

Chapter 5

Cumulative Impacts

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5 Cumulative Impacts

CEQ regulations implementing NEPA require that the cumulative impacts of a proposed action be assessed (40 CFR 1500-1508). A cumulative impact is defined as:

“...the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.” (40 CFR 1508.7)

CEQ’s guidance for considering cumulative effects states that NEPA documents “should compare the cumulative effects of multiple actions with appropriate national, regional, state, or community goals to determine whether the total effect is significant” (CEQ 1997). While environmental impacts result from a diversity of sources and processes, this CEQ guidance observes that “no universally accepted framework for cumulative effects analysis exists,” although certain general principles have gained acceptance. One such principal provides that “...cumulative effects analysis should be conducted within the context of resource, ecosystem, and community thresholds — levels of stress beyond which the desired condition degrades.” Thus, “...each resource, ecosystem, and human community must be analyzed in terms of its ability to accommodate additional effects, based on its own time and space parameters.” Therefore, cumulative effects analysis normally will encompass geographic boundaries beyond the immediate area of the proposed action, and a time frame including past actions and foreseeable future actions, in order to capture these additional effects. Bounding the cumulative effects analysis is a complex undertaking, appropriately limited by practical considerations. Thus, CEQ guidelines observe, “[i]t is not practical to analyze cumulative effects of an action on the universe; the list of environmental effects must focus on those that are truly meaningful.”

This section presents an analysis of potential cumulative impacts of the proposed action in conjunction with other planned programs having a similar implementation schedule and region of influence (ROI). In this section, the ROI for each resource is the same as, or greater than, described in Chapter 4, Environmental Consequences. While it is likely that many other projects may occur in this area (e.g., construction projects, roadway modifications, and dredging activities), most such projects would be either too small or too remote to have a meaningful interaction with the proposed action. Cumulative projects considered below are similar to the proposed action, in proximity to the proposed action, or large enough to have effects that could overlap with those of the proposed action.

5.1 Cumulative Assumptions

CEQ’s cumulative effects guidance sets out several different methods to determine the significance of cumulative effects, such as checklists, modeling, forecasting, and economic impact assessment where changes in employment, income and population are assessed (CEQ 1997). This SEIS uses a checklist methodology based on resource areas and regional projects within the ROI to determine cumulative effects on ecosystems, as well as development projections for determining socioeconomic and infrastructure impacts. The geographic scope of the cumulative impact analyses and the specific related projects that are included in the analyses may also vary depending on the specific environmental issue being analyzed. The cumulative context for each cumulative impact analysis is discussed in Section 5.3, Analysis of Cumulative Impacts, for each resource area.

For the purposes of this assessment, the analysis of the potential for cumulative impacts is based on a list of related projects identified by the DoN, the City and Port of San Francisco and neighboring

jurisdictions, and/or on full implementation of the city’s General Plan and/or other planning documents, depending on the specific impact being analyzed. For example, the cumulative analysis for the Traffic Study (which is the basis for many of the cumulative analyses in this document) uses the SFCTA travel demand forecasting model, which projects general background growth based on ABAG projections and is consistent with buildout of the city’s General Plan. The Traffic Study (provided in Appendix D of the CP-HPS DEIR [SFRA 2009]) specifically updated the background growth assumptions based on information regarding a number of major related projects, including the following:

- India Baseline Shoreline;
- Hunters Point Shipyard Phase I;
- Hunters View;
- Jamestown;
- Executive Park;
- Brisbane Baylands;
- Cow Palace; and
- Visitacion Valley/Schlage Lock.

The project analysis was conducted for 2030 conditions, rather than existing conditions, to account for the significant roadway and transit network and development changes associated with the proposed action that would occur over a period of about 20 years (construction to be initiated in 2011 and completed by 2029), and to account for the significant changes that are projected to occur in the ROI. Therefore, the project impact analysis represents a cumulative growth scenario for 2030 that includes growth from development that would occur with implementation of the proposed action, as well as other, non-project generated growth, and transportation network improvements accounted for in the 2030 No Action Alternative conditions. The 2030 No Action Alternative also assumes development within HPS associated with the approved Phase 1, the buildout of the existing HPS Redevelopment Plan, and proposed development within India Basin.

The Planning Department recently completed a citywide projection that captured citywide growth expectations by 2030 designed to closely match the recently adopted ABAG Projections 2009 target, but taking into account local knowledge of projects currently in various stages of the entitlement process, commonly referred to as the development pipeline. The Planning Department assumed full buildout over the course of the forecast period of three large developments currently undergoing or completed environmental review (Treasure Island, Bayview Waterfront, and Parkmerced projects), as discussed in Section 5.2, Other Past, Present, and Reasonably Foreseeable Projects (personal communication, Rahaim 2009). The development projections for 2030 are shown below.

	<i>2000</i>	<i>2005</i>	<i>2030</i>	<i>Growth 2000 - 2030</i>	<i>Growth 2005 - 2030</i>
Households	329,700	341,478	403,292	73,592	61,814
Household Population	756,976	783,441	916,800	159,824	133,359
Jobs	642,500	553,090	748,100	105,600	195,010

5.2 Other Past, Present, and Reasonably Foreseeable Projects

In the project vicinity, a number of development proposals have recently been approved or are in the environmental review stages. A list of existing or reasonably foreseeable projects that would be constructed in the project region is provided in Table 5.2-1, with the corresponding locations shown in Figure 5.2-1.

#	Project Title	Project Description
1.	Hunters Point Shipyard Phase I	This project includes 1,600 residential units and 20,000 ft ² (1,858 m ²) of neighborhood retail. An EIR was completed for this project.
2.	Candlestick Point – Bayview Waterfront Redevelopment	This project consists of a number of sites along the southeastern waterfront, would account for 10,000 units and nearly 8 million ft ² (743,224 m ²) of office, R&D, retail and community space, as well as a 10,000 seat arena at Candlestick Point. A Final EIR has been certified by the City and County of San Francisco.
3.	India Basin Survey Area (India Basin Shoreline Area C)	This project is a 76-ac (31-ha) area proposed as the India Basin Special Use District that could be amended into the Bayview/Hunters Point Plan. The India Basin Shoreline, or Area C, remains a redevelopment survey area. The PACs vision for the India Basin Shoreline or Hunters Point Shoreline Activity Node includes new mixed-use development along Innes Avenue, water-oriented and recreational activities, better integration of the Housing Authority development on Hunters Point Hill, and improved waterfront access. The current planning process builds off this vision contained in the Concept Plan. This plan proposes 1,240 residential units; 100,000 ft ² (9,290 m ²) of neighborhood retail; and 1,365,000 ft ² (125,813 m ²) of office space. An NOP for this project has been issued and the EIR is ongoing.
4.	Hunters View	This project includes 800 residential units, 6,400 ft ² (595 m ²) of neighborhood retail, and 21,600 ft ² (2,007 m ²) of community services. The 227-229 West Point Road EIR has been prepared for this project.
5.	Executive Park-Candlestick Cove	This project proposes the conversion of office space to 3,400 residential units, 88,500 ft ² (8,222 m ²) of neighborhood residential, and 320,000 ft ² (29,729 m ²) of office space. The EIR for this project is ongoing.
6.	Visitation Valley Redevelopment Project	The project is located on 46 ac (18.6 ha) and involves demolition of the majority of the existing vacant buildings on the former Schlage Lock site; environmental remediation of the site; and the construction of 1,600 residential units, 131,500 ft ² (12,217 m ²) of regional retail, 39,500 ft ² (3,670 m ²) of neighborhood retail, and 25,000 ft ² (2,323 m ²) of community development. The Visitation Valley Redevelopment Program Final EIR has been prepared for this project.
7.	Brisbane Baylands Specific Plan	This project includes 904,425 ft ² (84,024 m ²) of residential; 668,100 ft ² (62,069 m ²) of big box retail; 3,781,525 ft ² (351,315 m ²) of office space; 1,504,400 ft ² (139,763 m ²) of hotel/extended stay uses; 247,450 ft ² (22,989 m ²) of warehousing and distribution; 601,600 ft ² (55,890 m ²) of R&D uses; 373,650 ft ² (34,713 m ²) of exhibition center uses; and 200,000 ft ² (18,581 m ²) of auto park uses. An EIR for this project is ongoing.
8.	Cow Palace	The Cow Palace Redevelopment project consists of approximately 1,700 homes and 550,000 ft ² (51,097 m ²) of commercial/R&D.
9.	EcoCenter at Heron's Head Park	The EcoCenter, an approximately 1,500 ft ² (139 m ²) facility at Heron's Head Park on the Southern Waterfront of San Francisco, is nearly complete.
10.	Pier 90-94 Backlands Planning	The Pier 90-94 Backlands covers approximately 23 ac (9.3 ha) of unimproved land. The Port is currently seeking necessary regulatory approvals and site engineering plans to prepare the site for interim uses, such as construction lay down, marshalling, automobile storage, self-storage, and construction material recycling as well as eco-industrial uses such as batching operations, and biofuels production. The interim uses being pursued have market support, are physically feasible, and are consistent with Port land use policies. This project is in the planning stage.
11.	Southern Waterfront Gateway Sites Planning	In an effort to promote economic development in the Southern Waterfront, the Port has identified three Gateway Sites (Cargo Terminal Gateway; Third & Cargo Way Gateway; and Islais Creek Gateway). In 2009, the Port Planning Division initiated the planning processing for the two Gateway Sites along Cargo Way to solicit input from area stakeholders, and to develop guidelines for development. This project is in the planning stage.
12.	Blue Greenway Project	The Blue Greenway Project would improve the City's Southern portion of the 500-mi (80- km), nine-county region wide Bay Trail and the newly established Bay Water Trail and associated waterfront open space system. This project is in the planning phase. The planning process will produce Blue Greenway Planning and Design Guidelines. These Guidelines define project and design parameters to provide direction for scoping and developing detailed construction plans to implement new Blue Greenway improvement projects. Projects currently in design include Heron's Head Park Improvement, Tulare Park Improvement, Mission Bay-Bayfront Park Shoreline, Hunters Point Shipyard and Candlestick Plan, and Candlestick State Park.

