	0	0	0	1,985
CP North	3,070	25	450	0	0	0	3,545
CP Center	275	2,321	170	0	0	0	2,766
CP South	2,970	0	290	0	0	0	3,260
Total CP	**7,850**	**2,346**	**1,360**	**0**	**0**	**0**	**11,556**
HUNTERS POINT SHIPYARD (HPS)							
HPS North	2,085	75	319	0	0	0	2,479
HPS Village Center	125	89	47	0	0	0	261
R & D (Parcel C)	440	2,939	317	0	0	0	3,696
HPS South	0	925	0	1,955	10,635	75	13,590
Total HPS	**2,650**	**4,028**	**683**	**1,955**	**10,635**	**75**	**20,026**
TOTAL CP / HPS	**10,500**	**6,374**	**2,043**	**1,955**	**10,635**	**75**	**31,582**



SOURCE: Fehr & Peers, 2009.

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FIGURE II-15

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PROJECT PARKING SUPPLY

Loading

The Project's loading program would facilitate access to freight vehicles (commercial delivery and moving trucks) and passenger vehicles (private vehicles, vans, and shuttles), while reducing conflicts with other transportation modes, particularly pedestrians. On-street loading spaces would serve as short-term parking near building entrances to meet the needs of disabled individuals, other visitors, and for commercial deliveries. The Redevelopment Plan documents would provide standards for the location and management of on-street loading spaces, including specific designation of street frontage at building entrances as short-term loading zones. On-street loading would be prohibited along BRT routes.

Proposed off-street loading spaces would be based on the land use and the gross floor area, as shown in Table II-3. Table II-10 (Proposed Off-Street Loading Program) presents the guidelines for the proposed off-street loading program. Standards in the Redevelopment Plan documents would apply to the location and design of off-street loading spaces including consolidation of loading to minimize curb-cuts and driveways, no off-street loading curb-cuts on BRT routes or local streets with bicycle lanes, shared openings with parking facilities, and single loading facilities to serve multiple uses.

Table II-10 Proposed Off-Street Loading Program

Land Use	*Size of Use*	*Number of Spaces*
Retail, Wholesale, Manufacturing, Live/Work	0 to 10,000 sf	0
	10,001 to 60,000 sf	1
	60,001 to 100,000 sf	2
	> 100,000 sf	3 plus 1 for each additional 80,000 sf
All other uses (including residential)	0 to 100,000 sf	0
	100,001 to 200,000 sf	1
	200,001 to 500,000 sf	2
	> 500,000 sf	3 plus 1 for each additional 400,000 sf

SOURCE: Lennar Urban, 2009

II.E.4 Infrastructure Plan

The Infrastructure Plan would include a low-pressure water system, a reclaimed water system, an Auxiliary Water Supply System (AWSS), and separate sanitary sewer and storm drainage facilities. Trenches throughout the Project site would accommodate electrical, communication, and gas utilities. These systems are generally described below.

■ Low-Pressure Water System

The low-pressure water system would provide potable and fire protection water. The Project site is currently served by the City's low-pressure water system from the University Mound Reservoir. A preliminary water distribution model prepared for the Project indicated the need for increased flow capacity from the City water distribution system to meet the required system performance criteria under

maximum day plus fire flow demand conditions. The Project could potentially include off-site improvements to convey additional flow to the Candlestick Point Project site from the University Mound pressure zone transmission mains on Third Street. The potential off-site improvements would involve upsizing existing pipelines within the rights-of-way on streets between Third Street and the project site. Low Pressure Water System Master Plans (LPW Master Plans) are being developed for Candlestick Point and HPS Phase II. The LPW Master Plans are anticipated to be completed by March 2010 and will identify the need for off-site improvements as well as the routing and scheduling of the construction of these improvements to meet the system performance criteria for the project.

Reclaimed Water System

The Project would provide a network of reclaimed-water mains for dual plumbing[27] in commercial buildings and for irrigation of landscaped areas. Reclaimed water mains would be connected to the potable water system until a source of reclaimed water is developed by the City and delivered to the Project site.

Auxiliary Water Supply System

The AWSS is a separate and distinct water supply system for fire protection purposes only. Candlestick Point and HPS Phase II are not currently served by the AWSS. Currently, there is a planned extension of the AWSS on Gilman Street from Ingalls Street to Candlestick Point. The Project would connect to this extension and provide an AWSS loop within Candlestick Point. At HPS Phase II, the AWSS would be connected to the existing AWSS system at the intersection of Earl Street and Innes Avenue and at the Palou Avenue and Griffith Avenue intersection with a looped service along Spear Avenue/Crisp Road.

Sanitary Sewer

A combined storm sewer system serves most of San Francisco, where stormwater, along with residential and commercial sewage, is directed to treatment plants prior to being released to the San Francisco Bay or Pacific Ocean. The Project's separated sanitary sewer system would convey wastewater from Candlestick Point by gravity flow to the Gilman Avenue combined sewer, which flows to the Southeast Water Pollution Control Plant (SWPCP). The Project's separated sanitary sewer system would convey wastewater from Hunters Point Shipyard Phase II via pump stations to the Hunters Point Sewer Tunnel at Palou Avenue and Griffith Avenue and on to the SWPCP. A portion of the wastewater from Hunters Point Shipyard Phase II site may be directed to existing combined sewer lines located in Innes Avenue at Earl Street. As described below, the Project would have separated stormwater drainage systems.

Storm Drainage/Water Quality

The storm drainage system would handle stormwater by three methods; the particular method employed for any individual storm event would depend on the magnitude of the event. These methods include (1) treated storm flows; (2) a 5-year storm piped system; and (3) overland flow. The storm drainage system would be separated from the sanitary sewer system to reduce wet weather flows to the SWPCP.

[27] Dual plumbing refers to a system of separated water and wastewater lines.

On-site treatment would handle the majority of the stormwater generated by typical rainfall events (1.17-year storm). Examples of on-site treatment could include vegetated swales, flow-through planter boxes, permeable pavement, green rooftops, and rainwater cisterns. Larger rainfall events up to a five-year storm would be handled within the rights-of-way of every street in the Project site. Examples of these stormwater facilities include vegetated buffer strips, flow-through planter boxes, bioretention facilities, pervious surfaces, and subsurface detention vaults. Bioretention basins would also be constructed within parks and open space. Most stormwater runoff from up to a five-year storm event would be treated before it enters the storm drains allowing the system to discharge directly to San Francisco Bay without further management. Stormwater from larger storm events would be routed to the Bay by overland flow along a network of street gutters and roadways. The overland flow stormwater system would fully contain a 100-year storm event. Also refer to Section III.M (Hydrology and Water Quality).

Joint Trenches

The joint trench systems for the Candlestick Point and Hunters Point Shipyard Phase II development plans will be based on the same criteria. The joint trench includes electrical, communications and gas utilities. A joint trench network will be developed for each development site. Major and minor joint trenches will be routed through the street network to provide power, communications, and gas facilities to the development areas.

II.E.5 Community Benefits

The Project includes funding, facilities, and programs intended to benefit the BVHP community. In addition to the improvements provided as part of the proposed development, such as new parks, transit and roadway improvements, artist replacement space and other public facilities, the Project provides funding for additional community benefits including workforce development, jobs, education, and community health and wellness programs. These community benefits, each of which would be more completely set forth in a Disposition and Development Agreement (DDA) between the Agency and the Project Applicant, are further described below.

Affordable Housing

The Affordable Housing Plan would provide for the development of approximately 3,345 affordable and below-market housing units on the project site. These housing units would include a variety of unit types, sizes, and structures, and a wide range of affordability levels subject to necessary governmental approvals. The Project would include the redevelopment of the Alice Griffith public housing site. To accommodate the needs of families, market rate, affordable, and below-market housing units would average 2.5 bedrooms (excluding those specifically offered to senior or disabled residents).

Community First Housing Fund

The Community First Housing Fund would assist qualifying residents in the purchase of market rate homes in District 10.[28]

Education

The Project includes contributions toward a scholarship fund to support educational opportunities for youth and adults up to 30 years old and education enhancements within the community, which may include new facilities or upgrades to existing education resources. The use of these funds will be determined through a community-based process that includes the San Francisco Unified School District.

Space within the Project would be dedicated to the provision of library services to supplement the expanded Bayview branch of the San Francisco Public Library (SFPL), including a reading room and automated book-lending machines integrated into community retail and public facilities.

Community Health and Wellness

The Project would provide funding to be used to create a center focused on the health and well being of children, youth, and their families. The center will be developed and implemented in conjunction with the San Francisco District Attorney's Office, the San Francisco Department of Public Health, and others with expertise in the field.

Business Development/Community Asset Building

The Project includes a workforce development program designed to create a gateway to career development for residents of District 10 and construction assistance program to ensure that contractors from the BVHP area are given the opportunity to obtain needed insurance and technical assistance.

Parcels can be reserved for development with local developers or builders, including for-profit or non-profit organizations that either do business in and have a primary address in the BVHP area, or are owned with at least 50 percent ownership interest by an individual or individuals residing in the BVHP area. A Community Brokers/Realtors program would provide qualified community brokers and realtors with a referral fee for referring buyers of market rate homes, and providing advance access to homes in the Project to such brokers. Specialized programs include space for "business incubation" to jump-start the location and development of innovative business, including cleantech, greentech, biotech, arts and digital media, and space for an International African Marketplace for the display and sale of arts, crafts, clothing, books, and other goods. In addition to these programs, a 0.5 percent fee calculated on the gross sales price of all residential market rate homes will be paid directly into the Hunters Point Shipyard Fund. The use of these funds will be determined in coming months through a continued dialogue with the Hunters Point Shipyard Citizens Advisory Committee (CAC), the PAC, and the BVHP community.

[28] Bayview Hunters Point and Hunters Point Shipyard are within Supervisorial District 10 in the City and County of San Francisco.

II.E.6 Green Building Concepts

The Project would comply with all applicable provisions of the City's Green Building Ordinance, which is contained in Chapter 13c of the San Francisco Building Code, and would provide recycling, composting, and trash facilities as required by the City's specifications. The Project has set an energy efficiency performance target of 15 percent below the energy efficiency standards articulated in Title 24, Part 6 of the 2008 California *Code of Regulations* (CCR). Lennar Urban would include measures such as high performance glazing, efficient lighting, daylighting, shading, envelope optimization, reflective roofs, and natural ventilation in the Project design. ENERGY STAR appliances are proposed for all new residential units. In addition, Lennar Urban could also implement renewable energy strategies, such as the use of photovoltaic cells to provide electricity; the use of solar thermal energy to provide space cooling with the use of absorption systems; and/or water for space heating and domestic water systems.

Lennar Urban has also voluntarily committed to constructing all Project buildings to the LEED® for Neighborhood Development Gold standard based on the Pilot Version of the rating system released in June 2007.[29] Following the 2007 LEED® ND Pilot Program rating system, preliminary analysis indicates the Project could achieve approximately 63 points, which is in the LEED® ND Gold range, through strategies including but not limited to the following:

- Compact, infill development (including 90 percent of the new buildings fronting on public streets or open space)
- Enhanced habitat values
- Brownfield remediation and urban reuse
- Close proximity to transit and bicycle networks (75 percent of all development would be within ¼-mile walk to a transit stop and Class I, II, and III bikeways provide connections throughout the site and to the greater Bayview community)
- Urban design that promotes walking and discourages driving
- Diversity of land uses and housing types
- Affordable housing that supports a community of mixed ages and income
- Community participation in the community planning and design
- Compliance with the San Francisco Green Building Ordinance
- ENERGY STAR compliance to be documented by a Home Energy Rating System (HERS)
- Unbundled parking
- Drought tolerant plant species and the use of efficient irrigation systems such as drip irrigation, moisture sensors, and weather data-based controllers
- Tree-lined streets throughout the development and streetscape improvements extending from the Project Site to Third Avenue along Gilman and Palou
- Access to public space and recreational amenities through the creation of parks and playfields

[29] Since the initial release of this standard, the rating system has undergone two public comment periods, and several credit requirements have changed. The LEED® ND rating system is currently being finalized for formal release by the US Green Building Council.

- Efficient use of water and the potential use of recycled water for non-potable water uses such as irrigation, toilets, vehicle washing
- Progressive stormwater management to retain and treat stormwater on site and/or in adjacent areas

II.F DEVELOPMENT SCHEDULE

It is anticipated that the Project would be constructed over time beginning in 2010 with full build-out by 2029, which represents an approximately 19-year construction period. Figure II-16 (Proposed Site Preparation Schedule) illustrates the site preparation sequence that precedes building construction. Figure II-17 (Proposed Building and Parks Construction Schedule) illustrates the building construction sequence.