Table 5.2-1. Related and Cumulative Projects		
#	Project Title	Project Description
13.	Mission Bay North and South	San Francisco's new Mission Bay development covers 303 ac (123 ha) of land between the San Francisco Bay and Interstate-280. Mission Bay is a mixed-use, transit-oriented development. The maximum development program includes: 6,000 housing units; 4.4 million ft ² (408,773 m ²) of office/life science/biotechnology commercial space; a new UCSF research campus and hospital complex; 500,000 ft ² (46,452 m ²) of retail space; a 500-room hotel; 41 ac (17 ha) of new public open space; and a 500-student public school, library, fire and police station, and community facilities. As of September 2009, 3,126 housing units, including 674 affordable units, have been constructed in Mission Bay. An additional 319 units are under construction. More than 1.5 million ft ² (139,355 m ²) of commercial office and biotechnology lab space has been built, with another 187,000 ft ² (17,373 m ²) under construction. Five buildings have been constructed on the UCSF campus, including three research buildings, a campus community center, and a university housing development. More than 11 ac (4.5 ha) of new parks and open space have also been completed. EIRs have been prepared for this project.
14.	Treasure Island	The proposed Redevelopment Plan would consist of approximately 6,000 residential units, 235,000 ft ² (21,832 m ²) of commercial and retail space, 400 to 500 hotel rooms, 300 ac (121 ha) of parks and open space, transportation, bicycle and pedestrian facilities, a ferry terminal/transit hub, public and community services, and utilities. Other components of the proposed redevelopment include supplemental remediation to allow the proposed uses, geotechnical stabilization, and renovation and adaptive re-use of existing historic structures. The Redevelopment Plan would be implemented in four phases from approximately 2009 through 2018. The EIR for this project is ongoing. A Final EIS for this project was approved in October 2005.
15.	Parkmerced	Parkmerced is an existing residential neighborhood with 3,221 units on approximately 116 ac (46.9 ha) of land in the southwest portion of San Francisco adjacent to Lake Merced. The proposed Parkmerced Project is a long-term mixed-use development program to comprehensively re-plan and redesign the Parkmerced site, increase residential density, provide new commercial and retail services and transit facilities, and improve utilities within the development site. With project implementation, there would be 8,900 units on the project site. Parkmerced was included in the San Francisco Planning Department's projections for citywide growth expectations by 2030. It is included as a cumulative project because it was used in developing the projections for households, persons, and jobs from 2005 to 2030. An EIR for this project is ongoing.
16.	Yosemite Slough Restoration Project	The California Department of Parks and Recreation approved this project to restore tidal wetlands on a 34-ac (13.8-ha) parcel of Candlestick Point SRA immediately adjacent to the project site and including the area of the proposed bridge. The plan would increase the existing tidally influenced area from 9 to over 20 ac (3.6 to 8.1 ha), create two islands for bird habitat, provide nursery areas for fish and benthic organisms, and provide transitional and upland areas to buffer sensitive habitats as well as create human recreational opportunities.



Figure 5.2-1. Cumulative Projects

5.3 Analysis of Cumulative Impacts

The potential cumulative impacts of the proposed action combined with other past, present, and reasonably foreseeable actions are discussed for each resource area below. Implementing the DoN property disposal action, as essentially a transfer of title, would not contribute to any direct cumulative impacts to any of the resources analyzed in this document. Therefore, the discussion of cumulative impacts for each resource does not include further analysis of DoN property disposal. Relevant significant and unavoidable, significant and mitigable, and not significant cumulative impacts associated with HPS reuse are described below.

5.3.1 Transportation, Traffic and Circulation

5.3.1.1 Project Contribution to Cumulative Transportation, Traffic and Circulation Impacts

The future 2030 cumulative condition represents the 2030 baseline conditions. For transportation, a future baseline is projected forward in time using 2007 baseline traffic data and including travel demand for all reasonably foreseeable projects, including the proposed action, to the year 2030. The future baseline also includes transportation improvements that would be implemented as part of the proposed action. For reasons discussed in Section 4.1, Transportation, Traffic, and Circulation, the proposed action's contribution to cumulative impacts would be *significant and unavoidable* as related to construction vehicle traffic and roadway impacts (Factor 1); increase in traffic volumes (Factor 2) with respect to Transportation Demand Management (TDM); various intersection and freeway ramp impacts; and transit impacts (Factor 3) from transit delays. Table 5.3.1-1 provides a summary of the project (PI) and cumulative (CI) impacts for Alternative 1 with respect to the 2030 baseline. The table identifies only those Factors for which significant impacts were identified.

As indicated in Table 5.3.1-1, project and cumulative impacts would be significant for some locations and for Factors 1, 2, and 3. The project would contribute to cumulative impacts with respect to Factor 1 during construction. The project would contribute to cumulative impacts with respect to Factor 2 for the TDM Plan, and the intersections at Third St and Evans Ave., Third St and Palou Ave, and Evans Ave and Napoleon St. as well as at every analyzed freeway ramp. The project would contribute to cumulative impacts under Factor 3 for transit delays. The proposed action's contribution to cumulative impacts would therefore be *significant and unavoidable* as related to construction vehicle traffic and roadway impacts (Factor 1); increase in traffic volumes (Factor 2) with respect to the TDM Plan; various intersection and freeway ramp impacts; and transit impacts (Factor 3) from transit delays. While stadium impacts would be significant and unavoidable, they would occur only on selected Sundays and would not generally affect other cumulative impacts.

However, arena event traffic, discussed below, would be added to freeway facilities that would operate at LOS E or LOS F during the weekday P.M. peak hour. Impacts associated with arena events would not be impacts of the proposed project, but would be cumulative effects of area development. Since these facilities would experience congested traffic prior to an arena event, freeway traffic impacts associated with arena events would be significant and unavoidable. However, since the arena is not part of the proposed action, traffic impacts associated with the arena would not be project impacts. Because the proposed action would not cause significant impacts, no mitigation is required by the future developer or owner of the property. However, to reduce the impacts to traffic for arena events, the arena operator could implement an event Transportation Management Plan (TMP) similar to the recommended Stadium TMP.

Table 5.3.1-1. Impact Summary Relative to the 2030 Baseline – Alternative 1			
<i>Description</i>		<i>Impacts</i>	<i>Mitigation</i>
Factor 1: Construction Vehicle Traffic and Roadway Impacts		■ PI/CI	Mitigation 1
Factor 2: Increase in Traffic Volumes			
Transportation Demand Management (TDM) Plan		■ PI/CI	Mitigation 2
Intersection Impacts			
#1002	Third St/Cesar Chavez St	● PI	No feasible mitigation
#1003	Third St/Cargo Way	● PI/CI	No feasible mitigation
#1004	Third St/Evans Ave	● PI/CI	No feasible mitigation
#1006	Third St/Palou Ave	● PI/CI	No feasible mitigation
#1008	Third St/Carroll Ave	● PI	No feasible mitigation
#1009	Third St/Paul Ave/Gilman Ave	● PI/CI	No feasible mitigation
#1016	Evans Ave/Cesar Chavez St	● PI	No feasible mitigation
#1058	Evans Ave/Napoleon St/ Toland St	● PI/CI	No feasible mitigation
#115	Robinson St/Spear Ave	⊙ PI	Mitigation 3
Freeway Ramp Impacts			
US-101 NB Off-ramp to Third St/Bayshore Blvd		● PI/CI	No feasible mitigation
US-101 NB On-ramp from Bayshore Blvd/Cesar Chavez St		● PI/CI	No feasible mitigation
US-101 SB On-ramp from Bayshore Blvd/Third St		● PI/CI	No feasible mitigation
I-280 NB On-ramp from Indiana St		● PI/CI	No feasible mitigation
I-280 SB Off-ramp to Pennsylvania Ave		● PI/CI	No feasible mitigation
Factor 3: Transit Impacts			
Final Transit Plan		⊙ PI/CI	Mitigation 4
Capacity Utilization Cordon Screenlines		⊙ PI/CI	Mitigation 4
Transit Delays		■ PI/CI	Mitigation 5 and 6
Stadium Football Games			
Factor 2: Traffic Impacts		■	Mitigation 7
Factor 3: Transit Impacts		■	Mitigation 8
Secondary Stadium Event – Weekday Evening			
Factor 2: Traffic Impacts		■	Mitigation 9
Factor 3: Transit Impacts		■	Mitigation 10
<i>Notes:</i>			
● - Significant and unavoidable (no feasible mitigation)			
■ - Significant and unavoidable (with mitigation)			
⊙ - Significant and mitigable (less than significant with mitigation)			
PI – Project Impact; PI/CI – Project and Cumulative Impacts			
<i>Source: CHS Consulting, et al. 2010.</i>			

5.3.1.2 Non-Project Cumulative Transportation Impacts

A new 10,000-seat arena (not part of the proposed action) that is proposed within Candlestick Point would be used for theater productions, concerts, speaking engagements, educational events, or sporting events. Most events at the arena would be for smaller audiences. It is anticipated that up to 150 events per year could occur at the arena (e.g., Wednesday, Friday, and Saturday every week per year). Similar to the analysis of secondary events at the stadium, assuming an approximate weekday evening start time of 7:00 P.M., the weekday P.M. peak hour (5:00 to 6:00 P.M.) was analyzed for pre-event conditions to address transportation impacts that would occur with sold-out events at the arena. Although no specific program has been developed for events at the arena, sell-out events with 10,000 attendees occurring during weekday evenings would likely be infrequent.

The analysis of a sold-out arena event assumes only regularly scheduled transit service would be provided and only a small number of attendees would arrive by private charter bus. The analysis assumes that 20 percent of attendees would arrive by transit. Therefore, of the 10,000 spectators, 2,000 would be expected to arrive by transit and 8,000 would be expected to arrive via automobile. Assuming the average vehicle occupancy for a sold-out event at the arena would be similar to a football game or for a secondary event at the stadium (i.e., three persons per automobile), the 8,000 spectators arriving via

automobile would generate an additional 2,667 vehicles to the stadium, with an additional 193 vehicles for employees (assuming similar ratios of employees to spectators as football game days).

Arrival and departure patterns for a sold-out event at the arena would likely be similar to those of secondary events at the stadium. It was assumed that 50 percent of the attendees, or 1,333 vehicles and 1,000 transit trips, would arrive between 5:00 and 6:00 P.M. for an event that begins at 7:00 P.M. Employees would arrive earlier and would not affect the 5:00 to 6:00 P.M. peak hour.

Similar to secondary events at the stadium, the geographic distribution of trips associated with events at the arena would vary depending on the event. For purposes of this analysis, it was assumed that the geographic location of the attendees would be similar to that of the football spectators.

Since the arena is proposed to be constructed within Candlestick Point, mitigation measures that would be required due to impacts caused by or exacerbated by events at the arena would not be considered a project-related impact. Since the arena is proposed as part of cumulative development in the project vicinity, the impact the arena would have on roadways serving the project site and project site roadways is analyzed for cumulative effects.

The impact analysis of arena events assumed a weekday evening sell-out event at the 10,000-seat arena. Smaller-sized events during weekday evenings and events occurring during the day and on weekends would have fewer impacts due to the lower traffic volumes demands on the study area roadways.

5.3.1.2.1 Factor 2: Increase in Traffic Volumes from Arena Uses

Access to the arena would be via the existing roadway network: US-101, Harney Way, Gilman Ave, and Third St. The number of vehicles would vary by route and the size of the event. During a weekday evening event, it is projected that approximately half of vehicle trips generated by a sell-out arena event, or 1,333 vehicles, would arrive approximately one hour prior to an event beginning, likely between 5:00 and 6:00 P.M., and would coincide with the weekday evening peak hour.

Table 5.3.1-2 presents a comparison of intersection LOS operating conditions for Alternative 1 weekday P.M. peak hour conditions without a sell-out event to conditions with a sell-out event at the arena. Traffic associated with a sell-out arena event would not cause operations to deteriorate to unacceptable levels or exacerbate traffic operations at any of the study intersections that would operate at LOS E or LOS F conditions under Alternative 1 conditions without an arena event.

Arena event traffic would be added to freeway facilities that would operate at LOS E or LOS F during the weekday P.M. peak hour. Since these facilities would experience congested traffic prior to an arena event, freeway traffic impacts associated with arena events would be significant and unavoidable. However, since the arena is not part of the proposed action, traffic impacts associated with the arena would be project impacts. Because the proposed action would not cause the impacts, no mitigation is required by the future developer or owner of the property. However, to reduce the impacts to traffic for arena events, the arena operator could implement an event TMP similar to the recommended Stadium TMP.

Table 5.3.1-2. Intersection LOS – 2030 Alternative 1 and Arena Event Conditions

Intersection		Peak	2030 Alternative 1		2030 Alternative 1 with Arena Event	
			LOS ^a	Delay ^b (v/c)	LOS	Delay (v/c)
City and County of San Francisco Streets						
#1002	Third St Cesar Chavez St	P.M.	F	>80/1.76	F	>80/1.78
#1003	Third St/Cargo Way	P.M.	F	>80/1.74	F	>80/1.73
#1004	Third St/Evans Ave	P.M.	F	>80/1.53	F	>80/1.53
#1006	Third St/Palou Ave	P.M.	F	>80/5.99	F	>80/5.94
#1008	Third St/Carroll Ave	P.M.	E	74.8/0.93	F	>80/0.94
#1009	Third St/Paul Ave/Gilman Ave	P.M.	F	>80/3.36	F	>80/3.36
#1016	Evans Ave/Cesar Chavez St	P.M.	F	>80/1.84	F	>80/1.84
#1048	Jennings St/Middle Point Rd/Evans Ave	P.M.	C	31.5	C	31.4
#1058	Evans Ave/Napoleon St/Toland St	P.M.	F	>80/1.61	F	>80/1.61
Hunters Point Shipyard Streets						
#110	Innes Ave/Donahue St	P.M.	A	8.0	A	8.0
#111	Donahue St/Galvez St	P.M.	C	18.1	C	18.1
#112	Donahue St/Lockwood St	P.M.	A	9.5	A	9.5
#113	Crisp Rd/I St (Outer Ring Rd)	P.M.	C	15.9	C	15.9
#114	Crisp Rd/Spear St (Inner Ring Rd)	P.M.	C	15.3	C	15.3
#115	Galvez St/Spear Ave	P.M.	F (SBL)	>50/1.24	F (SBL)	>50/1.24
#116	Lockwood St/Spear Ave	P.M.	B	14.6	B	14.6
<i>Notes:</i>						
LOS – level of service; A.M. – A.M. Peak; P.M. – P.M. peak; Sun – Sunday Peak; NBL – northbound left turn; SBL – southbound left turn; EBL – eastbound left turn; WBL – westbound left turn.						
a. Intersections operating at LOS E or LOS F conditions highlighted in bold and overall intersection volume-to-capacity (v/c) ratio is presented.						
b. Delay in seconds per vehicle. For Side Street STOP-controlled intersections, delay and LOS presented for worst approach.						
<i>Sources:</i> CHS Consulting Group, et al.2010; CHS Consulting Group, et al. 2009.						

5.3.1.2.2 Factor 3: Transit Impacts from Arena Uses

Arena events would be served by the existing and proposed transit routes serving Candlestick Point, as well as HPS. Additional transit service is not planned as part of special events at the arena. Table 5.3.1-3 presents the total one-way capacity that would be available during the weekday P.M. peak.

Table 5.3.1-3. Weekday P.M. Peak Hour One-Way Muni Capacity to Arena by Line

Route	Peak Hour Frequency (minutes)	One-Way Hourly Capacity (passengers per hour)
29-Sunset	5	768
28L-19 th Ave/Geneva Ave	5	1,130
CPX—Candlestick Point Express	10	380
Total		2,278

Source: SFMTA, Fehr & Peers 2009.

During the weekday evening period, up to 1,000 transit riders would be generated in the peak hour prior to an event. These would be added to the 1,023 transit trips inbound to the Candlestick Point and HPS study areas during the P.M. peak hour on routes serving the arena (e.g., 29-Sunset, 28L-19th Avenue Limited, and the proposed CPX service). The overall one-way transit demand in the P.M. peak hour on days when an event is being held at the arena could be up to 2,023. As shown in Table 5.3.1-3, the total one-way transit capacity serving the arena during a typical weekday P.M. peak hour would be 2,278

passengers per hour, which would be adequate to serve the arena event and background demand generated by Alternative 1 land uses.

Traffic associated with a sold-out event at the arena would add to already congested conditions on the study area roadway network, and most could not be mitigated to not significant levels. Traffic volumes would impact transit service accessing the project site, as well as Candlestick Point. Since the proposed action would not be the source of impacts, no mitigation is proposed. However, to reduce the impacts to traffic for arena events, the future developer or owner of the property for Candlestick Point and the SFMTA should consider a mitigation measure to maintain transit headways during an arena event.

5.3.1.2.3 Factor 4: Bicycle Network and Circulation Impacts from Arena Uses

During arena events, bicyclists would have access to the proposed bicycle facilities on existing and reconfigured roadways, as it is not anticipated that any special roadway network restrictions would be required to accommodate arena event traffic. While traffic volumes on area roadways would increase during arena events, the increase would not be sufficient to affect bicycle circulation, and impacts on bicycle operations would therefore be *not significant*, and no mitigation is proposed.

5.3.1.2.4 Factor 5: Pedestrian Circulation Impacts from Arena Uses

Pedestrian access to the arena events would be accommodated within the proposed sidewalk network, although due to large number of pedestrians and vehicles accessing the arena during a sell-out event, pedestrians may experience crowding. However, this is expected and would be managed during large events by the arena operator. Therefore, arena event impacts on pedestrian circulation would be *not significant*, and no mitigation is proposed.

5.3.1.2.5 Arena Event Impact Summary

Table 5.1.3-4 summarizes the impacts that would be associated with a weekday P.M. arena event.

Table 5.3.1-4. Impact Summary – Arena Event (Alternative 1)	
<i>Description</i>	<i>Impact</i>
Factor 2: Increase in Traffic Volumes	○
Factor 3: Transit Impacts	○
Factor 4: Bicycle Impacts	○
Factor 5: Pedestrian Impacts	○
Factor 6: Emergency Access	○
Factor 7: Loading Impacts	○
<i>Notes:</i> ● - Significant and unavoidable ■ - Significant and unavoidable with mitigation ◎ - Not significant with mitigation ○ - Not significant <i>Source:</i> CHS Consulting Group, <i>et al.</i> 2010.	

5.3.2 Air Quality and Greenhouse Gases

5.3.2.1 Criteria Pollutants

The ROI considered in this air quality cumulative analysis includes the SFBAAB project region. Cumulative impacts resulting from the proposed action , in conjunction with impacts from other projects

discussed in Section 5.2, Other Past, Present, and Reasonably Foreseeable Projects (above), would potentially occur during proposed construction and operational activities.

Air quality impacts from construction activities would occur from combustive emissions due to the use of fossil fuel-fired construction equipment and on-road trucks and fugitive dust ($PM_{10}/PM_{2.5}$) emissions from earth-moving activities, the use of vehicles on bare soils, and demolition of structures. The analysis of Factor 1 determined that implementation of a Dust Control Plan (DCP) approved by the Bay Area Air Quality Management District (BAAQMD) and City would ensure that air emissions from proposed construction activities would produce not significant impacts for particulate emissions ($PM_{10}/PM_{2.5}$). However, construction activities would produce emissions that would exceed the daily NO_x significance threshold and the lead agency would have to consider all feasible measures to mitigate these emissions to insignificance. It is expected that mitigated NO_x emissions from project construction would *remain significant* with respect to Factor 1. The project region is not expected to attain the national and/or state ambient air quality standards for ozone for several years. Therefore, the contribution of NO_x emissions from proposed construction would produce *significant cumulative* impacts to regional ozone levels. Future sources and projects in the region for all other pollutants would occur far enough away from the project site and therefore their emissions would combine with the proposed construction emissions and would produce nominal air quality impacts. Thus, the combination of proposed construction and future project emissions would not contribute to an exceedance of an ambient air quality standard or public health threshold. Thus, proposed construction activities would result in cumulative impacts that would *not be significant* for all pollutant levels other than ozone, which would *be significant*.

The evaluation of impacts under Factor 2 determined that diesel particulates from heavy equipment used in construction and the release of TACs related to chemicals bound to airborne dust or fugitive dust would not pose significant health effects to the public with the implementation of environmental controls. As a result, cumulative impacts from the combination of proposed construction activities and future projects air quality impacts would *not be significant*.

Proposed operations would generate criteria pollutant emissions from onsite area sources (such as combustion of natural gas for space and water heating and other fuels for building and grounds maintenance equipment) and vehicles that access the project site. The analysis of Factor 1 determined that daily emissions produced from the operation of the proposed action would exceed the BAAQMD daily emissions thresholds for ROG, NO_x , PM_{10} , and $PM_{2.5}$. The proposed action incorporates features that minimize motor vehicle trips and energy usages in buildings. The project region is not expected to attain the national and/or state ambient air quality standards for ozone and $PM_{2.5}$ for several years in the future. Therefore, the contribution of proposed operational emissions to future air quality would produce *significant* cumulative impacts to regional ozone, PM_{10} , and $PM_{2.5}$ levels.

The evaluation of cumulative impacts under Factor 2 considered both the existing and foreseeable future projects within 1,000 ft (305 m) of proposed project operations. These projects were used to perform a cumulative hazard analysis for a comparison to the BAAQMD cumulative hazard analysis threshold for onsite residents. With the addition of the TACs sources and the proposed project, the potential excess cancer risks to onsite residents are projected to be below 100 in one million for TACs and the estimated acute and chronic non-cancer hazard indices (HHIs) would be below 1.0 assuming that the Bayview Greenwaste Management facility comes into compliance with the ARB's ATCM rule before 2013 (SFRA 2010).

The cumulative health impact analysis also considered impacts within a radius of 1,000 feet (305 m) for offsite residents. This analysis estimated that excess cancer risks would be below 100 in one million, and the estimated acute and chronic non-cancer HHIs would be below 1.0 (SFRA 2010). Cumulative traffic $PM_{2.5}$ concentrations at some onsite residential locations directly adjacent to Arelious Walker Dr could

exceed the San Francisco Health Code Article 38. Therefore, residential development at these locations would be required by SF Health Code Section 3807 to either locate the residential units to avoid the residential exposure or install ventilation systems that will remove 80 percent of PM_{2.5} from habitable areas of the dwelling units (Appendix H4 of the CP-HPS FEIR – *Community Hazards and San Francisco Health Code Article 38 Analyses*. Prepared by ENVIRON [SFRA 2010]).

The evaluation of impacts under Factors 2 through 6 determined that with implementation of environmental controls, proposed operational emissions would produce *not significant* impacts to localized criteria pollutant, public health, and odor impacts as related to Factors 2 through 6. Emissions from other future sources and projects in the region would occur far enough away from the project site such that they would substantially dilute before combining with proposed operational emissions. Therefore, the combination of proposed operational and future project air quality impacts would not contribute to an exceedance of an ambient air quality standard or public health threshold. As a result, proposed operations would produce cumulative impacts to localized air quality levels that would *not be significant* as related to Factors 2 through 6.

5.3.2.2 Greenhouse Gases

The potential effects of proposed GHG emissions are by nature global and cumulative in their impacts, since individual sources of GHG emissions are not large enough to have an appreciable effect on climate change. Therefore, an appreciable impact on global climate change would only occur when proposed GHG emissions combine with GHG emissions from other man-made activities on a global scale.