During construction, three basic types of activities would be expected (e.g., abatement and demolition; site preparation and earthwork/grading; and building construction). Some activities could occur simultaneously.

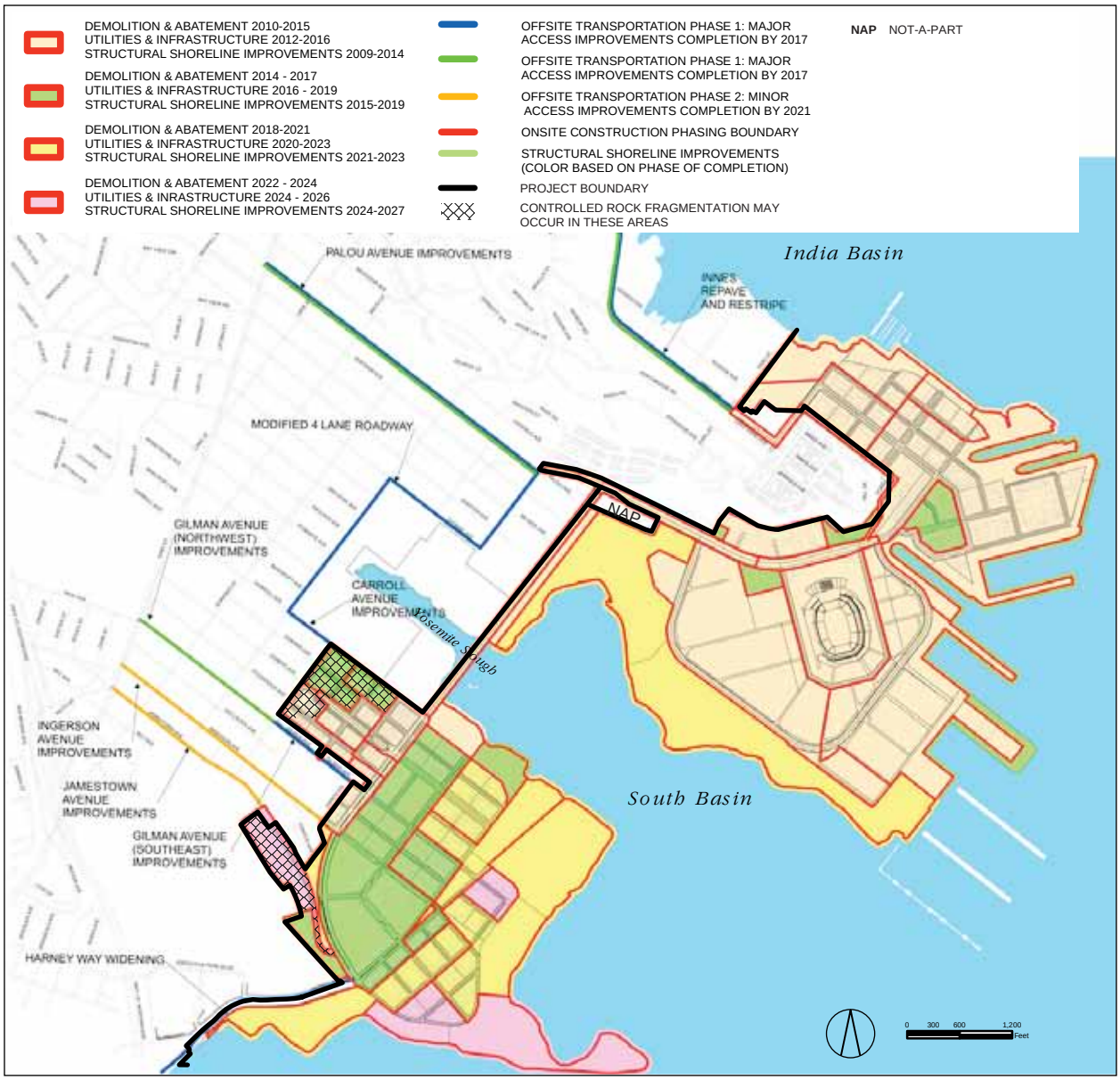
II.F.1 Abatement and Demolition

Demolition of existing structures within the Project site would occur from 2011 to 2024 on Candlestick Point and from 2010 through 2016 on HPS Phase II. As the majority of development would occur on HPS Phase II during the first phase by 2017, most demolition would initially occur in that area of the Project site. In Candlestick Point, demolition of Alice Griffith housing would also occur in the first phase. The estimated quantity of demolition debris is presented in Table II-11 (Estimated Demolition Debris).

Demolition activities would result in construction debris generated by the removal of structures, roads, and infrastructure. In total, approximately 971,787 tons of construction debris would be generated, including 424,681 tons from Candlestick Point and 547,104 tons from HPS Phase II. Most of the construction debris (45 percent) would consist of concrete, with the remaining debris consisting of wood (17 percent), steel (18 percent), and other miscellaneous debris (20 percent). It is assumed that the concrete debris would be recycled on site as pipe bedding or road base; the wood debris would be chipped and sent to the local landfill for disposal; and the steel would be recycled off site for other uses.

Candlestick Point

Demolition activities at Candlestick Point would include demolition of the existing Candlestick Park Stadium, associated parking lots, existing infrastructure, and structures on adjacent properties to be acquired, as well as demolition of the Alice Griffith public housing. Minor utilities would be abandoned in place or removed if they would interfere with installation of new infrastructure. Those include existing small-diameter combined sewer, the CPSRA sewer force main, storm drainage facilities, and low-pressure water main. Lennar Urban would be responsible for all demolition at Candlestick Point.



SOURCE: MACTEC, 2009.

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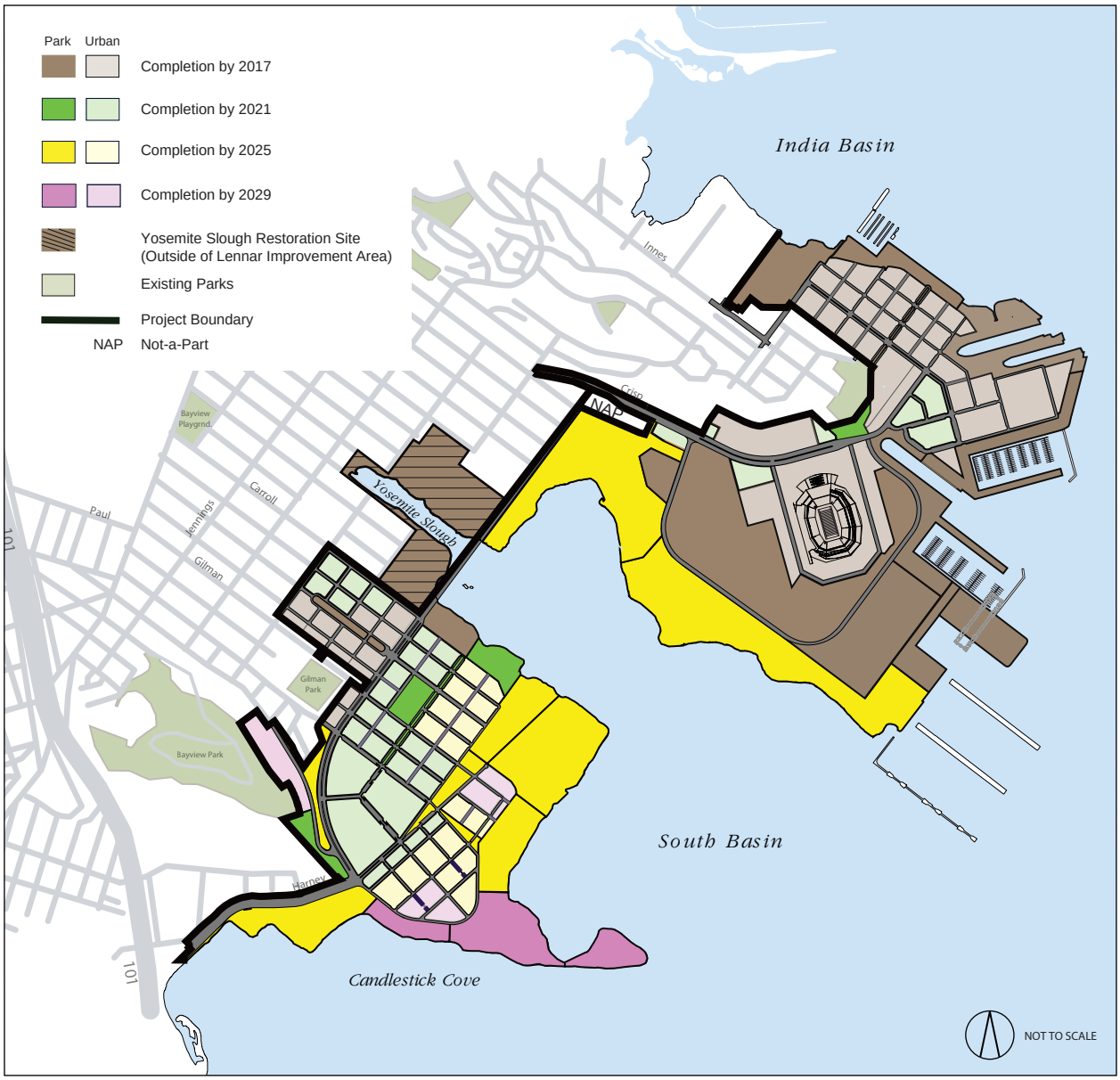
Candlestick Point — Hunters Point Shipyard Phase II EIR

PROPOSED SITE PREPARATION SCHEDULE

FIGURE II-16



SOURCE: Lennar Urban, 2009.

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Candlestick Point — Hunters Point Shipyard Phase II EIR

PROPOSED BUILDING AND PARKS CONSTRUCTION SCHEDULE

FIGURE II-17

Table II-11 Estimated Demolition Debris

	Concrete[a] (tons)	Wood[b] (tons)	Steel[c] (tons)	Misc. Debris[d,e] (tons)	Total[f] (tons)
Candlestick Point					
Building Demolition	212,361	26,611	104,250	55,150	398,372
Road Demolition	2,021	0	33	24,255	26,309
Subtotal	*214,382*	*26,611*	*104,283*	*79,405*	*424,681*
Hunters Point Shipyard Phase II					
Building Demolition	179,652	137,572	74,480	86,119	477,823
Road Demolition	36,950	0	0	32,331	69,281
Subtotal	*216,602*	*137,572*	*74,480*	*118,450*	*547,104*
Total	***430,984***	***164,183***	***178,763***	***197,855***	***971,785***

SOURCE: Lennar Urban, 2009.

a. Concrete debris can be sized and recycled on site as pipe bedding or road base
b. Wood debris can be chipped and composted.
c. Scrap steel can be recycled off site.
d. Miscellaneous debris including glass, asphalt, plastic, etc would be transported and disposed of at a local landfill.
e. Asphalt included in Miscellaneous Debris may be recycled.
f. Quantity estimates are approximate. Pre-demolition surveys need to be performed to confirm size of structures and building material types.

Hunters Point Shipyard Phase II

Demolition activities at HPS Phase II would include removal of structures and infrastructure. The Navy would remove Piers B and C and Drydocks 5, 6, and 7 and in addition demolish five buildings due to radiological concerns, prior to the transfer of HPS Phase II to the City. Lennar Urban would demolish all other buildings proposed for removal. As necessary, lead and asbestos abatement would occur in buildings prior to demolition. Existing infrastructure would be demolished to allow the construction of the new infrastructure. The Navy would remove most stormwater and sewer lines prior to transfer. Lennar Urban would remove existing surface improvements such as asphalt and concrete pavement, concrete sidewalk and other surface improvements.

II.F.2 Site Preparation and Earthwork/Grading

Major earthwork would be required at both Candlestick Point and HPS Phase II. An Earthwork Quantity Analysis was prepared to plan utilization and assignment of earthwork for all phases of development. Project grading requirements are summarized in Table II-12 (Summary of Project Site Grading Requirements) and described below.

Depending on a number of factors, some soil would be transported off site for disposal and some soil may be transported on site. Development of the project's infrastructure would then follow, which would include streets, storm drains, collection and conveyance systems for water, sewer, and stormwater, and distribution systems for gas, electricity, and telephones.

Site preparation for the new 49ers stadium would occur during the first phase of construction. The existing Candlestick Park stadium would be maintained in service while the new 49ers stadium is built.