According to draft 2010 CEQ guidance on how federal agencies should evaluate the effects of climate change and GHG emissions for NEPA documentation, if a proposed action emits 27,558 tons (25,000 mt) or more of CO₂e on an annual basis, agencies should consider this an indicator that a quantitative and qualitative assessment may be meaningful to decision makers and the public. Currently, there are no formally adopted or published DoN NEPA thresholds of significance for GHG emissions. Formulating such thresholds is problematic as it is difficult to determine what level of proposed emissions would substantially contribute to global climate change. Therefore, in the absence of an adopted or science-based NEPA significance threshold for GHGs, this SEIS compares GHG emissions that would occur from the operation of the proposed action to the U.S. GHG baseline inventory of 2008 to determine the relative increase in proposed GHG emissions.

Table 4.2-1 in Section 4.2, Air Quality and GHG, shows that the proposed construction equipment of Alternative 1 would emit a total of 63,854 mt of CO₂e emissions over a construction period of 16 years, or an average of 3,991 mt per year. Since GHG emissions from the proposed action would equate to such a minimal amount of the U.S inventory, they would not substantially contribute to global climate change. Therefore, GHG emissions from the operation of the proposed action and other future projects would result in cumulative impacts that would *not be significant* as related for Factor 1.

Table 4.2-5 in Section 4.2, Air Quality and GHG, shows that operation of the proposed action would emit a total of 51,348 mt of CO₂e emissions upon buildout. Cumulative GHG emissions could not be calculated from all relevant projects. However, the BAAQMD CAP projected that the SFAAB would produce 115.4 million mt of CO₂e emissions in the 2020, including future developments such as the proposed action. This estimate includes the implementation of regulatory reforms, such as AB 1493, which requires reductions in CO₂ emissions from motor vehicles (BAAQMD 2010). Compared to the projected U.S. CO₂e emission inventory in 2020, the SFAAB's GHG contribution is estimated to be 0.015 percent, as shown in Table 5.2-1 (U.S. Department of State 2010). Since projected GHG emissions from cumulative projects (which include the proposed action) in SFBAAB would equate to such a minimal amount of the U.S. GHG emissions inventory, they would not substantially contribute to global climate

change. Therefore, GHG emissions from the operation of the proposed action and other future projects would result in impacts that would *not be significant* as related to Factors 1 and 2. GHG environmental controls 1 through 4 for GHGs are proposed to ensure that the final development plan and operations for the proposed action minimize the generation of GHG emissions.

Table 5.2-1. Cumulative Annual CO₂e Emissions (mt per Year)

SFBAAB Projected 2020 CO₂e emissions (10⁶) mt	115.4
U.S. 2020 Annual GHG Emissions (10 ⁶) mt	7,390
SFBAAB Emissions as a % of U.S. Year 2020 GHG Emissions	0.015
<i>Sources: U.S. Department of State 2010; BAAQMD 2010.</i>	

Although the proposed action would not cause significant cumulative impacts associated with global climate change, this important topic warrants continued dialogue by DoN leadership on broad-based programs to reduce energy consumption and shift to renewable and alternative fuels, thereby reducing emissions of CO₂ and other GHGs. In an effort to reduce energy consumption, reduce dependence on petroleum, and increase the use of renewable energy resources in accordance with the goals of federal government, the DoN has implemented a number of renewable energy projects (NAVFAC SW 2006). The types of DoN projects currently in operation within California include thermal and photovoltaic solar systems, geothermal power plants, and wind generators. The military also purchases one-half of the biodiesel fuel sold in California. The DoN continues to promote and install new renewable energy projects. These examples illustrate the leadership role that the DoN provides in achieving energy reductions that will contribute to the national effort to mitigate global climate change.

5.3.3 Noise

The ROI for cumulative noise impact assessment is the immediate vicinity of HPS. Noise is a localized phenomenon in that sound pressure levels diminish rapidly over distance from the source. If activities within a locality do not change substantially, noise levels remain essentially the same over long periods of time. Cumulative noise impacts would derive from increases in noise-generating activities within the geographic area. Increases can occur from construction, although temporary, and from changes in future land uses or intensification of land uses (i.e., conversion from less dense to more dense urban development).

Future developments that would have the potential to combine with the project to generate noise impacts include projects numbered 1 through 5 and 9 from Table 5.2-1. Other projects are sufficiently distant such that noise associated with them would be very unlikely to contribute to cumulative impacts in the HPS vicinity.

Future project-specific construction would result in significant vibration impacts due to the proximity of future residences to construction locations where pile driving would occur. However, vibration attenuates rapidly with distance and would not combine with other projects, even during construction, to result in cumulative adverse vibration impacts. Therefore, the project would not contribute to cumulative vibration impacts during construction.

Truck traffic associated with the project during construction (Factor 3) would result in significant noise impacts at some sensitive offsite receptors. If other projects are simultaneously in operation, truck traffic associated with multiple construction projects occurring at the same time could result in cumulative noise impacts related to simultaneous construction activities in close proximity to one another. The project would make a considerable contribution to cumulative construction noise impacts. However, significant construction noise impacts would be temporary only during the combined construction period.

Operation of projects in the vicinity would result in increases in ambient noise levels associated with human occupation of buildings and use of commercial establishments (Factor 4). Increases in both the number of households and the population will translate generally into an increase in anthropogenic noise from vehicle traffic, playground activities, social activities, commercial businesses, garden maintenance and other noise generating activities associated with residential areas. In addition, while local job opportunities are expected to improve, the activities associated with employment in R&D and commercial establishments (both for the proposed action and cumulative projects) would be expected to generate incrementally more noise than current activity levels. Like the project alone, these activities would be expected to cause a substantial permanent increase in ambient noise levels above 70 dBA Ldn in existing and future residential areas. While this would be in the range of a typical urban environment, the impact would be *cumulatively significant and unavoidable*.

As indicated in Section 4.3.2.2.3, Factor 6: Exposure to Increased Traffic Noise Levels, project-related traffic would cause a substantial increase in noise at residences along Donahue St, Palou Ave, and the Innes Ave/Evans Ave corridor. Buildout would also cause a substantial noise increase along 3rd St. This increment is large enough to exceed the factor for a “substantial permanent increase” in traffic noise in residential areas. In addition, noise levels at future cumulative build-out would exceed allowable increases at all but four modeled locations in the HPS vicinity. Therefore, the cumulative noise from all projects would result in significant and unavoidable impacts which the project would exacerbate at many locations. Therefore, the project contribution with regard to Factor 6 would be *cumulatively significant and unavoidable*.

5.3.4 Land Use and Recreation

5.3.4.1 Land Use

The ROI for evaluation of cumulative impacts associated with land use changes is the project vicinity which includes the Bayview Hunters Point neighborhood, Executive Park, and India Basin. These areas contain a mix of land uses, including residential, commercial, and industrial. The past and present development in these areas is described in Section 3.4, Land Use and Recreation, representing the baseline conditions for evaluation of cumulative impacts to land use. Reasonably foreseeable future development forecasts are based on projections of future growth and take into account projects in the entitlement process. Those forecasts account for other major projects currently in various stages of the approval process, including the Candlestick Point-Bayview Waterfront Redevelopment (Cumulative Project #2), India Basin Shoreline Plan (Cumulative Project #3), the Executive Park project (Cumulative Project #5), HPS Phase I (Cumulative Project #1), Hunters View (Cumulative Project #4), and Yosemite Slough Restoration Project (Cumulative Project # 16). Future conditions would also account for land use changes expected through implementation of the *Bayview Hunters Point Redevelopment Plan*.

5.3.4.1.1 Factor 1: Physical Division of an Established Community

Cumulative projects within the project vicinity have contributed or would contribute to the redevelopment of mixed uses. Past and present land uses are consistent with the designated land uses in land use plans governing development in the project vicinity. Construction and operation associated with present and future redevelopment projects would not result in physical changes that could divide or isolate established communities. Therefore, cumulative projects would result in cumulative land use impacts that would *not be significant*.

The proposed action was determined to have impacts that would *not be significant* as related to dividing established communities. Rather, proposed circulation improvements would include extension of street network from the surrounding neighborhoods to the project site integrating HPS into the surrounding

community. This is considered a *beneficial* impact. Therefore, the individual impact of the proposed action would not contribute to significant impacts on land use consistency that could result from cumulative project development, and the proposed action's related cumulative impact on land use would *not be significant*.

5.3.4.1.2 Factor 2: Consistency with Land Use Plans and Policies

It is anticipated that all future projects proposed within the City and County of San Francisco would be consistent with the adopted goals, policies, and objectives of the relevant land use plans such as the *Planning Code*, *General Plan*, and relevant area plans including *BVHP Area Plan*, *Candlestick Point Subarea Plan*, and *HPS Redevelopment Plan*. In addition, these cumulative projects would improve rather than degrade the existing character of the land uses.

The proposed action would generally be consistent with the objectives and goals of applicable land use plans and policies, including the recently amended *HPS Redevelopment Plan*, *HPS Area Plan*, *General Plan*, and *Planning Code*. However, it would be inconsistent with various land use designations contained in several plans, including the *HPS Phase II Public Trust Lands*, *Bay Plan*, *Seaport Plan*, and *Bay Trail Plan*. Implementation of the proposed action would require amendments to these plans as a component of the entitlement action before the inconsistent aspects could be implemented. In the event that the *Bay Plan* is not be amended before the portions of the project site designated as "Port" Priority Use are conveyed, then new consistency determinations from BCDC may be required for those areas. Following such amendments, the proposed action would be consistent with applicable land use plans and policies. Thus, the proposed project impacts would *not be significant* as related to inconsistencies with the adopted land use plans and policies.

The individual impact of the proposed action would not contribute to significant impacts on land use consistency that could result from cumulative project development, and the proposed action's related cumulative impact on land use would *not be significant*.

5.3.4.1.3 Factor 3: Change to the Existing Land Use Character

Future development within those areas would result in changes to the existing land use through conversion of vacant land to developed uses or through the conversion of existing land uses. The *Planning Code*, *General Plan*, and applicable area plans are the documents that govern land use and development within San Francisco. Cumulative projects in the project vicinity have been or would be subject to the land use goals and objectives delineated in these plans, thereby ensuring consistency with land use, zoning, and density designations to minimize impacts on existing land uses. Past, present and reasonably foreseeable future projects have not resulted and are not anticipated to result in cumulatively significant impacts.

The proposed action would result in a substantially different built environment compared to the existing character of the site and vicinity, but would develop new uses that would be compatible with other development in the project vicinity. The project would increase residential and non-residential densities at the project site and would be compatible with the existing land use character. Development patterns would include transitions from low-density residential uses to higher density residential and commercial uses. The transition in scale between adjacent neighborhoods and the project site, and the varied range of proposed uses, would not result in a substantial adverse change in the existing land use character. Since development of cumulative projects within the defined geographic context would not result in an adverse impact on existing land use character, there would be no cumulative impact to which the project could contribute. Therefore, *no significant* cumulative impact would occur.

The proposed action would likely generate some indirect offsite land use impacts such as gentrification and a demand for offsite housing and commercial space to serve residents and businesses moving into the immediate project vicinity. Project impacts associated with jobs and housing are discussed in Section 4.6, Socioeconomics, and Section 6.4, Environmental Justice. Cumulative impacts associated with jobs and housing are discussed in Section 5.6, Socioeconomics, and Section 6.4, Environmental Justice.

5.3.4.2 Recreation

The ROI for cumulative impacts to recreational resources is the City. The past and present development in San Francisco is described in Land Use and Recreation Section 3.4.3, Existing Conditions, and represents the baseline conditions for evaluation of cumulative impacts. Reasonably foreseeable future development forecasts are based on projections of future growth and take into account projects going through the entitlement process, as well as additional growth in the City envisioned through 2030.