Candlestick Point

The estimate of earthwork grading requirements for Candlestick Point was based on a profile along the edge of development, which allows for overland flow and piped storm drainage flow. All earthwork is assumed to be used on site for Project grading and for grading improvements to the State Park land, or is exported to HPS Phase II. Table II-12 indicates the use and assignment of earthwork for all phases of development.

Table II-12 Summary of Project Site Grading Requirements

	Candlestick Point (cubic yards)	*Hunters Point High Grade (cubic yards)*
Development Areas		
Excavation	1,111,000	82,500
Import Fill (Export from CP)	N/A	596,000
Import Fill	N/A	1,108,000
Trench Backfill (Utilities)	77,900	227,900
Navy cap (Area Less Open Space Areas)[a]	-	485,000
Open Space Areas		
Excavation	156,000	
Import Fill (Export from CP)		127,000
Import Fill		487,300
Navy cap (Open Space Areas)[a]		321,000
Excess Material when Completed	450,000	

SOURCE: Lennar Urban, 2009.

Crusted concrete from demolition activities estimated at 430,984 cubic yards will be used to reduce the imported fill quantities shown.

a. The "Navy cap" noted above refers to "cutting off an exposure pathway." In the context of the Parcel B Record of Decision, 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 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 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" remedy, includes a "demarcation layer" of some sorts, is often accompanied with methane recovery or monitoring equipment, and more intensive operation and maintenance requirements than a "cover" remedy.

Hunters Point Shipyard Phase II

The estimate of earthwork grading requirements for HPS Phase II was based on a profile along the edge of development of Parcels B and C, which allows for overland flow and piped storm drainage flow. Earthwork at the 49ers stadium location and parking lot would be raised and graded by providing five feet of embankment over existing ground surface. This allows for buried pipeline with limited

penetration of the existing soil. There would be some excavation on site. The material would be imported from Candlestick Point or other off-site sources.

Yosemite Slough Bridge

Construction of Yosemite Slough bridge would include: radiological excavations along the boundary of Parcel E to clear the HPS Phase II bridge approach from radiological restrictions; bridge and revetment construction; and construction of the streets leading to the bridge. In order to access the bridge construction site from the north (HPS Phase II), Parcel E radiological excavation must be completed first. Once completed, construction of the northern abutment, footings and piers would begin, as would construction of the bridge approaches from the south (Candlestick Point). Revetment construction to protect the shoreline parallel with each abutment would follow pier construction. The construction of footings and piers would require cofferdams for access to those specific sites. Construction materials would be transported to the construction area from the South bay or by barge from the East bay. Deliveries of exceptional size (i.e., extra long or wide bridge construction components, equipment or materials) would be scheduled during hours with minimal traffic and coordinated with Caltrans authorities as appropriate.[30]

Shoreline Improvements

The shoreline along the project boundary consists of a variety of edge conditions, many of which need to be improved to reduce erosion, provide public access, protect against present and future coastal flooding due to rising sea levels, and extend the life of the structural edges. There are several distinct types of edge conditions along the project shoreline[31] including piers, wharves, bulkheads, revetments, and natural shoreline consisting of sandy beaches and vegetated marsh. Piers and wharves are the structures that extend out over the water, bulkheads are vertical seawall structures, and revetments are sloped riprap or concrete protected edges.

The Project would repair and improve the existing shoreline edge at Candlestick Point and HPS Phase II. The proposed improvements are based on an assessment of the condition of the existing shoreline, which included analysis of the potential for coastal flooding and provided recommendations to reduce potential effects of storm-induced flooding and ongoing sea level rise. A subsequent investigation[32] provided more detailed information on existing shoreline conditions at the Project site, which permitted refinement of the recommended shoreline improvements.

Improvements to the shoreline along Candlestick Point would include the placement of additional (rock) riprap to improve the flood protection function of the existing riprap shoreline edge, the creation of a sandy recreational beach at the mid-point of the Wind Meadow reach along the Eastern Shoreline; and the creation of new tidal habitat in several locations.

Along some areas of the HPS Phase II shoreline, piers and wharves have deteriorated due to structure age and lack of maintenance and near-shore settlement has occurred. Repairs of existing HPS Phase II

[30] MACTEC, *Work Program for the Construction of Yosemite Slough Bridge*, June 17, 2009.
[31] Moffatt & Nichol, *Candlestick Point/Hunters Point Development Project, Initial Shoreline Assessment*, February 2009.
[32] Moffatt & Nichol, *Hunters Point Shoreline Structures Assessment*, October 2009.

shoreline structures vary based on type of edge and include repair of piles and deck, concrete crack repairs and rock buttresses along base of the drydocks, removal of upper portion of fill along bulkheads, and rip-rap placement. Several piers and drydocks would be modified by the removal of short section of piers and/or bulkheads (near the shore) to preclude public access, thereby creating opportunities for waterbirds to roost on the retained portions of these structures. In addition, some of the shoreline improvements associated with HPS Phase II include transforming the revetment edge in wave-protected reaches to a more natural looking shoreline by placing suitable fill to cover the revetment that would be constructed by the Navy, which may include Articulated Concrete Block (ACB) mats and/or marsh soils. Shoreline wave berms may be included along the southwest facing shoreline at the bayward end of the ACB mats.

Table II-13 (Summary of Shoreline Improvements at the Project Site) summarizes the proposed shoreline improvements within the Project site, while Table II-14 (Description of Existing Shoreline Conditions and Proposed Improvement Concepts) provides more detail regarding shoreline conditions and improvements.

Figure II-18 (Shoreline Improvements within Agency Jurisdiction [Below High Tide Elevation]) identifies the areas where the lateral extent of shoreline may increase or decrease relative to the high tide elevation with the conceptual shoreline improvements. Figure II-19 (Shoreline Structures Recommended Work Map) and Figure II-20 (Natural Shoreline Recommended Work Map) show the type of shoreline treatment that will occur within the Project site; these figures also illustrate the specific locations of the various berths, drydocks, piers, and shorelines that are referenced in Table II-14 (in terms of conceptual improvements).

The proposed improvements would repair in place the existing shoreline edge or modify the location of the shoreline in one of the following ways: (1) the removal of the upper portion of a seawall or bulkhead structure (e.g., 10–15 feet) and the creation of a sloped surface (with an approximate slope of 2:1) in the intertidal and above tidal zones; and (2) the creation of a sandy beach (with an approximately slope of 6:1), which would provide recreational access to the Bay or serve as roosting habitat depending on location. The creation of the sloped surface at the top of selected locations would generally result in the shoreline being relocated between 3 feet and 20 feet landward at HPS Phase II. In addition, because of advanced corrosion and deterioration at the Re-gunning Pier (Berths 16 to 20), a natural shoreline edge would be created, which would result in the landward relocation of the shoreline edge by approximately 60 feet. The creation of sandy beaches and mudflats at Candlestick Point would result in the shoreline being located approximately 3.6 feet to 7.6 feet bayward due to placement of appropriate substrate for these improvements. The net effect of the proposed shoreline improvements would be to increase the land surface area by approximately 0.42 acre at Candlestick Point and reduce the land surface area by approximately 8.51 acres at HPS Phase II. The creation of new nearshore habitat in the form of mudflats, sandy beaches, and sloped tidally inundated areas are discussed more fully in Section III.N (Biological Resources).

In addition to shoreline improvement features and to reduce the impact of rising sea levels (Sea Level Rise [SLR]) that could adversely affect the Project site, the Project includes modification of the land surface through grading and importation of fill. These modifications would raise the surface elevation of

Table II-13 Summary of Shoreline Improvements at the Project Site

Parcel or Area	Location	Proposed Use	Proposed Shoreline Improvements: Repairs: Deck	Repairs: Piles	Repairs: Walls	Modifications: Riprap	Modifications: Remove	Modifications: Remove Portion	Modifications: Slope Top of Wall	Modifications: New Buttress	Modifications: Sandy Beach	Modifications: Tidal Habitat	Estimated Change in Shoreline Location (feet)[d]
Candlestick Point													
North Shore	Grasslands South, Bayview Gardens North	Waterfront Recreation				X						X	+3.6
North Shore	Last Rubble	Waterfront Recreation				X							0
East Shore	Last Rubble, Heart of the Park	Waterfront Recreation				X							0
East Shore	Wind Meadow	Waterfront Recreation									X	X	+7.0
South Shore	Point, Heart of the Park, Neck, Last Port	Waterfront Recreation				X					X		+7.6
Hunters Point Shipyard, Phase II													
B	Drydocks 5 to 7	Northside Park/ Waterfront Promenade			X			X		X			0
	Wharf—Berths 55 to 61	Waterfront Promenade	X	X									0
C	Drydock 3	Heritage Park			X					X			0
	Wharf—Drydocks 2 & 3	Heritage Park					X						0
	Drydock 2	Heritage Park			X					X			0
	Wharf—Berths 1& 2	Waterfront Promenade[a]	X	X									0
	Berths 3 to 5	Waterfront Promenade			X				X				-18.3
	Berths 6 to 9	Waterfront Promenade[b]			X				X				-18.3
	Drydock 4	Waterfront Promenade			X					X			0
D	Berths 10 through 13	Waterfront Promenade[c]			X				X				-18.3
	Berth 14	Waterfront Promenade			X				X				-18.3
	Berths 16 to 20	Wildlife Habitat (Re-gunning Pier)						X	X			X	-60.4
	Berths 15,21, 22, & 29	Waterfront Promenade							X	X			-18.5

Table II-13 Summary of Shoreline Improvements at the Project Site

			Proposed Shoreline Improvements											
			Repairs					Modifications						
Parcel or Area	*Location*	*Proposed Use*	*Deck*	*Piles*	*Walls*	*Riprap*	*Remove*	*Remove Portion*	*Slope Top of Wall*	*New Buttress*	*Sandy Beach*	*Tidal Habitat*	*Estimated Change in Shoreline Location (feet)*[d]
	Berths 23 to 28	Wildlife Habitat						X					0
E	Berths 30 to 35	Wildlife Habitat						X					0
	Berth 36	Grasslands Ecology Park							X	X			-18.5
	Berth 37 to 42	Wildlife Habitat						X					0
	Natural Edge/Riprap	Grasslands Ecology Park										X	-3.0
E2	Natural Edge/Riprap	Grasslands Ecology Park										X	-3.0

SOURCE: Moffatt & Nichol, Draft Hunters Point Shoreline Structures Assessment, September 2009.

At some locations, poor condition of existing shoreline features may require an alternate improvement.

a. Alternate improvement: remove or retain but add landscaping to deter public access and provide open space/habitat
b. Alternate improvement: remove and replace with concrete or steel bulkhead
c. Alternate improvement: remove and replace with concrete or steel bulkhead
d. These numbers represent an average estimated change in the shoreline at the specified location. A positive number indicates an increase in the shoreline; and a negative number indicates a decrease in the shoreline.

Repair Descriptions:

Deck: Remove and replace deteriorated deck materials

Piles: Limit corrosion by wrapping or encasing piles in concrete and/or improve structural integrity by welding additional steel plates to the piles

Walls: Patch spalls, exposed and corroded reinforcing bars, or broken concrete. Add weep holes (to equalize pressure). As needed, install new sheet piles behind existing wall to form new wall (and remove existing wall).

Riprap: Place additional riprap (e.g., boulders) in the same location as existing riprap.

Modification Descriptions:

Remove: Remove deteriorated piers, pilings, and deck

Remove Portion: Remove a portion of pier near shoreline (to preclude public access)

Slope Top of Wall: Remove the top portion of a wall (e.g., 10-15 feet) and slope back top of wall at approximate slope of 2H:1V

New Buttress: Install new underwater rock and/or sand buttress at base of wall to improve structural stability of adjacent wall. Additional analysis will be required to determine the need for a buttress at some locations.

Sandy Beach: Slope back surface at approximate slope of 6H:1V to create sandy beach for recreational purposes

Tidal Habitat: Take advantage of sloped surface (or reduce slope where needed) to install aquatic plants and create new tidally-exposed habitat

Change in Shoreline Location: approximate change (in feet) in the location of shoreline (compared to existing conditions) which would result from proposed shoreline improvements.