This analysis evaluates where the proposed action, along with other past, present, and reasonably foreseeable future projects, would result in: substantial adverse construction-related effects to existing parks and/or recreational facilities (Factor 1); and/or increase the use of existing parks and recreational facilities such that substantial physical deterioration or degradation of the facilities would occur or be accelerated or new or expanded facilities would be required (Factor 2).

A number of cumulative projects listed in Table 5.2-1 would enhance recreational opportunities in the project vicinity. Among these are Candlestick Point-Bayview Waterfront Redevelopment (Cumulative Project #2), India Basin Survey Area (Cumulative Project #3), EcoCenter at Heron's Head Park (Cumulative Project #9), Blue Greenway Project (Cumulative Project #12), Mission Bay North and South (Cumulative Project #13), Treasure Island (Cumulative Project #14), and Yosemite Slough Restoration Project (Cumulative Project #16).

5.3.4.2.1 Factor 1: Construction Impacts

The cumulative projects could include recreational facilities or would be required to improve or expand existing recreational facilities. Any potential impacts to existing recreational facilities resulting from the construction or improvement of new or existing park and open space facilities provided by cumulative development would be specific to the particular project being constructed, its local context, and the specific construction impact. As discussed in Section 4.4.2.2.1, Factor 1: Construction Impacts, construction of the proposed action would not impact existing public parks, recreational facilities, and open space because none currently exist at HPS. Therefore, the proposed action would not contribute to any potentially significant impact on recreational resources that could result from cumulative project development, and the proposed action's construction related cumulative impact on recreational resources would *not be significant*.

5.3.4.2.2 Factor 2: Degradation or Deterioration of Existing Parks and Recreational Facilities

The majority of the related projects would either not result in a substantial demand for recreational services or would result in additional available recreational opportunities. As a consequence, past, present, and reasonably foreseeable future projects would not result in a significant cumulative impact related to increased demand for the use of existing parks and recreational facilities, such that substantial physical deterioration or degradation of the facilities would occur or be accelerated or new or expanded facilities would be required.

The proposed action would not result in significant impacts to existing parks, recreational facilities, and open space. Therefore, the proposed action would not contribute to any potentially significant impact on

parcs, recreational facilities, and open space that could result from cumulative project development, and the proposed action's related cumulative impact on recreational resources would *not be significant*.

5.3.5 Visual Resources and Aesthetics

5.3.5.1 Construction Impacts

The ROI for an analysis of impacts to visual resources is the same limited geographic area as the proposed action, as visual construction impacts are generally site-specific. The past and present development in the city represents the baseline conditions for evaluation of cumulative impacts. Reasonably foreseeable future development includes development at Candlestick Point and Hunters Point, extending generally to the east of US-101 between Candlestick Cove and India Basin, which includes Executive Park, HPS Phase I (Parcel A) development, India Basin Shoreline Area C, as well as Yosemite Slough Restoration Project, which has been approved and will restore tidal wetlands in 34 ac (14 ha) of the CPSRA. Construction impacts on aesthetics are site-specific, as construction activities are temporary. Therefore, the geographic context for an analysis of cumulative construction impacts to aesthetics would be limited to projects in the immediate project vicinity that could be seen together with the proposed action, assuming that construction activities were concurrent, including the approved Yosemite Slough Restoration Project and HPS Phase I (Parcel A) development.

Construction activities associated with development of cumulative projects in the project vicinity would not obstruct any scenic vistas, such as views of the bay, East Bay hills, the San Francisco downtown skyline, Hunters Point Hill, Yosemite Slough, and the CPSRA, as most construction equipment is not tall or wide enough to physically interfere with views. Other visual impacts associated with construction of related projects, such as exposed pads and staging areas for grading, excavation, and construction equipment, would occur. In addition, temporary structures could be located on the construction sites during various stages of construction, within materials storage areas, or associated with construction debris piles on site. Exposed trenches, roadway bedding (soil and gravel), spoils/debris piles, and possibly steel plates would be visible during construction of utility infrastructure improvements. As part of the environmental review process, cumulative projects would be required to temporarily screen, to the maximum extent feasible, views during construction to minimize impacts on scenic vistas and visual character. Implementation of environmental controls would reduce the proposed action's contribution to cumulative impacts during construction by requiring the applicant to screen construction sites from public views at street level; provide appropriate onsite staging of construction equipment; keep the surrounding streets clean and free from construction debris; and maintain the cleanliness of construction equipment (Section 2.3.2.1.9, Environmental Controls).

A minimal amount of glare could result from reflection of sunlight off windows of trucks, but this would be negligible and would not affect daytime views in the area. Security lighting would be provided after hours on all construction sites, but this lighting would be minimal, restricted to the project site, and would not exceed the level of existing night lighting in urban areas. Therefore, light and glare impacts from the proposed action's construction activities would *not be significant*.

The proposed action would not result in significant construction-related impacts to scenic vistas/resources, visual character, and/or light and glare. Therefore, the proposed action would not contribute to any potentially significant impact on visual resources that could result from cumulative project development, and the proposed action's construction related cumulative impact on visual resources would *not be significant*.

5.3.5.2 Operational Impacts

5.3.5.2.1 Factor 1: Effects on Scenic Vistas

Following conveyance of HPS to San Francisco or other non-federal entities, future development of most portions of the HPS would be under city jurisdiction. Therefore, *General Plan* policies would apply to reuse of HPS. The General Plan Urban Design Element contains policies that guide development in order to protect scenic views and promote visual harmony. Non-federal cumulative projects would conform to these guiding principles, and all projects are subject to design review by the Planning Department to ensure consistency with the General Plan. Policy 1.1 in the Urban Design Element of the San Francisco General Plan emphasizes the city's desire to recognize and protect major views in the city, with particular attention to those of open space and water. While each non-federal cumulative project would be required to comply with applicable design review requirements, development of one or more cumulative projects could result in obstruction of scenic vistas from various vantage points in the city, including the bay, the East Bay hills, and San Bruno Mountains, depending on the height, massing, and density of future development.

Overall, development of the proposed action would not substantially block publicly accessible views of the bay or other scenic areas. The proposed action would provide a continuation of the existing street grid, thereby maintaining existing view corridors to the bay and East Bay hills. The proposed action would also provide new parks and open space facilities. Public access areas would provide views from the project site toward the East Bay and the bay. The Yosemite Slough Restoration Project would restore tidal wetlands in a 34ac (13.8 ha) parcel of the CPSRA adjacent to the project site and would include continuation of the Bay Trail and viewpoints/interpretative signage. The proposed Yosemite Slough bridge would be a low structure located across the neck of the slough that would partially obstruct a scenic view from the slough toward the bay from some public vantage points. Views of the bay and the remainder of the slough would be retained from numerous vantage points, including along the shoreline, the project site, the CPSRA, and the proposed bridge. The proposed action would improve access to the project site, allowing people to experience the scenic resources at CPSRA and the slough.

Since development of cumulative projects within the defined geographic context would not likely result in an adverse impact on scenic vistas, there would be no cumulative impact to which the proposed action could contribute. Even if there were an adverse impact on scenic vistas due to cumulative development, the proposed action's incremental contribution would not be cumulatively considerable, as the proposed action would not result in a substantial adverse impact on any scenic vista. Therefore, the proposed action's cumulative impact would *not be significant*.

5.3.5.2.2 Factor 2: Effects on Scenic Resources

Damage to scenic resources would occur if a project would directly affect environmental features, such as topographic features, landscaping, or a built landmark, that contribute to a scenic public setting. The built landmarks and topographic features that contribute to a scenic public setting in the project site include Hunters Point Hill, the Re-Gunning Crane, CPSRA, and the Yosemite Slough. The General Plan Urban Design Element contains policies that guide development near major topographic features such as substantial hills to prevent development from adversely affecting these features. The proposed action would retain structures at the identified Drydock Historic District and the Re-Gunning Crane, a landmark visible from surrounding public vantage points. The project site does not contain other features that would be considered scenic resources that contribute to a scenic public setting. The Yosemite Slough bridge would change the setting of the slough, with the bridge structure and roadway approaches, and the bridge would replace some views of open water as seen from nearby locations. Yosemite Slough would continue to be a scenic resource (i.e., a waterway bordered by open space). Overall, the bridge would not

substantially damage a resource that contributes to a scenic public setting. On completion of the Yosemite Slough Restoration Project, public views from the proposed bridge would include the restored slough areas, as well as the bay, and provide additional viewing opportunities that would not exist without the proposed action. The proposed shoreline improvements would improve the aesthetic quality of the shoreline, reduce erosion and remove debris. These improvements would complement the Yosemite Slough Restoration Project (i.e., restoration of tidal wetlands), and provide additional open space areas, including recreational trails connected to regional trails and wildlife viewing. These improvements would represent a beneficial impact of the development, improving the overall visual character of the shoreline.

Since development of cumulative projects within the defined geographic context would not likely result in an adverse impact on scenic resources, there would be no cumulative impact to which the proposed action could contribute. Even if there were an adverse impact on scenic resources due to cumulative development, the proposed action's incremental contribution would not be cumulatively considerable, as the proposed action would not result in an adverse impact on any scenic resource. Therefore, the proposed action's cumulative impact would *not be significant*.

5.3.5.2.3 Factor 3: Effects on Visual Character

Visual character refers to the aesthetic character or quality of a streetscape, building, group of buildings, or other manmade or natural feature that creates an overall impression of an area. A project would degrade the existing visual character if it would result in substantial effects on a site or its surroundings. It is anticipated that future development within the defined geographic area would result in changes to the existing land use environment through conversion of vacant land to developed uses or conversions of existing land uses (e.g., from residential to commercial, or industrial to residential) that could result in a change in visual character.

The San Francisco General Plan contains guidelines for urban design that would ensure compatibility with adjacent land uses and visual character. While development in these geographic areas would likely change the existing land use character, the existing condition in many parts of the General Plan area is deteriorated. Change in visual character is not always adverse and can, in fact, be beneficial. A change from a blighted industrial development to mixed uses, with new housing and commercial areas, would likely be perceived as a positive change in the visual character of the area, as these uses would offer increased landscaping, visual integration of structures, and coordinated design schemes. It is anticipated that all future non-federal projects proposed in these areas would be consistent with the adopted goals, policies, and objectives of the area Plans and would improve rather than degrade the existing visual character of the land uses.

The transition in scale between adjacent neighborhoods and the project site and the varied range of proposed uses would not result in a substantial adverse change in the existing land use character. Since development of cumulative projects within the defined geographic context would not likely result in an adverse impact on existing visual character, there would be no cumulative impact to which the proposed action could contribute. Even if there were an adverse change in existing visual character due to cumulative development, the proposed action's incremental contribution would not be cumulatively considerable, as the proposed action would not result in an adverse change in visual character. Therefore, the cumulative impact would *not be significant*.

5.3.5.2.4 Factor 4: Effects of Light and Glare

Development of cumulative projects would result in increased sources of light and glare from building and street lighting, parking lot lighting, vehicle headlights, and increased building surfaces. The new sources of light would be typical of urban development elsewhere in San Francisco, but could generate

obtrusive lighting that could adversely affect day or night views or negatively affect adjacent neighborhoods, depending on location and project design. For example, if project driveways were oriented such that vehicle lights would shine on adjacent sensitive receptors, this could be considered an adverse effect. The addition of numerous sources of illumination would also change the night views onto the project site from various vantage points, including Oakland and Alameda across the bay. However, as noted in Section 4.5, Visual Resources and Aesthetics, the intervening distance would mean that this increased illumination would not result in adverse effects on sensitive receptors or interfere with views of the night sky.