Table II-14 Description of Existing Shoreline Conditions and Proposed Improvement Concepts

Parcel or Area	Location	Proposed Use	Existing Shoreline Conditions	Proposed Improvement Concepts
North Shore	Grasslands South, Bayview Gardens North, Last Rubble	Waterfront Recreation	The slope protection on the north portion of the segment is a mixture of concrete rubble, rock riprap, and brick. The slope protection varies in size from cobbles to 4 feet in diameter. The north shoreline shows two small areas of unprotected shoreline that are fronted by exposed mud flats and vegetation.	Improve the present riprap edge along the shoreline to required elevations (placing riprap) to remain consistent with the present configuration. At the two reaches where opportunities exist for a natural edge, lay back the slope at a flatter configuration and plant marsh plantings.
East Shore	Last Rubble, Heart of the Park	Waterfront Recreation	The eastern shoreline is mainly riprap protected, except for one small sandy beach area built as a demonstration project by Art Ecology, a local community group. Burrowing from ground squirrels and other rodents was noted along the eastern, unprotected portions of this segment.	Improve the present riprap edge along the shoreline to required elevations (placing riprap) to remain consistent with the present configuration. At the mid-point of the Wind Meadow reach, construct a sandy recreational beach by laying the slope back at a 6H:1V or flatter configuration.
South Shore	Point, Heart of the Park, Neck, Last Port	Waterfront Recreation	The slope protection on the south portion of the Candlestick segment is primarily rock riprap. The slope protection varies in size from 1 to 4 feet in diameter. Along the majority of the south-facing shoreline, active erosion was observed in the higher portions of the embankment.	Improve the present riprap edge along the shoreline to required elevations (placing riprap) to remain consistent with the present configuration.
B	Drydocks 5 to 7	Northside Park/Waterfront Promenade	The portion of shoreline west of the submarine drydocks (Drydocks 5, 6, 7) is an embankment protected by riprap, with some sandy pocket beach areas in the sheltered coves. This segment is part of the Navy's proposed remediation action, and is therefore not included in the analysis. The submarine drydocks consist of three slipways (Drydocks 5, 6, and 7) with concrete bulkheads on either side of each slipway. The portion between adjacent bulkheads consists of timber pile-supported deck. Portions of this segment are part of the Navy's remediation action, wherein the timber structures will be demolished and any contaminated sediments at the bottom of the drydocks will be dredged by the Navy. The remaining portions (shoreline and concrete structures perpendicular to shoreline) are part of the Redevelopment project.	This portion of shoreline will be improved to a riprap revetment by the Navy. The Navy will demolish the timber portions of the drydocks, and excavate any contaminated sediments. As part of the redevelopment project, the following improvements are envisioned: ■ Concrete bulkheads will be left in place but disconnected from the shoreline by demolishing the sections near the shoreline to prevent public access to the walls for safety reasons ■ For slope stability reasons, a rock buttress will be placed along the quay-wall extending from the bottom of the docks to about mid-tide level elevation (to be determined after geotechnical studies are complete) ■ Weep-holes will be constructed in the quay-wall above low tide elevation to relieve the loading from the backfill along the shoreline

Table II-14 Description of Existing Shoreline Conditions and Proposed Improvement Concepts

Parcel or Area	Location	Proposed Use	Existing Shoreline Conditions	Proposed Improvement Concepts
	Wharf—Berths 55 to 61	Waterfront Promenade	The wharf at berths 55-61 is approximately 1100 ft long. Berths 55, 56, 57, and 58 are located along two piers perpendicular to the wharf and constructed of timber decking and supported by timber piles. The pier for berths 59 and 60 (located just to the east of berths 57 and 58) no longer exists. The wharf is a reinforced concrete structure and the timber piers are connected to the concrete wharf. Each bent is supported by four 4-ft diameter concrete-filled caissons, the bents are spaced at 40 ft on center. The deck is a reinforced concrete slab supported by reinforced concrete beams and a deck elevation of +13.25 ft MLLW. The record drawings indicate precast beams and cast in place deck slab with a thickness of 14 inches. Based on drawing information found, the Design Live Load for this wharf is 600 pounds per square foot (psf). Furthermore, it is also designed for a truck crane loading of 21,000 lbs. per wheel (truck crane with 6 wheels). The riprap slope protection underneath the wharf is a minimum 2 ft thick based on the drawings and has a slope of 1.5 horizontal to 1 vertical (1.5H:1V). <u>Riprap-Protected Slope East of Berth 55 (Heritage Park)</u> This segment of shoreline is protected by concrete debris and riprap, and is part of the Navy's remediation action. Therefore, it is not included in the analysis.	The wharf at Berths 55 through 61 will need to be repaired and upgraded so that it can be used as a promenade for public access. Proposed repairs are: ■ Repairs to the 4-ft diameter steel caisson piles, which could range from limiting ongoing corrosion by wrapping or encasing the piles in concrete, to structural retrofit of piles by welding additional steel plates to the piles ■ Repairs to the reinforced concrete beams and deck slab including spall repair using shotcrete, grout, and/or epoxy injections. <u>Riprap Protected Slope East of Berth 55 (Heritage Park)</u> This portion of shoreline will be improved to a riprap revetment by the Navy.
C	Drydock 3	Heritage Park	Drydock 3 is a reinforced concrete structure with concrete sidewalls. The cross-section of the drydock varies from trapezoidal to rectangular, and the bottom surface is reinforced concrete. The concrete sidewalls vary between smooth-surfaced and stepped, depending on location and elevation. The concrete steps at some places of the concrete sidewalls apparently provided operational access during drydocking.	The drydock is proposed to remain at its current configuration but with the following modifications: ■ Add weep holes on the sidewall to reduce pressure behind it. These weep holes shall be located above the lowest tide and shall extend to near the top of the drydock walls ■ Add rock or sand buttress on the face of the drydock walls at the bottom. This will result in additional passive resistance with the intent of increasing slope stability ■ Patching all exposed spalls, replacement of reinforcing bars if necessary, epoxy material injection to cracks, and filling any holes and/or depressions.

Table II-14 Description of Existing Shoreline Conditions and Proposed Improvement Concepts

Parcel or Area	Location	Proposed Use	Existing Shoreline Conditions	Proposed Improvement Concepts
	Wharf—Drydocks 2 & 3	Heritage Park	There is a timber pile-supported wharf designated as Wharf No. 2 located between Drydock No. 2 and 3. The deck framing consist of 4 x 12 timber planks, 4 x 14 stringers, and 14 x 14 timber pile caps. The supporting timber piles are spaced at 10 ft maximum. The deck elevation is indicated on the drawings as +12.0 ft MLLW.	This portion of shoreline will be removed by the Navy.
	Drydock 2	Heritage Park	Drydock 2 is very similar to Drydock 3 but smaller (shorter and shallower).	Drydock 2 is similar to Drydock 3 and the repairs described above shall be applied here too.
	Wharf—Berths 1& 2	Waterfront Promenade[a]	The wharf along Berths 1 and 2 is about 1000 ft long and 40 ft wide, and is backed by a concrete bulkhead along the shoreline. It is a reinforced concrete structure consisting of reinforced cast in place deck slab 8-inch thick, 16-inch wide x 36-inch deep beams, 2.5 ft wide x 5 ft deep girders, 4 ft wide x 6.5 ft deep pile caps, and 3 ft diameter concrete-filled steel cylindrical piles. There is a steel (wide-flange section) batter pile connected to the pile cap on the inboard side of the wharf. The batter piles are spaced at 6.25 ft. and the cylindrical piles are spaced at 25 ft on center. The deck elevation is indicated as +12.0 ft MLLW and has a rail track that runs parallel to the face of the wharf. The reviewed drawings indicate a design live load of 600 psf, 15-ton capacity Re-gunning crane, and 25-ton locomotive.	The wharf structure can be repaired and left in its present configuration. Recommended repairs include: ■ Construct a new sheet pile bulkhead behind the existing steel bulkhead because it has very likely corroded to a point past its serviceable life. The new sheet piles will be driven and tied back to form the new shoreline location. ■ Inspect the pile-supported wharf portion of the structure and assess structural integrity of the deck and piles. If the structure is determined to be adequate, or repairable to current codes with relatively minor repairs, conduct the repairs for continued use as a waterfront promenade for public use. If the investigation finds the structure to be significantly deficient or expensive to repair, it will be demolished or left in place with appropriate landscaping improvements that will deter public access and yet serve as open-space.
	Berths 3 to 5	Waterfront Promenade	The shoreline along Berths 3 and 4 is about 1100 ft long. It is constructed as a filled-in quay-wall 58 ft wide using timber cribs and filled with bank run rock fill. The top is at elevation +12.0 ft MLLW. The timber crib wall is founded on a 5 ft thick sand blanket and 18-inch sand piles spaced at 20 ft on centers. The facing of the wharf is a reinforced concrete wall anchored to the timber cribbing. Timber fenders are attached to the concrete wall (at the top), which extend below the MLLW line. The shoreline along Berth 5 is about 400 ft long. It was constructed exactly the same as the quay-wall along Berths 3 and 4.	Based on visual observations and engineering judgment, it is likely that the structure can be repaired and left in its present configuration. Recommended repairs would include the following: ■ Remove the upper portions (10 to 15 ft) of the concrete wall facing including the timber cribbing and bank run rock fill. The facing shall be sloped back at a 2H:1V slope and protected with rock facing to provide a more natural-looking surface without any additional bayfill and related impacts. ■ Patching all exposed spalls, replacement of reinforcing bars if necessary, epoxy material injection to cracks, and filling any holes and/or depressions.

Table II-14 Description of Existing Shoreline Conditions and Proposed Improvement Concepts

Parcel or Area	Location	Proposed Use	Existing Shoreline Conditions	Proposed Improvement Concepts
	Berths 6 to 9	Waterfront Promenade[b]	The shoreline along Berths 6 though 9 is a 120 ft wide structure, 1000 ft long. Its construction is similar to the wharf for Berths 3 and 4 as filled-in quay-wall. The top is at elevation +12.0 ft MLLW. It is constructed using timber cribs extending the full width and height of the pier and filled with bank run rock fill. The timber crib wall is founded on a 5 ft thick sand blanket underneath a variable thickness bank run rock blanket. The facing of the wharves on each side of the pier is a reinforced concrete wall anchored to the timber cribbing and extends the full height of the pier. Timber fenders are attached to the concrete wall (at the top), which extend below the MLLW line. There are rail tracks along each side and parallel to the face of the pier.	Since this is the same type of construction as for Berths 3 and 4, the recommended modifications are the same. Refer to the description above. However, if additional investigations indicate that the timber cribs have been attacked by marine borers and are beyond repair, the repairs would be more extensive and may include complete demolition of the pier and replacement with a concrete or steel sheetpile bulkhead to serve as wave protection for the proposed marina in its lee.
	Drydock 4	Waterfront Promenade	Drydock 4 is a reinforced concrete structure with concrete sidewalls. The cross section of the drydock varies in trapezoidal shapes – the entrance has steeper sloping walls compared to the main drydock with flatter sloping walls. It is larger compared to Drydocks 2 and 3.	Since this is the same type of construction as for Drydocks 2 and 3, the recommended modifications are the same.
D	Berths 10 through 13	Waterfront Promenade[c]	The shoreline along Berths 10 through 13 was constructed in exactly the same manner as for Berths 6 through 9 (timber crib structure).	Since this is the same type of construction as for Berths 3 and 4, the recommended modifications are the same (see description above). However, if additional investigations indicate that the timber cribs have been attacked by marine borers and are beyond repair, the repairs would be more extensive and may include complete demolition of the pier and replacement with a concrete or steel sheetpile bulkhead to serve as wave protection for the proposed marina in its lee.