Moreover, cumulative development would conform to the guidelines and policies contained in the Planning Code, applicable land use plans, including Redevelopment Plans, which would result in implementation of lighting design and use of non-reflective building surfaces to the maximum extent feasible so as to avoid any adverse light and glare impacts on sensitive receptors. Therefore, as the geographic area is located within an urban context, and projects would conform to the design guidelines contained in the applicable planning documents, there would not be a significant adverse cumulative effect with regard to light and glare from development of cumulative projects. Even if the cumulative projects would result in an adverse light and glare impact, the proposed action's incremental effect would not be cumulatively considerable, as implementation of environmental controls would reduce impacts from light and glare by shielding lighting fixtures, minimizing spill light from proposed lighting, screening vehicle headlights to the maximum extent feasible, and eliminating or minimizing increased glare by using nonreflective glass and nonreflective textured surfaces in the proposed development (Section 2.3.2.1.9, Environmental Controls). Therefore, the proposed action's cumulative impact with regard to light and glare would *not be significant*.

5.3.6 Socioeconomics

The ROI for evaluation of cumulative socioeconomic impacts is the Bayview Hunters Point neighborhood, the City and County of San Francisco, and San Mateo County. Past and present socioeconomic conditions in these areas, described in Section 3.6, Socioeconomics, represent the baseline conditions for evaluation of cumulative socioeconomic impacts. Section 5.1, Cumulative Assumptions, documents the Planning Department projections of future population and employment growth to 2030. As noted, the Planning Department projections assume full buildout of three large developments currently undergoing or completed environmental review: Treasure Island (#14 in Table 5.2-1 and Figure 5.2-1), Bayview Waterfront (#2), and Parkmerced (#15). Several other projects may affect socioeconomic conditions in the future, especially #1 (Hunters Point Shipyard Phase I), #3 (India Basin Survey Area or India Basin Shoreline Area C), #4 (Hunters View), #5 (Executive Park-Candlestick Cove), #6 (Visitacion Valley Redevelopment Project), #7 (Brisbane Baylands Specific Plan), #8 (Cow Palace), #11 (Southern Waterfront Gateway Sites Planning), and #13 (Mission Bay North and South). If all of these other projects are built out as currently predicted, based on the information available at this time, they would result in the construction of approximately 14 million ft² (1.3 million m²) of office, retail, commercial, and industrial uses and about 16,000 additional housing units. Some of these housing units would be affordable or below market rate, but many would be market-rate. Information available at this time is not sufficient to determine how many of the projected cumulative total housing units would be below market rate.

Reasonably foreseeable future projects in the survey area would also generate new job opportunities from both the construction and operation of these new projects. Given the size of the regional economy, and the inherently temporary nature of construction employment, it is likely that construction employees not already living in the areas of construction would commute from elsewhere in the Bay Area rather than relocate for a temporary construction assignment. In terms of operation phase employment, planning policies and mechanisms in place – such as the regular Planning Department and ABAG revisions of

population and employment estimates, and planning department review of and participation in environmental reviews – would help to ensure that development activities would not result in a substantial unplanned population increase. Indeed, many of the planned projects listed would, like the proposed action, help to alleviate the housing shortage in San Francisco. The proposed action has been incorporated in city growth plans and projections, and would *not have a significant cumulative* contribution to unplanned population or housing growth (Factor 1).

Where reasonably foreseeable future projects include redevelopment, the projects could result in displacement (and reconstruction) of areas currently occupied in part by housing units (Factor 2). Because there are no existing housing units on the project site, buildout of the proposed action would not displace existing housing and would therefore have *no direct impact* on cumulative displacement of housing in the cumulative impact analysis area. Regarding indirect impacts, the reasonably foreseeable future projects could contribute to displacement either by increasing property values and rental rates or by creating new employment opportunities that are filled by people who do not now live in the same neighborhood, and have higher incomes, thereby increasing demand for housing and property values. The proposed action, however, includes construction of affordable and below-market rate housing in excess of policy requirements. The proposed action also has very aggressive local hiring goals for construction and permanent jobs. Thus, the city has taken steps to minimize the impacts of the proposed action relative to indirect displacement of existing populations, and its contribution to cumulative impacts would *not be significant*.

Where reasonably foreseeable future projects include redevelopment, they would also sometimes result in the displacement of areas currently occupied in part by businesses (Factor 3). The only businesses presently on the project site are studios that house approximately 100 professional artists. The Community Benefits Plan, which provides for affordable and preferential access to studio space by existing artists, would minimize the impacts of the proposed action on business displacement and the project contribution to cumulative impacts would *not be significant*.

Reasonably foreseeable future projects would be subject to environmental and planning review that would ensure compatibility with adopted policies and objectives of the San Francisco General Plan. The proposed action is also consistent with all adopted elements, and it would have *no cumulative impact* relative to consistency with the relevant elements of the San Francisco General Plan.

5.3.7 Hazards and Hazardous Substances

5.3.7.1 Routine Transport, Use, and Disposal of Hazardous Materials and Waste

Cumulative projects could generate hazardous materials and waste from the operation of retail and manufacturing businesses, entertainment venues, marinas, grounds and landscape maintenance, and other uses. At the state level, the DTSC administers laws and regulations related to hazardous materials and waste, which are the state equivalents of RCRA and CERCLA, respectively. The RWQCB enforces laws and regulations governing releases of hazardous waste and petroleum. In particular, the RWQCB focuses on all petroleum releases and those hazardous waste releases that may impact groundwater or surface water. In addition, the CDPH is responsible for ensuring facilities that use, store, or dispose of radiological materials are properly investigated, decontaminated, and decommissioned or licensed (or properly issued an exemption from such requirements), in accordance with state and federal laws and regulations, including the state Radiation Control Law. These regulations have been in place for many years. Consequently, many past projects are, and all present and reasonably foreseeable future projects would be, required to comply with applicable federal, state, and local regulations. Compliance with applicable regulations and guidelines pertaining to hazardous materials and substances would ensure that cumulative impacts from construction activities would *not be significant*.

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

5.3.7.2 Reasonably Foreseeable Risk of Upset or Accident

Cumulative development could include handling or disposal of hazardous materials/waste in such a way as to pose a risk from upset or accident. Such upsets or accidents, however, are likely to result in site-specific impacts, but these would not combine with another upset or accident that may occur at another site. Hazardous waste generated from a site during operation of existing facilities or planned uses would need to be transported to a facility permitted to accept such waste. Management of specific hazardous wastes is addressed at the federal, state, and local levels. DTSC is authorized by USEPA to enforce the requirements of the federal RCRA. Under the state's Hazardous Waste Control Law, DTSC has adopted extensive regulations governing the generation, transportation, treatment, and disposal of hazardous wastes, which are more stringent than the requirements of RCRA.

Facilities in the city where hazardous materials are used must be constructed in compliance with current laws and regulations requiring hazardous materials/waste storage that minimizes exposure to people or the environment, including the potential for inadvertent releases. In addition, these materials must be labeled to inform users of potential risks and to instruct them in appropriate storage, handling, and disposal procedures. Employers are required by law (Cal/OSHA) to ensure employee safety by properly identifying hazardous materials and adequately training workers. The use of hazardous materials and generation of wastes would continue to be regulated under the authority of the DPH and HMUPA, under a compliance certificate, with additional oversight by other agencies, including the California Department of Health Services. Transporters of hazardous materials and wastes are required to comply with federal laws and regulations that are monitored and enforced by the California Highway Patrol (CHP). DPH HMUPA would continue to conduct periodic inspections throughout the city to ensure that hazardous materials and waste are being used and stored properly.

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

Cumulative projects could also affect the demand for hazardous materials/waste emergency response services in the city, depending on the types of hazardous materials/waste that would be handled. The likelihood of emergency incidents is more a function of the types of materials used as opposed to the quantities of materials used. All projects would be required to comply with applicable statutes and regulations, which would ensure that impacts related to the transport, use, and disposal of hazardous materials would not be significant. Adherence to these regulations would also minimize the risk of upset or accident related to the handling of hazardous materials/waste. For all of these reasons, potential cumulative impacts from the risk of upset or accident would *not be significant*.

5.3.7.3 Hazardous Substances Release Sites

As a result of implementation of CERCLA response actions, including land use restrictions and controls, at HPS hazardous substances release sites, there are no reasonably foreseeable environmental impacts associated with the release of hazardous substances, pollutants, or contaminants into the environment during construction activities at HPS. It is anticipated that future development of other identified hazardous waste sites would also comply with applicable laws and regulations pertaining to hazardous substances, and that risks associated with these sites would be eliminated or reduced through compliance with the requirements for proper handling, disposal practices, and/or cleanup procedures. In many cases, development applications for projects affected by hazardous substances on other identified sites would be denied by the city if adequate cleanup or treatment is not completed or feasible. Accordingly, cumulative impacts on the public or environment associated with development on or near hazardous waste sites would *not be significant*.

As described previously, the historic uses at HPS by both the DoN and its tenants resulted in a number of hazardous waste release sites that are presently undergoing remediation by the DoN, under the supervision of federal and state environmental agencies and in accordance with CERCLA. All necessary remedial actions at HPS required by CERCLA, the Federal Facilities Agreement (FFA), or other applicable law, must be completed to the satisfaction of the relevant regulatory agencies, and those agencies must determine that the site is suitable for its intended use, whether those remedial activities occur before or after the DoN transfers ownership of the property. The proposed action would be consistent with any requirements imposed as part of these remediation programs and the federal, state, and local laws governing those remediation programs. Applicable statutes, regulations, and site-specific cleanup documents describe the required process if previously unidentified soil or groundwater contamination were encountered during construction or operation of the proposed action on any portion of the project site and would ensure proper remediation, in accordance with appropriate guidelines and applicable federal, state, and local laws and regulations. As a result, the cumulative impact associated with the proposed action would *not be significant*.

5.3.7.4 Impair Implementation of Adopted Emergency Response Plans

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

The Emergency Response Plan describes the city's actions during an emergency response. Forthcoming annexes and appendices to this plan will describe in more detail response actions and hazards specific to HPS. While these additional plans are in development, existing departmental plans and hazard-specific annexes remain in effect. Further, this plan describes the role of the Emergency Operations Center (EOC) and the coordination that occurs between the EOC, city departments, and other response agencies. Finally, this plan describes how the EOC serves as the focal point between federal, state, and local governments in times of disaster (DEM 2008). A separate Hazard Mitigation Plan assesses risks posed by natural and human-caused hazards and sets forth a mitigation strategy for reducing the city's risks.

San Francisco ensures fire safety primarily through provisions of the *San Francisco Building Code* and *San Francisco Fire Code*. Many existing buildings are required to meet standards contained in these codes. Proposed action buildings and structures would be required to conform to these standards, which (depending on building type) may also include development of an emergency procedure manual and an exit drill plan. Plan review for structures for compliance with *San Francisco Fire Code* requirements, to

be completed by the San Francisco Department of Building Inspection and the SFFD, would minimize fire-related hazardous materials emergency dispatches, reducing the demand for fire protection services. Therefore, future development would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. For the reasons set forth above, neither the proposed action nor other cumulative development would directly or indirectly result in any additional exposure of residents or workers to fire risk. Therefore, because all cumulative development would be required to comply with applicable codes that would ensure effective implementation of the city's existing emergency plans, the cumulative impact would *not be significant*.