Table II-14 Description of Existing Shoreline Conditions and Proposed Improvement Concepts

Parcel or Area	Location	Proposed Use	Existing Shoreline Conditions	Proposed Improvement Concepts
	Berths 14; Berths 16 to 20	Waterfront Promenade	The shoreline along Berth 14 was constructed exactly the same as for Berths 3 through 5 (timber crib structure). The shoreline along Berths 16 through 20 is a quay-wall type filled-in structure. The pier was designated by the navy as the Regunning Pier. It is 400 ft wide and about 1650 ft long on the north side and about 1000 ft on the south side. The quay wall around the pier is a cellular type cofferdam using steel sheet piles with semi-circular shaped facing (in plan). Each cell is about 31 ft x 65 ft in plan with the sheet piles varying in lengths from 64 ft to 76 ft. The longer piles are along the exterior portion of each cell which represents the wall of the pier. The shorter piles are the "tie back" piles buried within the pier. The cells are filled with hydraulic sand fill. At the outer edge of the cells near the top of the pier, the cells are filled with "Quarry run chips and fines" 9.5 ft thick 5 ft wide at the top and 15 ft wide at the bottom according to the drawings. The rest of the pier is filled with sand or selected bank run fill. Refer to Figure D4 for a typical section of the pier cellular wall and details of its upper portion. The top of the pier is at elevation +12 ft MLLW. Along the edges, there is a 1.5 ft thick concrete cap on top of the steel sheet piles which provides a straight edge for the pier facing. Timber fenders are installed along the face of the pier for berthing. The top is surfaced with a concrete pavement and asphalt-wearing surface. There are rail tracks on top of the pier. At this pier, there is a large overhead crane rated at 450 tons. The crane is supported by steel-framed towers and the foundation for the towers is supported by steel H-shaped piles (14HP89). There are four towers. Each tower is supported by four legs. The foundation for each leg has thirty H-shaped steel piles. The foundation for this crane is independent from the pier cellular wall system. Various sections of the sheet pile wall are dilapidated or sheared off above the water line. The shoreline supported by the sheet pile wall is eroding and failing in locations where the sheet pile wall has been undermined.	<u>Berth 14 (Waterfront Promenade)</u> Since this is the same type of construction as for Berths 3 and 4, the recommended modifications are the same. Refer to the description above. <u>Berths 16 through 20 (Wildlife Habitat)</u> Visual observations of advanced corrosion and deterioration indicate that the steel sheetpile cellular bulkhead, that provides the shoreline facing for the pier, is beyond repair. The improvement options that could be implemented include replacing the bulkhead with a riprap edge or replacing it with a natural shoreline edge. Since the proposed land use is wildlife habitat, the recommended modification is as follows: Lay back the upper portion of the slope by saw-cutting the concrete deck at some distance from the shoreline and removing the sand fill at a 5H:1V slope (or gentler) Cutting the steel sheet piles at about mid-height (approximately low tide) or even lower Placing a coarse sand layer over the excavated slope to serve as substrate for grasses and other plants Constructing a boardwalk along the centerline of the smaller peninsula created as described above

Table II-14 Description of Existing Shoreline Conditions and Proposed Improvement Concepts

Parcel or Area	Location	Proposed Use	Existing Shoreline Conditions	Proposed Improvement Concepts
	Berths 15, 21, 22, & 29	Waterfront Promenade	The shoreline along Berths 15, 21, 22, and 29 are very similar in construction to the pier for berths 16 through 20 (described above). The wharf facing is a cellular type quay wall consisting of steel sheet piles with the cell filled with hydraulic sand fill. Each cell is 31 ft along the face of the wharf and about 65 ft wide. These berths do not have a concrete cap on top of the steel sheet piles.	Berth 15 (Waterfront Promenade) Visual observations of advanced corrosion and deterioration indicate that the steel sheetpile cellular bulkhead, that provides the shoreline facing for the pier, is beyond repair. The recommended improvement is to remove the upper portion (10 to 15 ft) of the sheetpile wall and sand fill behind it. The facing shall be sloped back at a 2H:1V slope and protected with rock facing to provide a more natural-looking surface without any additional bayfill and related impacts.
	Berths 23 to 28	Wildlife Habitat	The shoreline in this segment consists of a concrete pile-supported pier which is deteriorating. No active reuse is envisioned for the pier, and it will provide habitat for shorebirds.	Since the pier is very likely beyond its serviceable life, the recommended improvement is to detach it from shore and let it convert to a habitat for shorebirds that already use it. The detachment will prevent public access to this unstable pier, as well as raptors from accessing the habitat.
E	Berths 30 to 35	Wildlife Habitat	The shoreline in this segment consists of a concrete pile-supported pier which is deteriorating. No active reuse is envisioned for the pier, and it will provide habitat for shorebirds.	Since this is the same shoreline configuration (pier) as for Berths 23 through 28, the recommended modifications are the same (see description above).
	Berth 36	Grasslands Ecology Park	The shoreline in this segment is very similar in construction to Berth 29 (described above). The wharf facing is a cellular type quay wall consisting of steel sheet piles with the cell filled with hydraulic sand fill. Each cell is 31 ft along the face of the wharf and about 65 ft wide. The berth does not have a concrete cap on top of the steel sheet piles.	Since this is the same type of construction as for Berth 15, the recommended modifications are the same (see description above).
	Berth 37 to 42; Natural Edge/Riprap	Wildlife Habitat	The shoreline in this segment consists of a concrete pile-supported pier which is deteriorating. No active reuse is envisioned for the pier, and it will provide habitat for shorebirds. Riprap Protected Slope (Grasslands Ecology Park) The portion of shoreline west of Berth 36 is an embankment protected by a combination of riprap and concrete debris. Slope protection varies significantly in size from small rock and bricks, 4 to 8 inches in size, to large 4' blocks of concrete debris. This segment is part of the Navy's proposed remediation action, and is therefore not included in the analysis.	Since this is the same shoreline configuration (pier) as for Berths 23 through 28, the recommended modifications are the same (see description above). Riprap Protected Slope (Grasslands Ecology Park) This portion of shoreline will be improved to a riprap revetment by the Navy. However, the presence of vegetation and marshlands in this reach implies that there may be an opportunity to enhance this segment to a more natural marsh / mudflat edge. The recommended improvements include placing a suitable substrate in front of the revetment constructed by the Navy, and seeding it (or allowing natural propagation) with marsh plants.

Table II-14 Description of Existing Shoreline Conditions and Proposed Improvement Concepts

Parcel or Area	*Location*	*Proposed Use*	*Existing Shoreline Conditions*	*Proposed Improvement Concepts*
E2	Natural Edge/Riprap	Grasslands Ecology Park	The shoreline along Parcel E-2 is an unprotected natural shoreline with some debris (broken concrete, broken bricks and random pieces of rock) lining the edges, as well as beach-fronted, unprotected slopes. Similar to Parcel E, this segment of the project shoreline is characterized by slopes protected by riprap or concrete debris, as well as beach-fronted, unprotected slopes. The shoreline shows areas of erosion as well as areas of vegetation/habitat growth within the intertidal zone. Slope protection, where it exists, consists of small rock and bricks, 4 to 8 inches in size.	This portion of shoreline will be improved to a riprap revetment by the Navy. However, the presence of vegetation and marshlands in this reach implies that there may be an opportunity to enhance this segment to a more natural marsh / mudflat edge. The recommended improvements include placing a suitable substrate in front of the revetment constructed by the Navy, and seeding it (or allowing natural propagation) with marsh plants.

SOURCE: Moffat & Nichol Engineers, 2009; PBS&J, 2009.

PBS&J 10.17.09 08068 | JCS | 09

FIGURE II-18

Candlestick Point — Hunters Point Shipyard Phase II EIR

SHORELINE IMPROVEMENTS WITHIN AGENCY JURISDICTION (BELOW HIGH TIDE ELEVATION)

SOURCE: Moffatt & Nichol Engineers, 2009.

PBS&J 10.16.09 08068 | JCS | 09

FIGURE II-19

Candlestick Point — Hunters Point Shipyard Phase II EIR

SHORELINE STRUCTURES RECOMMENDED WORK MAP

SOURCE: Moffatt & Nichol Engineers, 2009.

PBS&J 10.16.09 08068 | JCS | 09

FIGURE II-20

Candlestick Point — Hunters Point Shipyard Phase II EIR

NATURAL SHORELINE RECOMMENDED WORK MAP

low-lying areas, including portions of both the Candlestick Point and HPS Phase II areas, as discussed more fully in Section III.M (Hydrology and Water Quality).

Sea Level Rise

Rising sea levels is an ongoing phenomenon, which needs to be accounted for in the planning process to prevent future flooding or loss of infrastructure due to shoreline erosion. Planning for SLR includes three separate components (1) designing the perimeter to be flexible enough that crest elevations could be increased to prevent overtopping, (2) designing the development areas to be high enough that flooding would not occur around dwellings should the perimeter not function adequately, (3) designing the storm drainage system to be flexible enough that higher water levels would not result in overland flooding. It is obvious that while the perimeter and storm drain system could be upgraded over time, habitable structures cannot be raised.

There is no current guidance or policy establishing numeric values for development projects along the Bay edge. The Federal Emergency Management Agency (FEMA) maps flood zones based on present day rainfall and tidal conditions, but regional and local agencies have taken a more proactive approach in reviewing development proposals because of the public infrastructure element that they would be responsible for.

A project specific SLR study was undertaken[33] to develop planning and design guidance through the various phases of the project. The study was based on an exhaustive review of the literature, recent guidance from regional agencies, and knowledge of coastal processes of San Francisco Bay. The literature on SLR estimates varies widely, from an observed value of 8-inches per century (historical measurements) to 33-inches per century (Intergovernmental Panel on Climate Change [IPCC] maximum estimate). News articles and semi-empirical studies (Rahmstorf 2007) based in part on recent measurements of ice cap melt, have stated that the increase in SLR over the next 100 years could be much higher than those estimated by IPCC. Even among projections considered plausible, albeit high, by the CALFED Independent Science Board, a SLR of 36-inches would not occur until about 2075 to 2080 and by about 2100 the SLR could reach 55 inches. However, sea level observations since the publication date of the ice cap melt studies, although not conclusive to establish a new trend in SLR, do not show the accelerated SLR trajectory predicted by some of the reports.[34]

Project design for SLR meets both near term (2050) and long-range (2080) objectives; and in addition, incorporates an adaptive management strategy to address sea level rise for the most conservative estimates at 2100 and beyond. Since building structures are generally "immovable," whereas a perimeter and/or storm drain system can be adapted to keep up with changing sea levels, each was designed to a specific planning horizon as described below.

[33] Moffatt & Nichol, *Hunters Point Shoreline Structures Assessment,* October 2009.
[34] Rahmstorf, S., A. Cazenave, J.A. Church, J.E. Hansen, R.F. Keeling, D.E. Parker, and R.C.J. Somerville, 2007. *Recent Climate Observations Compared to Projections*. Science 316, p. 709.

Development Design

For building structures, a 36-inch SLR allowance plus a freeboard of 6 inches was selected as the design criteria to use for design and construction. Per the most conservative rate of SLR (Rahmstorf, 2007 which includes ice-cap melt estimate), a SLR of 36 inches would not occur until about 2080,[35] which would be approximately 50 years beyond the last phase of construction for the project. Ongoing measurements of SLR from the scientific community would be incorporated into Monitoring and Adaptive Management Plans, administered by a Geologic Hazard Abatement District (GHAD) or other entity with similar funding responsibility.[36] This entity would guide the decision-making process for implementation of future improvements, such as raising the perimeter. The proposed Monitoring and Adaptive Management Plan for the project would have the appropriate language that specifies management actions that would need to occur should SLR exceed 36 inches. Should the SLR exceed 36 inches, the proposed project-specific funding mechanism (GHAD or similar) would pay for improvements.

Perimeter and Storm System Design

For the perimeter system, it is not practical to build a high wall around the project for a design condition that may not happen for several decades. At the same time, it is not prudent to build to present sea level conditions and keep raising it as sea levels rise. Therefore, an interim sea level rise estimate for the year 2050, as put forth by BCDC and the State Coastal Conservancy,[37] was selected as the design criteria to use for design and construction. That sea level is 16 inches higher than the present, which will ensure that adaptive management construction activities are not triggered until at least the year 2050. In addition, the shoreline and public access improvements have been designed with a development setback to allow any future increases in elevation to accommodate higher SLR values, should they occur.

For the storm drain system, the same approach as the perimeter system described above was adopted. This will avoid installing pumps and other appurtenances at the present time, when they are not needed, while still ensuring that an adaptation strategy and a funding mechanism exists for future management actions.

Figure II-21 (Flood Zones [Existing and with a 36-Inch Sea Level Rise]) shows the existing flood zone and the flood zone with a 36-inch SLR scenario. With the proposed project improvements at the time of construction, the flood zone would be reduced to that shown in Figure II-22 (Flood Zones [With Project]).

Figure II-23 (HPS Shoreline Section [Berths 55 to 60; Waterfront Promenade]), Figure II-24 (HPS Shoreline Section [Berths 3–5; Marina]), Figure II-25 (HPS Shoreline Section [Berths 16–20; Re-Gunning Pier]), and Figure II-26 (HPS Shoreline Section [Grasslands Ecology Park]) show typical sections along the edge of the proposed development. Figure II-27 (Candlestick Point Section [The Neck Area of the CPSRA]) shows proposed shoreline improvements at "The Neck" area of the CPSRA.

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[35] Moffatt & Nichol, *Candlestick Point/Hunters Point Development Project Initial Shoreline Assessment*, prepared for Lennar Urban, February, 2009, op. cit.

[36] Moffatt & Nichol, *Hunters Point Shoreline Structures Assessment*, October 2009.

[37][6] California State Coastal Conservancy. 2009. *Policy Statement on Climate Change*. Adopted at the June 4, 2009 Board Meeting. Available online at <http://www.scc.ca.gov/index.php?p=75&more=1>.

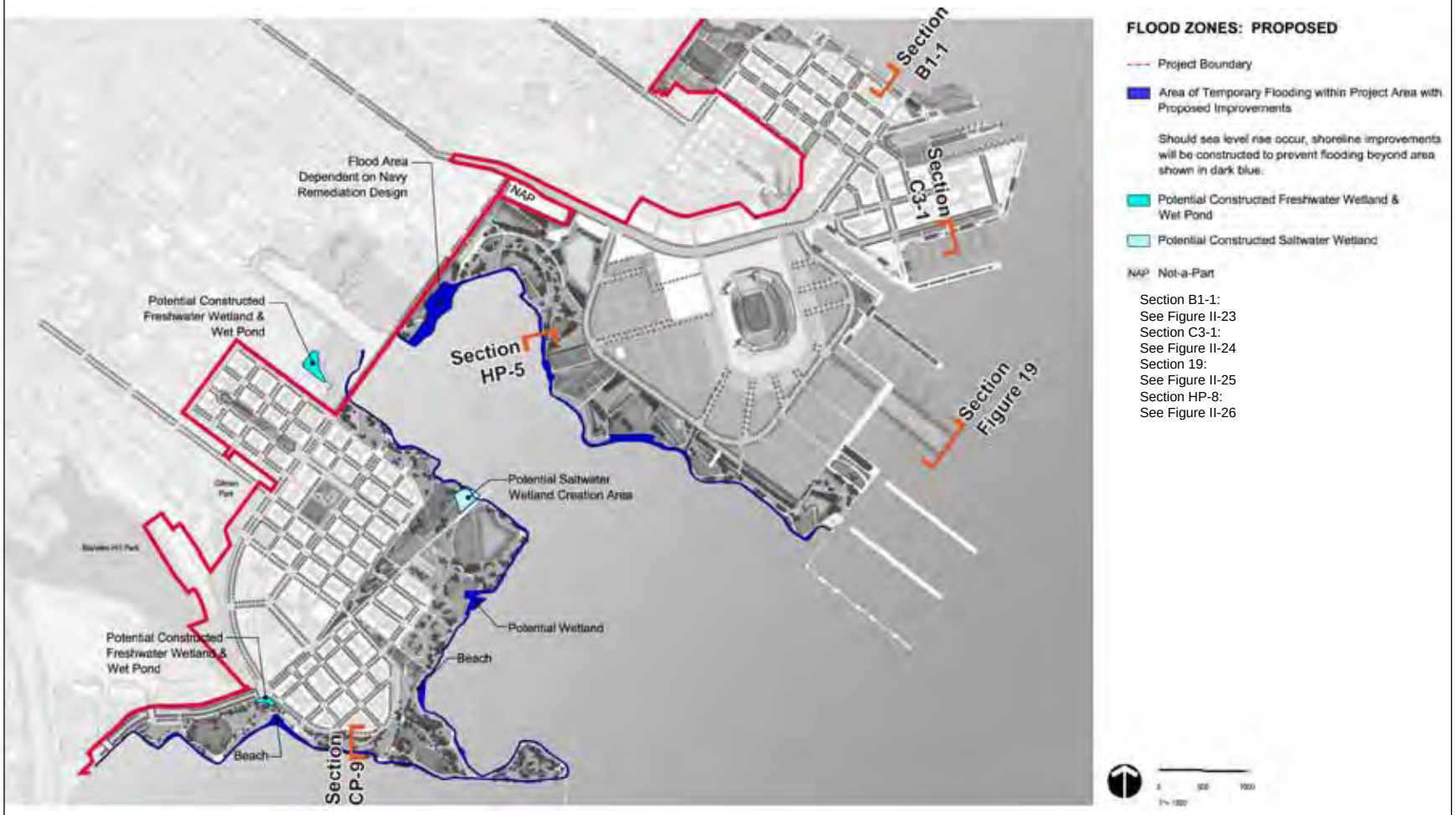
SOURCE: RHAA, 2009.

PBS&J 11.2.09 08068 | JCS | 09

FIGURE II-21

Candlestick Point — Hunters Point Shipyard Phase II EIR

EXISTING FLOOD ZONES AND SEA LEVEL RISE (WITH PROJECT LAND USE OVERLAY AND WITHOUT PROJECT SHORELINE AND GRADING IMPROVEMENTS)



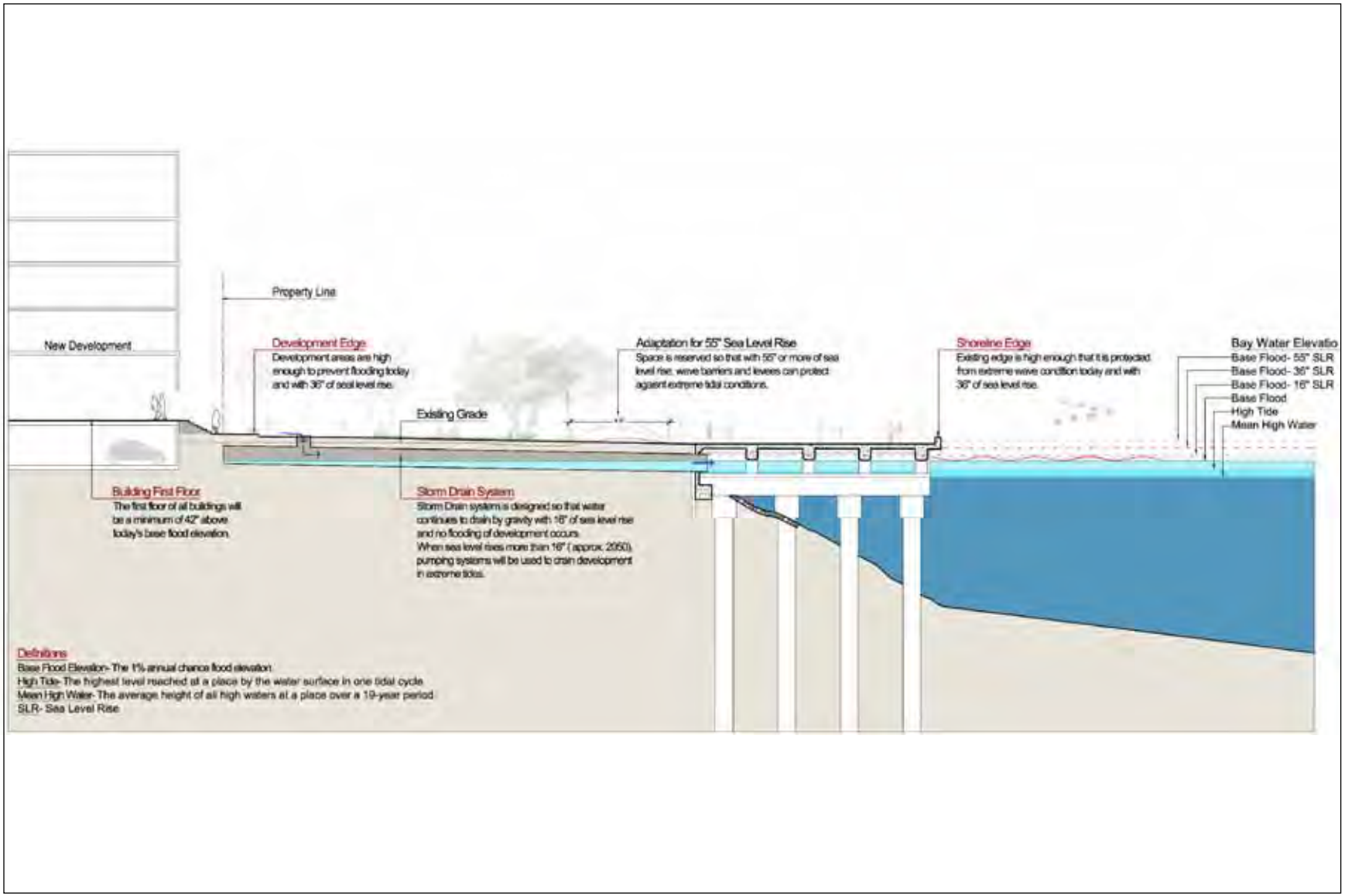
SOURCE: RHAA, 2009.

PBS&J 11.2.09 08068 | JCS | 09

FIGURE II-22

Candlestick Point — Hunters Point Shipyard Phase II EIR

EXISTING FLOOD ZONES AND SEA LEVEL RISE (WITH PROJECT LAND USE OVERLAY AND WITH PROJECT SHORELINE AND GRADING IMPROVEMENTS)



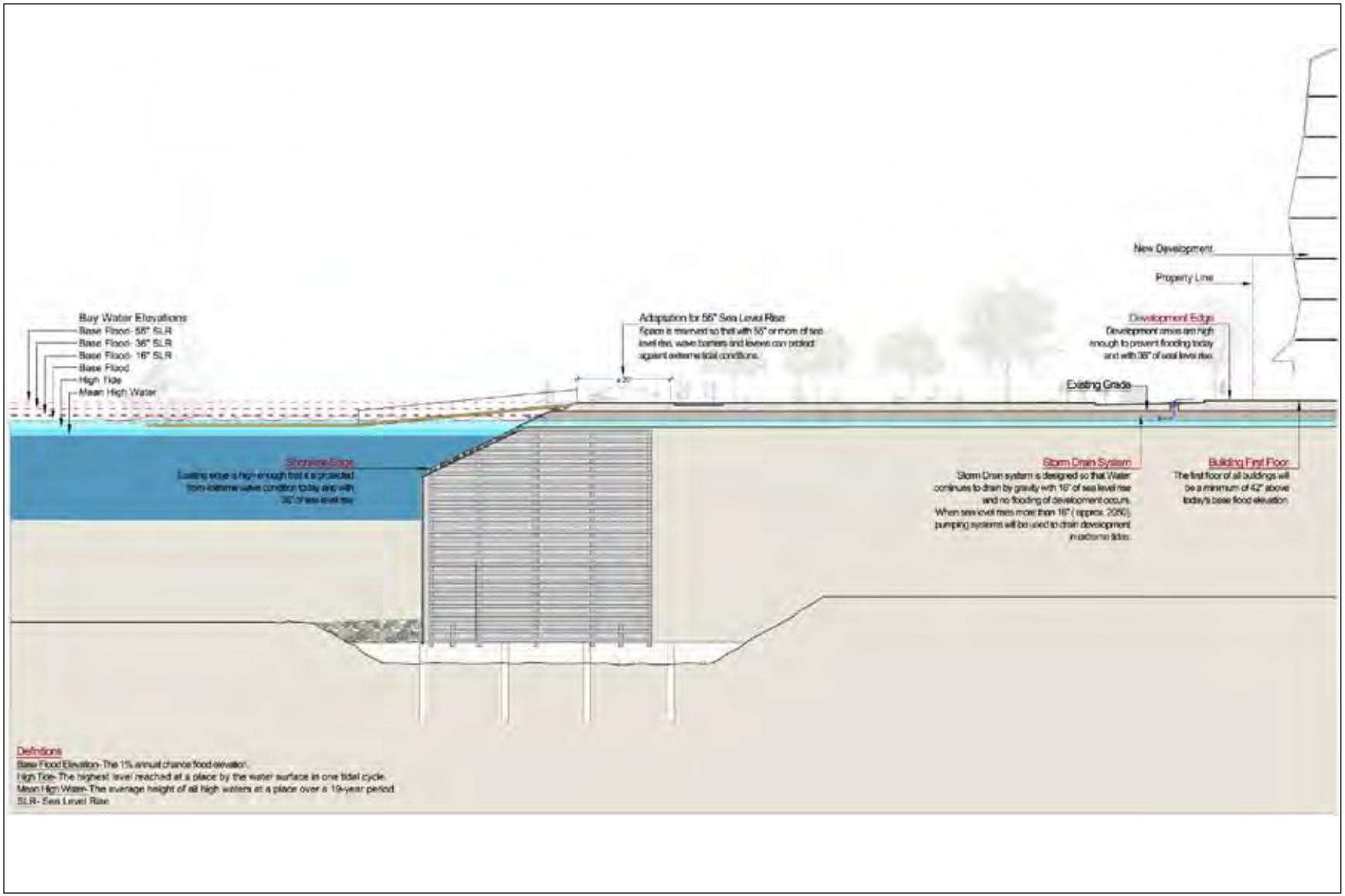
SOURCE: RHAA, 2009.