5.3.8 Geology and Soils

The ROI for the analysis of cumulative impacts resulting from geologic hazards is generally site-specific because each project site has a different set of geologic considerations that would be subject to specific site-development and construction standards. Therefore, there is little, if any, cumulative relationship between the project and other areas in the city. As such, the potential for cumulative impacts to occur is geographically limited for many geology and soils impact analyses; however, variations from a site-specific cumulative context are identified, as applicable.

San Francisco is located in a seismically active area and is subject to risk of injury to persons and property damage as a result of seismic ground shaking. Given the risk from seismic activity associated with all development in seismically active areas, this impact would be significant if it were not mitigated by building code requirements. Building in California is strictly regulated by the California Building Code (CBC), as adopted and enforced by each jurisdiction, to reduce risks from seismic events to the maximum extent possible. Impacts associated with potential geologic hazards related to fault rupture would occur at individual building sites and would be related to the site location relative to fault zones, the composition of the site soil, and the structural strength of a particular building.

Because the city uses and enforces the requirements of the CBC as part of the San Francisco Building Code (SFBC), new buildings and facilities in the city are required to be sited and designed in accordance with the most current geotechnical and seismic guidelines and recommendations. In addition, the proposed action would implement all necessary design features recommended by the site-specific geotechnical studies to reduce the risk from liquefaction, settlement, lateral spreading, expansive or corrosive soils, and landslides. With adherence to the SFBC and related plans, regulations, and design and engineering guidelines and practices, the proposed action would not make a cumulatively considerable contribution to any potential cumulative impact arising from fault rupture. The proposed action's cumulative impact would *not be significant*.

Impacts associated with potential geologic hazards related to ground shaking and seismic-related ground failure would occur at individual building sites. These effects are site-specific and impacts would not be compounded by additional development. New buildings and facilities in the city are required to be sited and designed in accordance with appropriate geotechnical and seismic guidelines and recommendations, consistent with the requirements of the SFBC. Therefore, although there is risk from seismic events inherent in all development in seismically active areas, compliance with applicable regulations reduces this risk. Because the proposed action would comply with the provisions of all applicable codes and regulations, and because its building plans would conform to the most current seismic safety design guidelines, the proposed action would not make a cumulatively considerable contribution to any potential cumulative impacts arising out of strong seismic ground shaking and the cumulative impact would *not be significant*.

The impacts from erosion and loss of topsoil from site development and operation can be cumulative within a watershed. Based on historic drainage patterns, watersheds in the project vicinity that would

form the ROI for an analysis of erosion impacts are the Islais Creek Basin and the Yosemite Basin. Development throughout the city is subject to runoff, erosion, and sedimentation prevention requirements, including the applicable provisions of Phases I and II of the NPDES permit process, as well as implementation of fugitive dust control measures, in accordance with BAAQMD Rule 403. Because the proposed action would be in compliance with applicable BAAQMD and NPDES permit requirements, and would implement and maintain BMPs, required by the project SWPPP, the proposed action would not make a cumulatively considerable contribution to any potential cumulative impact related to soil erosion or loss of topsoil, and the cumulative impact of the proposed action would *not be significant*.

As with seismic ground shaking impacts, the ROI for analysis of impacts on development from unstable soil conditions, including landslides, liquefaction, subsidence, collapse, or expansive or corrosive soils, generally is site-specific. Because all development is required to undergo analysis of geological and soil conditions applicable to the specific project, and because restrictions on development would be applied in the event that geological or soil conditions pose a risk to safety, it is anticipated that cumulative impacts from development on soils subject to instability, subsidence, collapse, and/or expansive soil would *not be significant*. Similarly, because the proposed action would implement the identified environmental controls, the proposed action would not make a cumulatively considerable contribution to any potential cumulative impacts and the cumulative impact would *not be significant*.

Cumulative projects, depending on the location, could substantially change site topography and/or unique geologic or physical features at respective sites. This could be a potentially significant impact if a large number of cumulative projects were to change topography or unique geologic features. However, nothing in the project site vicinity suggests that such a cumulative impact could occur. Because the project site consists of fill areas or low lying shoreline areas, most of the project site is relatively flat, with elevations ranging from approximately 0 to 20 ft (0 to 6 m). Maximum ground surface elevation near the project site is on Bayview Hill (west of Candlestick Point), which reaches an elevation of approximately 400 ft (120 m). There are no unique geologic features, such as prominent hills, exceptional rock outcroppings, or similar features. The proposed action would alter surface topography for new development, including about 3 ft (0.9 m) of fill in some areas, and the project site shoreline would be altered with new seawalls or other shoreline protection. Overall, the proposed action would not contribute to substantial changes in site topography or affect unique geologic features, and it would have no impact on such features in the project vicinity. Therefore, there would be *no cumulative impact* related to topography and unique geographic features.

5.3.9 Water Resources

The potential contributions of the proposed action to cumulative hydrology and water quality impacts are evaluated in the context of past, present, and reasonably foreseeable future development expected to occur in the project vicinity. The following projects are in the vicinity of the proposed action and are included in the cumulative impacts analysis: development at Executive Park, HPS Phase I, India Basin Shoreline, Jamestown, Brisbane Baylands, Visitacion Valley, and Yosemite Slough Restoration.

The following impacts to water resources identified for the proposed action would be confined to the project site and would not contribute to impacts from other development projects: placement of housing in a 100-year flood hazard area, flooding in areas adjacent to the bay, and exposure of people or structures to inundation by seiche, tsunami, mudflow, or dam failure. In contrast, some effects, particularly those pertaining to water quality, have the potential to contribute cumulatively to impacts from other developments.

5.3.9.1 Factor 1: Violate any water quality standards

Portions of the bay adjacent to the project site are impaired for chlordane, DDT, dieldrin, dioxin compounds, exotic species, furan compounds, mercury, and PCBs (Section 3.9, Water Resources). With the exception of mercury and exotic species, these impairments are related to legacy contaminants. Future use of chlorinated pesticides (e.g., chlordane, DDT, and dieldrin) or PCBs at the project site or other cumulative project sites is unlikely because these compounds have been banned. However, soils may contain residues of these contaminants at concentrations that are below cleanup levels and/or ecological or human health risk thresholds. Construction activities or post-development conditions that have the potential for erosion and transport of soils containing contaminant residues could contribute to loadings to the bay that undermine future TMDL-related efforts to reduce contaminant inputs.

Construction of the Yosemite Slough bridge, as part of the proposed action, and the proposed Yosemite Slough Restoration project, both have the potential to disturb sediments within Yosemite Slough, although not at the same time. Excavation of soils/sediments for the Restoration Project is expected to occur prior to construction of the Yosemite Slough bridge. The goals and objectives of the Restoration Project include "...remediate, sequester, or remove contaminated soils to reduce potential for human and wildlife contact..." Thus, the Restoration Project is expected to improve sediment quality within the slough, and reduce potential for future cumulative impacts related to bridge construction for the proposed action. However, the bridge construction activities would need to avoid disturbances of any contaminated soils that were sequestered or remediated in place for the Restoration Project. It is expected that these limits would be specified in the 401 and 404 permits.

With respect to cumulative effects on water quality associated with construction, all future development within the Islais Creek and Yosemite Basins would be required to conform to applicable WDRs. To obtain coverage under these permits, cumulative development projects would be required to implement construction BMPs similar to those required for the proposed action. As discussed in Section 4.9, Water Resources, BMPs are intended to reduce the potential for soil erosion and transport of soils and associated chemical contaminants to the bay. Construction permits and WDRs also are expected to require inspection and maintenance of BMPs, as well as monitoring runoff and receiving waters to document the effectiveness of the BMPs and compliance with water quality criteria. Because the water quality criteria are expected to be protective of beneficial uses, construction and operational activities associated with cumulative projects would not interfere with beneficial uses, and cumulative impacts on water quality would *not be significant*.

5.3.9.2 Factor 2: Adversely affect drainage patterns

Construction activities could slightly alter the drainage patterns of the various development sites within the Islais Creek and Yosemite Basins. However, the cumulative impact would not be considerable because overall changes would not cause excessive siltation or erosion of local streams or other receiving waters, such as San Francisco Bay. Therefore, cumulative impacts would *not be significant*.

5.3.9.3 Factor 3: Substantially degrade or deplete groundwater supplies

The groundwater basins underlying the project site and the sites of the cumulative projects are not used for domestic water supply. Construction and operation of cumulative development would not deplete groundwater supplies or interfere with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. Construction dewatering activities associated with multiple projects within the groundwater basin could result in small-scale reductions in the groundwater elevation, but this effect would be offset by infiltration from constructed stormwater

retention features, such as stormwater treatment wetlands and biofiltration ponds. Thus, the impact on groundwater recharge from cumulative development would *not be significant*.

5.3.9.4 Factor 4: Increase risks to human health and safety due to flooding

Construction and operation of the proposed action would not increase the cumulative risks of flooding-related damages or exposures within the project site or in adjacent areas. It is anticipated that cumulative development in the floodplain would be subject to environmental controls to that for the proposed action, and all cumulative projects would be required to obtain Floodplain Development Permits from the City Administrator prior to buildout. To acquire such a permit, the future developer or owner of the property must demonstrate that the proposed buildings or structures would not redirect flood flows such that an adverse physical effect would occur. Thus, cumulative impacts would *not be significant*.

5.3.10 Utilities

5.3.10.1 Factors 1 and 2: Water

The ROI for an analysis of cumulative impacts to water supplies is the service area of the Regional Water System, operated by the SFPUC. The past and present water supply and water treatment capacity in the Regional Water System service area is described in Section 3.10, Utilities, representing the baseline conditions for evaluation of cumulative impacts. Reasonably foreseeable development includes future growth incorporated into the 2005 Urban Water Management Plan and the updated demand projections included in the WSA, which included updated projections for San Francisco, as developed by the San Francisco Planning Department (SFPUC 2005b).

To enhance the reliability of the Regional Water System, improve dry-year supplies, diversify the water supply portfolio, and meet projected wholesale and retail demand through 2030, the SFPUC developed the WSIP that included facility and water supply improvement projects to accommodate a projected increase in annual average demand from 265 million gallons per day (MGD) (1,003 ML/d) to 300 MGD (1,136 ML/d). The SFPUC subsequently adopted the Phased WSIP to implement facility improvement projects with phased implementation of the water supply program, and provide an additional supply of 20 MGD (76 ML/d) from recycled water, groundwater, and conservation projects to meet projected demand through 2018. By 31 December 2018, the SFPUC must re-evaluate water demands and water supply options and allocate available water supplies to meet the demand through 2030.

Per the Phased WSIP, retail water supplies to San Francisco, including the project site, comprise deliveries from the Regional Water System, groundwater, and the identified local water supply improvement projects. With these sources, retail water supplies are estimated to vary between 93 and 94.5 MGD (352 and 358 ML/d) (Table G-2, Appendix G), depending on hydrologic conditions. Total retail water demand, including demand from the proposed action, several major development proposals (as discussed in the WSA), and background growth from ABAG projections and the 2005 Urban Water Management Plan, is estimated to increase from 91.81 MGD (347.5 ML/d) in 2010 to 93.42 MGD (353.6 ML/d) by 2030 (Table G-3, Appendix G).