PBS&J 11.1.09 08068 | JCS | 09

FIGURE II-23

Candlestick Point — Hunters Point Shipyard Phase II EIR

HPS SHORELINE SECTION
(BERTHS 55 TO 60; WATERFRONT PROMENADE)



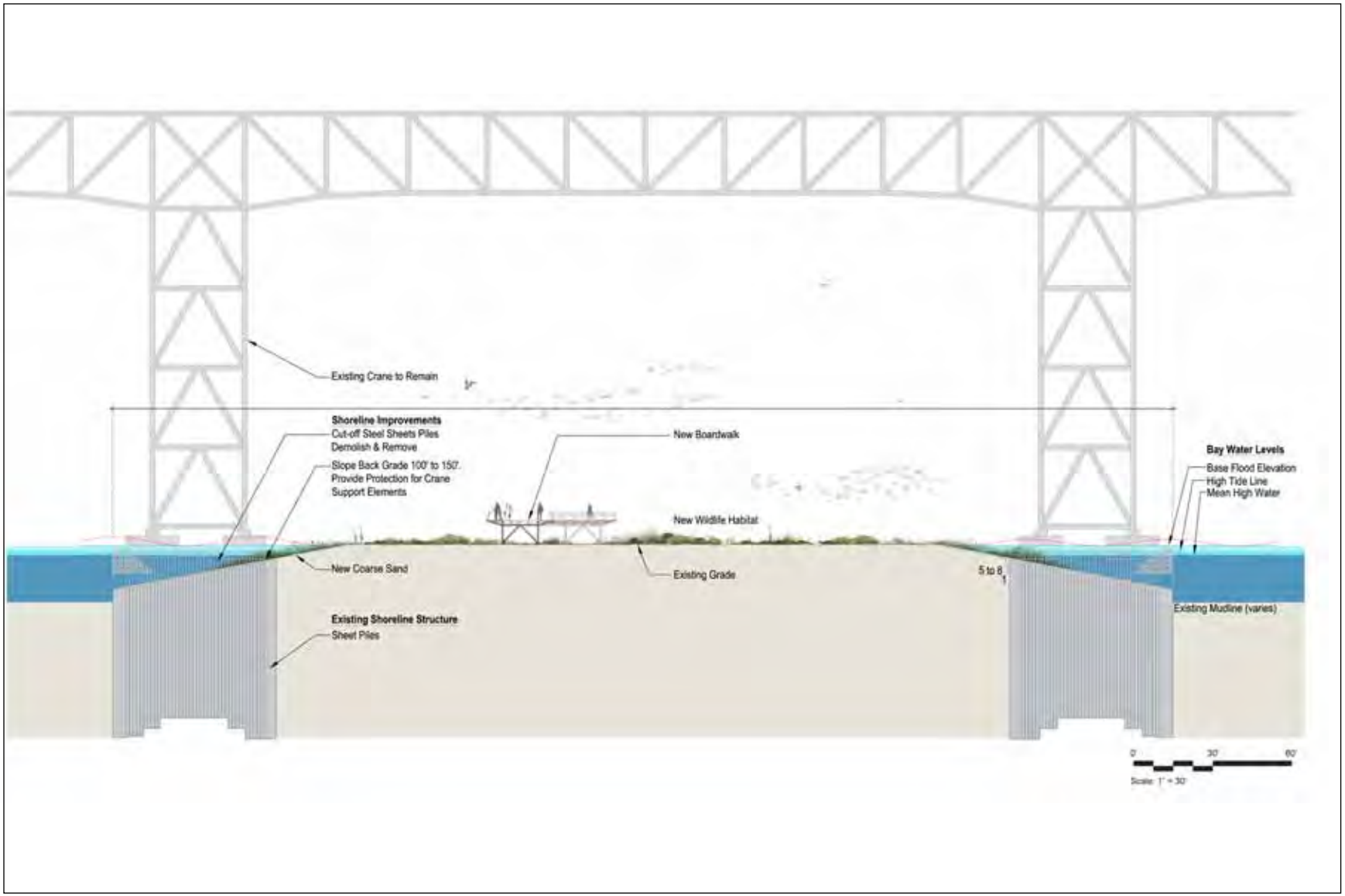
SOURCE: RHAA, 2009.

PBS&J 11.1.09 08068 | JCS | 09

FIGURE II-24

Candlestick Point — Hunters Point Shipyard Phase II EIR

HPS SHORELINE SECTION (BERTHS 3-5; MARINA)



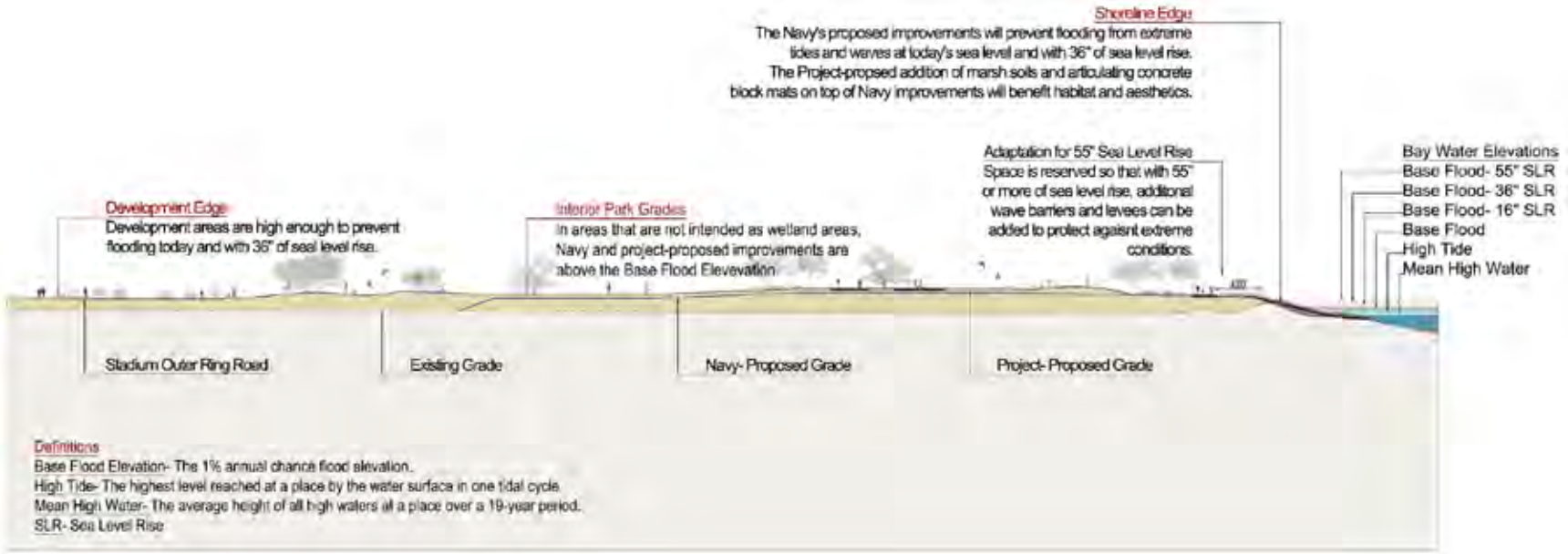
SOURCE: RHAA, 2009.

PBS&J 11.3.09 08068 | JCS | 09

FIGURE II-25

Candlestick Point — Hunters Point Shipyard Phase II EIR

HPS SHORELINE SECTION (BERTHS 16-20; RE-GUNNING PIER)



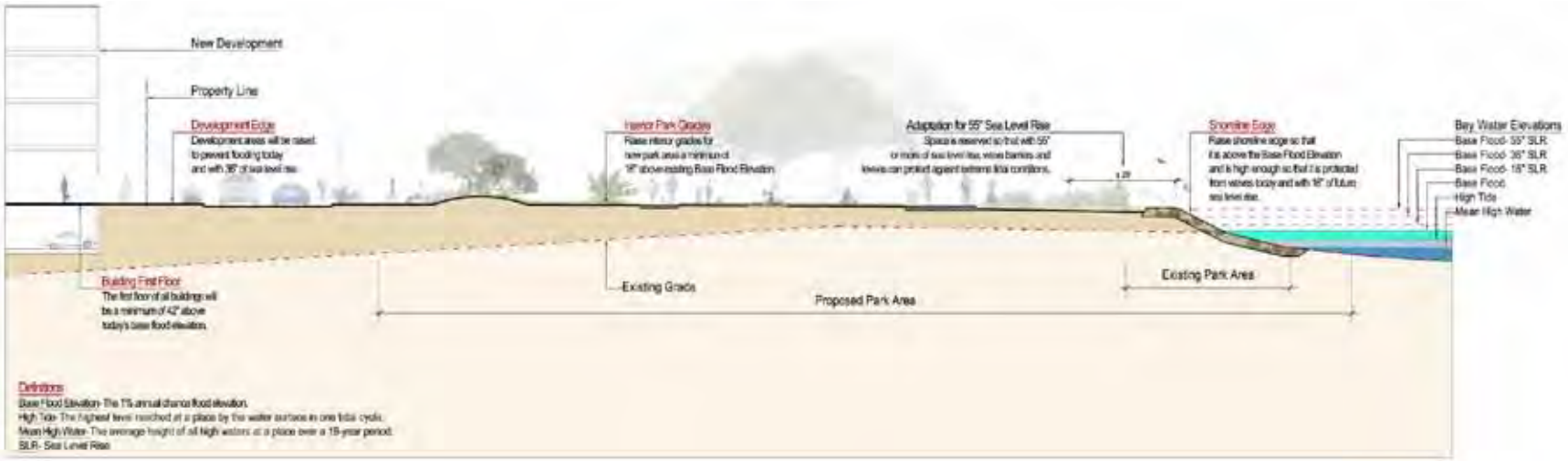
SOURCE: RHAA, 2009.

PBS&J 11.1.09 08068 | JCS | 09

FIGURE II-26

Candlestick Point — Hunters Point Shipyard Phase II EIR

HPS SHORELINE SECTION (GRASSLANDS ECOLOGY PARK)



SOURCE: RHAA, 2009.

PBS&J 11.1.09 08068 | JCS | 09

FIGURE II-27

Candlestick Point — Hunters Point Shipyard Phase II EIR

CANDLESTICK POINT SECTION (THE NECK AREA OF THE CPSRA)

Building Construction

The Project would include a variety of land uses, such as residential, retail, office, research and development, hotel, artists' studios/art center, community services, parks and open space, football stadium, marina, performance venue, and associated parking. Building construction would include development of new buildings as well as planting of new landscaping, the application of architectural coatings on buildings, and paving of roadways and walkways (although these two activities would not occur simultaneously).

Controlled Rock Fragmentation

Different densities or hardness of rock exist at Candlestick Point: Franciscan Sandstone and Shale at the Alice Griffith Housing site and Franciscan Chert, Sandstone, Shale and Greenstone near Jamestown Avenue.[38] Harder areas of bedrock may require alternative techniques for removal such as controlled rock fragmentation. Controlled rock fragmentation technologies include pulse plasma rock fragmentation (PPRF), controlled foam or hydraulic injection, and controlled blasting. In some scenarios it may be necessary to utilize a combination of these techniques. Controlled blasting can typically be performed at noise levels below typical building demolition levels (80-100 dBA).

Current estimates indicate 98,000 cubic yards (CY) of rock near Jamestown Avenue may need to be removed using controlled rock fragmentation. To accomplish this within the 8-month demolition/grading time period, controlled rock fragmentation removing 12,000 CY each month will need to occur.

Current estimates indicate approximately 42,000 CY of hard rock exists within three areas of Alice Griffith. For estimation purposes, it is assumed that each area may contain a third of this volume, or 14,000 CY of rock, that may need to be removed using controlled rock fragmentation. Removal of 14,000 CY of rock could potentially be completed within 6 weeks utilizing three events, each event producing approximately 4,500 CY, with a two-week period between events for set up and excavation. The three events within Alice Griffith would occur sequentially; approximately 17 weeks would be needed for these events at Alice Griffith. Figure II-16 identifies the location of controlled rock fragmentation. Table II-15 (Building Construction Completion Dates) presents the timeline for the proposed building construction for the Project.

Candlestick Point

Building construction at Candlestick Point would coincide with completion of the utilities and roadways for each district. Building construction would begin in the Alice Griffith district, followed by Candlestick Center, Candlestick North, and then Candlestick South districts. Development in Candlestick Point would begin in 2012 and would conclude in 2029.

[38] MACTEC, *CP-HPSII Rock Fragmentation*, June 2009.

Table II-15 Building Construction Completion Dates

Use	Development Area	Completion Year 2017	2021	2025	2029	Subtotal	Total
Residential Units	CP	795	2,680	3,220	1,155	7,850	10,500
	HPS	2,325	325	—	—	2,650	
Regional Retail (gsf)	CP	—	635,000	—	—	635,000	635,000
	HPS	—	—	—	—	—	
Neighborhood Retail (gsf)	CP	—	125,000	—	—	125,000	250,000
	HPS	60,000	65,000	—	—	125,000	
Office (gsf)	CP	—	150,000	—	—	150,000	150,000
	HPS	—	—	—	—	—	
Hotel (gsf)	CP	—	150,000	—	—	150,000	150,000
	HPS	—	—	—	—	—	
R&D (gsf)	CP	—	—	—	—	—	2,500,000
	HPS	2,278,000	222,000	—	—	2,500,000	
Community Services (gsf)	CP	—	50,000	—	—	50,000	100,000
	HPS	—	50,000	—	—	50,000	
Performance Venue (gsf/seats)	CP	—	75,000/10,000	—	—	75,000/10,000	75,000/10,000
Stadium (Seats)	HPS	69,000	—	—	—	69,000	69,000

SOURCE: Lennar Urban, 2009.

Hunters Point Shipyard Phase II

At Hunters Point Shipyard, new development would begin with the construction of the 49ers stadium, scheduled for completion during the 2014–2017 time period. Hunters Point North residential development would begin during 2011–2015 and is planned for completion by 2017. Build-out of the Shipyard Research and Development Park is planned by 2017. The mixed-use, neighborhood retail and residential development at Hunters Point Village Center district would be completed in 2021.

Parks and Open Space

In general, parks and open space would be developed at the same time as adjacent building construction (Figure II-17).

II.F.3 Construction Equipment

Site earthwork and grading activities would typically be performed using standard construction equipment, such as excavators, loaders, tractors, compactors, crushers, graders, and water trucks. Import fills and export material would be loaded and transported using loaders, standard size haul trucks, and barges. Site earthwork and grading activities would be planned to match yearly site development phasing. Typically, work would be performed during normal workdays and hours.

Candlestick Point

Construction activities in Candlestick Point would occur from 2011 through 2028.[39] Off-site roadway improvements would be constructed during years 2013 through 2021. The number of construction workers on the site on any given day would vary from a low of 10 during the final stages of vertical development to a maximum of 180 workers during the peak years of development. The number of truck trips on any given day would vary from a low of 4 truck trips to a maximum of 152 during site preparation at Alice Griffith. The number of on-site equipment would be about 60 pieces during the height of construction activity.

Hunters Point Shipyard Phase II

Construction activities in HPS Phase II would occur from 2010 through 2023.[40] Off-site roadway improvements would be constructed during years 2011 through 2016. The number of construction workers on the site on any given day would vary from a low of 14 workers during the final stage of shoreline improvements to a maximum of 504 workers during the peak years of development. The number of truck trips on any given day would vary from a low of 4 to 8 trucks trips to a maximum of 512 truck trips primarily during the peak year of grading and infrastructure development. The number of on-site equipment would be about 130 pieces during the height of construction activity.

II.G APPROVAL REQUIREMENTS

Consistent with the intended uses of the EIR, implementation of the Project would require multiple approvals from City, regional, state, and federal agencies. Table II-16 (Major Project Approvals) presents the major approval requirements.

Table II-16 Major Project Approvals

CITY AND COUNTY SAN FRANCISCO APPROVAL PROCESS AND PERMITS

Redevelopment Agency Commission

- Certifies the Final EIR
- Adopts CEQA findings, a statement of overriding considerations, and a mitigation monitoring and reporting program
- Approves Reports to the Board of Supervisors on the amendments to Redevelopment Plans
- Approves amendments to the *Hunters Point Shipyard Redevelopment Plan* and approves amendments to the Hunters Point Shipyard Design for Development
- Approves amendments to the *Bayview Hunters Point Redevelopment Plan* and approves a Design for Development for Candlestick Point
- Approves land transfer agreements with the Navy, City, and State agencies
- Approves land transfer agreements with Port Commission, State Lands Commission, and CDPR
- Approves Disposition and Development Agreements and Owner Participation Agreements

Port Commission

- Approves land transfer agreements with Agency, State Lands Commission, and CDPR

[39] Construction schedules may vary if the SF 49ers elect to renew their lease at the current stadium site until 2017 and potentially, an additional 5 years until 2023.
[40] Ibid.

Table II-16 Major Project Approvals

Planning Commission

- Certifies the Final EIR
- Adopts CEQA findings, a statement of overriding considerations, and mitigation monitoring and reporting program
- Approves shadow determinations/impacts
- Adopts amendments to the General Plan to accommodate the Project and to find the amendments for the *Hunters Point Shipyard Redevelopment Plan* and *Bayview Hunters Point Redevelopment Plan* in conformity with the General Plan
- Adopts resolution recommending to the Board of Supervisors approval of amendments to the Planning Code/Zoning Maps for the Project
- Authorizes cooperative agreement with Redevelopment Agency

Board of Supervisors

- Affirms certification of Final EIR
- Adopts CEQA findings, a statement of overriding considerations, and a mitigation monitoring and reporting program
- Approves General Plan amendments
- Approves amendments to the *Hunters Point Shipyard Redevelopment Plan* and the *Bayview Hunters Point Redevelopment Plan*
- Approves amendments to the Planning Code/Zoning Maps
- Approves other necessary code amendments
- Approves a Joint Facilities Agreement and Tax Allocation Agreements with the Redevelopment Agency
- Approves land transfer agreements

San Francisco Public Utilities Commission

- Approves Project infrastructure for water, sewer, stormwater, and electricity

Department of Building Inspection

- Approves Project construction-related permits.

Department of Public Works

- Approves subdivision maps, public improvements, and infrastructure

Department of Public Health

- Recommends ordinance to Board related to oversight of environmental controls; oversees compliance with environmental controls

Municipal Transportation Authority

- Approves transit improvements

Department of Recreation and Parks

- Approves land transfers
- Recommends to Planning Commission shadow determinations/impacts

Art Commission

- Approves public art and the design of public structures on City property

San Francisco Housing Authority

- Approves replacement of Alice Griffith public housing

REGIONAL, STATE, AND FEDERAL APPROVALS

Bay Conservation and Development Commission

- Approves amendments of the Bay Plan and Seaport Plan
- Approves permits for activities within BCDC's jurisdiction, including the proposed Yosemite Slough bridge

State Lands Commission

- Approves public trust land agreement

Table II-16 Major Project Approvals

California Department of Parks and Recreation

- Approves agreement for the reconfiguration of Candlestick Point State Recreation Area
- Approves General Plan Amendment for the reconfiguration of Candlestick Point State Recreation Area

California Department of Transportation

- Approves any necessary encroachment permits for the Project roadway improvements

Regional Water Quality Control Board

- Approves Section 401 water quality certification

Bay Area Air Quality Management District

- Approves any necessary air quality permits for individual uses

Navy

- Authorizes the execution of necessary transactional documents with the Redevelopment Agency to transfer property at Hunters Point Shipyard for the development of the Project

US Army Corps of Engineers

- Approves permit for fill related to the Yosemite Slough bridge, shoreline improvements, and other activities.

Department of the Interior

- Approves conversion of portions of Candlestick Point State Recreation Area reconfiguration improved with Land and Water Conservation Fund grants

US Coast Guard

- Issues determination regarding vessel navigability for the Yosemite Slough bridge

US Department of Housing and Urban Development

- Approves land transfer agreements involving Alice Griffith public housing site and funding approvals

SOURCE: Agency, Planning Department.

This Table is not intended to provide an exhaustive or exclusive list of the numerous public agency approvals that may be necessary to carry out the Project over its 20-year build-out. Instead, the Table provides a list of the major land use entitlements and related approvals anticipated from local and State agencies that may rely on this EIR. It is also anticipated that other permit and transactional approvals will be necessary as these major entitlements are implemented and that the approving public agencies, to the extent required by law, will rely on this EIR, in accordance with the requirements of CEQA and the CEQA Guidelines, in granting such approvals. This Table also lists federal agencies that would have jurisdiction over certain aspects of the Project.

II.G.1 General Plan Amendments, Planning Code Amendments, Redevelopment Plan Amendments

Implementation of the Project includes amendments to the *Bayview Hunters Point Redevelopment Plan* adopted in 2006 and the *Hunters Point Shipyard Redevelopment Plan* adopted in 1997.

Following certification of the EIR, the Redevelopment Plan Amendments will be considered by the Agency and by the Board of Supervisors. Adoption of the Redevelopment Plan Amendments would enable the Agency to (1) use redevelopment funds or financing mechanisms to remedy the blight that now characterizes the Project Areas; and (2) establish land use standards to allow and control development of the Project Areas.

In addition, adoption of the Project would include amendment of some components of the San Francisco General Plan to ensure consistency with the Redevelopment Plan Amendments; however, the

General Plan contains a number of elements with most objectives, policies, and principles that are relevant to the Project that would not require any changes.

II.G.2 Disposition and Development Agreement

The DDA would allow and govern the physical construction of each element of the Project and establish and govern the relationship between the Agency and the Project Applicant regarding acquisition, ownership, assembly of a Project site, and financing, construction, ownership, and operation of Project improvements.

II.G.3 Design for Development

Design for Development documents (D4D) that would apply in each of the redevelopment plan areas would be among the implementing documents of the Redevelopment Plans. The Redevelopment Plan documents would set forth policies and principles for urban design within the Project site. The Redevelopment Plan documents would provide design standards, such as height, bulk, and density parameters that would apply to the Project.

The Redevelopment Plan documents documents would largely function as the *San Francisco Planning Code* for the Project site. Section II.G (Approval Requirements) provides additional information on Project implementation steps.

II.G.4 Project Plans

The following project plans will be approved and become binding at the time the Disposition and Development Agreement is approved:

Sustainability Plan. The Sustainability Plan details the goals and strategies that the Project will employ to achieve sustainability targets in seven focus areas that span the economic, social and environmental aspects of sustainability: economic vitality and affordability, community identity and cohesion, public well-being, safety and quality of life, accessibility and transportation, resource efficiency, ecology and advanced Information and communications technology.

Infrastructure Plan. The Infrastructure Plan includes grading plans for sea level rise, and plans for the low-pressure and high-pressure water distribution system, reclaimed water distribution, separated sanitary sewer collection, separated storm drain collection, low impact development strategies for stormwater management, and joint trench systems for electrical, communications and gas utilities.

Transportation Plan. The Transportation Plan describes the Project's Transportation Demand Management program (e.g., car pools, car sharing, transit passes, and "unbundled parking"), new and extended transit services, and on and off-site street network improvements.

Streetscape Plan. The Streetscape Plan describes street types (e.g., Residential Streets, Commercial Streets, Parkways, Transit Priority Streets), and the pedestrian, bicycle, and transit amenities proposed for each type. Design guidelines for amenities including street furnishings, plantings, lighting, and special pavement treatments at crosswalks would be included.

Parks, Open Space, and Habitat Concept Plan. The Parks, Open Space, and Habitat Concept Plan describes the vision and guiding principles for Project parks, open space and habitat restoration. Included are descriptions of both passive and active recreational opportunities, an ecological program to restore native habitats, and cultural programming to highlight Shipyard's maritime heritage. Design guidelines for improvements including, trails, furnishings, and public art would also be included.

II.H TECHNICAL, ECONOMIC, AND ENVIRONMENTAL CHARACTERISTICS

The Project's technical characteristics are described in Section II.E (Project Characteristics). The site's environmental characteristics, including the environmental setting and anticipated environmental impacts, are described in Chapter III (Environmental Setting, Impacts, and Mitigation Measures). The Project would bring economic benefits to the City including an expanded economic base and additional sources of employment, as well as needed housing for all income levels. The Project would generate up to 10,730 employment positions. Approximately 3,476 new employees would be associated with Candlestick Point, and primarily with the regional retail uses. Approximately 7,254 new employees would be associated with HPS Phase II, and primarily with the R&D uses. The 350 jobs associated with the new 49ers stadium are mostly relocated from Candlestick Point to HPS Phase II.

In addition, construction employees would also be needed to construct the Project. The number of construction employees would vary depending upon the phase of construction, but would range from 60 workers at the commencement of construction activities to approximately 500 workers during 2016, the most labor-intensive phases of construction. An additional discussion of the economic characteristics of the site is provided in Section III.C (Population, Employment, and Housing) and Section V (Growth Inducement, and Secondary Land Use Effects).