After 2030, during multiple dry-year periods, the total retail water supply is estimated to be slightly less than total demand, including the cumulative demand associated with the proposed action, major development proposals, and background growth. During multiple dry-year periods, the SFPUC would implement the provisions of the Water Shortage Allocation Plan and Retail Water Shortage Allocation Plan, which could include voluntary rationing or the curtailment of retail deliveries. With the implementation of the Water Shortage Allocation Plan and Retail Water Shortage Allocation Plan during

multiple dry-year periods, existing and projected future water supplies could accommodate cumulative future retail water demand.

Implementation of the Phased WSIP would ensure sufficient water supply and water treatment capacity for the proposed action and estimated current and future retail demand. Provision of an onsite AWSS and connection to the existing offsite AWSS would ensure adequate water for firefighting purposes at the project site. As no additional water supply or water treatment capacity would be needed to serve the proposed action and projected future development, beyond the supply identified under the Phased WSIP, the proposed action would not make a considerable contribution to cumulative impacts on water supply. Therefore, cumulative impacts associated with the proposed action would *not be significant*.

5.3.10.2 Factors 3 and 4: Wastewater

The ROI for an analysis of cumulative impacts to wastewater treatment and conveyance facilities is the area that utilizes the Hunters Point tunnel sewers and contributes wastewater to the SWPCP and the NPWWF and BWWF during wet weather. The past and present development in the city is described in Section 3.10, Utilities, representing the baseline conditions for evaluation of cumulative impacts. For wastewater conveyance, reasonably foreseeable development includes future projects that would be served by the Bayside Transport/Storage System, as described in Section 4.10, Utilities. For wastewater treatment, the cumulative projects would include all reasonably foreseeable future development in the Bayside Drainage Area that would utilize the SWPCP, NPWWF, and BWWF.

Wastewater Conveyance Capacity. Cumulative projects in the Bayside Drainage Area would contribute both additional wastewater and stormwater to the Bayside System, which could exceed its capacity. The Bayside Systems and Facilities Operations Plan is intended to implement strategies to meet objectives that include maximizing the volume of wastewater treated at the SWPCP or NPWWF, consistent with their capacities. Any cumulative projects that would result in wastewater and/or stormwater flows that exceed the capacity of the Bayside System would be inconsistent with the objectives of the Operations Plan and would result in potentially significant impacts on wastewater conveyance.

The proposed action would construct a separate onsite stormwater and wastewater system and would only contribute wastewater to the Bayside System. Peak-flow capacities of the Bayside System are adequate to convey the wastewater generated by the proposed action, which would only represent 3.5 percent of the remaining available capacity of the Bayside System. Total wet-weather flow volumes would be reduced compared to existing conditions because the stormwater that currently flows from the project site into the Combined Sewer System would be offset by the proposed onsite separated stormwater and wastewater system. In addition, there would be adequate dry-weather conveyance capacity to transport wastewater from the project site. Regardless of future contributions to CSOs from other projects, the contribution of the proposed action would not be cumulatively considerable. In addition, the future developer or owner of the property would ensure there would be no increase in CSO flows as a result of the proposed action by providing temporary detention or retention of wastewater onsite during wet weather or completion of the separate stormwater and wastewater systems (Section 2.3.2.1.9, Environmental Controls). Therefore, the proposed action would not have a cumulatively considerable contribution to potentially significant cumulative impacts on wastewater conveyance capacities and cumulative impacts associated with the proposed action would be *not significant*.

Wastewater Treatment Capacity. Wastewater from the project site is treated at the SWPCP, which has a design capacity of 150 MGD (568 ML/d) to secondary treatment standards and the ability to treat an additional 100 MGD (378 ML/d) during wet weather to primary treatment standards. The SWPCP currently processes an average flow of 67 MGD (254 ML/d), with a remaining secondary treatment

capacity of 83 MGD (314 ML/d). Cumulative projects in the area would contribute to the overall demand for wastewater treatment by the SWPCP.

The SWPCP could accommodate the maximum 1.18 MGD (4.47 ML/d) of wastewater generated by the proposed action without requiring any expansion of existing facilities. Development of cumulative projects within the vicinity, including the proposed action, is not expected to generate additional quantities of wastewater beyond the current capacity of the SWPCP. The existing and future wastewater flows, in combination with proposed action flows, would not exceed the capacity of existing infrastructure and would not require the construction of new or expanded wastewater conveyance facilities or expansion of existing facilities, other than those proposed onsite. Therefore, the proposed action would not have a cumulatively considerable contribution to potentially significant cumulative impacts on wastewater treatment facilities and cumulative impacts associated with the proposed action would be *not significant*.

Compliance with Waste Discharge Requirements. The NPDES permit system requires that all existing and future municipal and industrial discharges to surface waters within the City of San Francisco be subject to specific discharge requirements. The proposed action would not result in the discharge of untreated wastewater to surface waters. Operational discharges would be sent through the onsite sewer system that would connect to the city's Combined Sewer System. Wastewater generated at the project site would be treated at the SWPCP, which is required to comply with waste discharge requirements that establish the levels of pollutants allowable in water discharged from any facility. Related projects would be required to follow all regional and local rules and regulations pertaining to wastewater treatment compliance. Consequently, there would be no cumulative impacts to which the proposed action could contribute. Therefore, cumulative impacts associated with the proposed action would *not be significant*.

5.3.10.3 Factors 5 and 6: Solid Waste

There is a growing landfill capacity problem for municipal solid waste and construction waste in California, and various approaches are being explored and implemented to help reduce the impact of the increasing amounts of solid waste generated by a growing population. Even with implementation of increased recycling programs, the future capacity of landfills to accommodate the solid waste in California is uncertain. In 1988, the City of San Francisco entered into an agreement with Altamont Landfill for the disposal of 15 million tons (13.6 million mt) of solid waste. Through 1 August 2009, the city has used 12,579,318 tons (11,411,765 mt) of this capacity. The city projects that the remaining capacity would be reached no sooner than August 2014 (assuming an average of 467,000 tons (423,655 mt) a year disposal). The city is in the process of selecting another landfill agreement for an additional 5 million tons (4,535,923 mt) of capacity, which could represent 20 or more years of capacity for San Francisco's waste. Future agreements will be negotiated as needed for San Francisco's waste disposal needs.

Cumulative development in the city would generate varying amounts of solid waste that would decrease the remaining capacity of servicing landfills. The city has implemented a number of aggressive strategies to divert additional solid waste and achieve citywide diversion goals. The city plans to achieve a 75 percent landfill diversion by 2010 and full (100 percent) waste diversion by 2020, and its contribution of solid waste to landfills is anticipated to continue to diminish over time. Increasing solid waste diversions would extend the life of the landfills utilized by the city, lengthening the time horizon before the remaining disposal capacity is filled. The Green Building Ordinance, Chapter 7 of the Environment Code, establishes LEED[®] Silver level as the standard for all city building projects, which includes the goal of diverting 75 percent of construction and demolition debris from landfills for each project. Therefore, contributions from the proposed action, combined with cumulative projects, which would also be subject to the Green Building Ordinance, would not substantially contribute to landfills. The amount

of waste generated by the proposed action would be a relatively small percentage (3.7 percent) of the solid waste generated by the city, without any recycling efforts beyond a 75 percent diversion rate. The proposed action would include provisions for onsite recycling, composting, and trash facilities as required by city specifications. In addition, consistent with the city's goal of achieving zero waste by the 2020, the future developer or owner of the property would prepare a SWMP that would specify the methods by which the project site would divert operational solid waste to assist the city in achieving its diversion goals (Section 2.3.2.1.9, Environmental Controls). As a result of compliance with the Green Building Ordinance, preparation of a SWMP, and implementation of onsite recycling facilities, the proposed action would not make a cumulatively considerable contribution to cumulative impacts on landfill capacities. All cumulative development in the city would be expected to meet or exceed all solid waste diversion requirements for new development. Therefore, the proposed action would not have a cumulatively considerable contribution to potentially significant cumulative impacts on solid waste and cumulative impacts associated with the proposed action would *not be significant*.

Development of cumulative projects in the City of San Francisco could result in additional hazardous waste generation, depending on the project. As there are no capacity issues with regard to transport or treatment of hazardous waste, cumulative projects would not contribute hazardous waste volumes that would exceed the capacity of authorized TSDs. In addition, since no heavy industrial uses are proposed as part of the proposed action, the amount of hazardous wastes generated would be minimal, consisting primarily of household hazardous waste and small amounts of inorganic wastes (e.g., waste oil from commercial uses). Therefore, the proposed action would not make a considerable contribution to potentially significant cumulative impacts on hazardous waste disposal facilities. Because the minimal amount of hazardous waste generated by the proposed action could be accommodated by existing facilities, cumulative impacts associated with the proposed action would *not be significant*.

5.3.10.4 Factors 7, 8, and 9: Electricity, Natural Gas, and Telecommunications

The ROI for an analysis of cumulative impacts associated with electricity, natural gas, and telecommunications/cable would be the service areas of the respective providers. For electricity, it would be either the service area of PG&E or the SFPUC. These service providers would extend their infrastructure to accommodate growth within their service areas. The past and present development in these service areas is generally described in Section 3.10, Utilities, representing the baseline conditions for evaluation of cumulative impacts. Reasonably foreseeable future development forecasts are based on projections of future growth and take into account projects going through the entitlement process.

Development of cumulative projects, in combination with the proposed action, would increase demands for electricity, natural gas, and telecommunications/cable services. All cumulative projects within the City of San Francisco would be required to comply with applicable rules and regulations, to ensure that project needs can be accommodated by various utility providers.

Since California's energy crisis in 2001, utility planning is completed in a much more coordinated manner to achieve adequacy of supply, establish and oversee formal operational standards for running the bulk power systems, and address security concerns for critical electrical infrastructures. This coordination is administered under mandatory procedures set up by the electric power industry's electricity reliability organization (i.e., North American Electric Reliability Corporation), with oversight provided by the Federal Energy Regulatory Commission and the USDOE (Energy Information Administration 2009). This planning effort has resulted in a more dependable electricity supply to the state, and new transmission lines are being built throughout California and elsewhere to ensure a steady and reliable supply of electricity. In addition, all projects in California are subject to Title 24 requirements for energy conservation and new energy-conservation measures recommended by the Attorney General and California Air Pollution Control Officers Association (CAPCOA), further reducing energy consumption.

Therefore, development of cumulative projects is not anticipated to result in demands exceeding energy supplies. Proposed infrastructure improvements associated with the proposed action would ensure necessary upgrades to the electrical distribution system are implemented and service provider capacities are not exceeded. In addition, the proposed action includes an energy efficiency performance target, which, has been set at 15 percent below Title 24 CCR energy-conservation standards. Therefore, the proposed action would not have a cumulatively considerable contribution to potentially significant cumulative impacts on electric power supplies and cumulative impacts associated with the proposed action would *not be significant*.

All projects in California are subject to Title 24 requirements for energy conservation. Therefore, development of cumulative projects is not anticipated to result in demands exceeding natural gas supply, and there would be no significant cumulative impact. Proposed infrastructure improvements associated with the proposed action would ensure necessary upgrades to the natural gas system are implemented and service provider capacities are not exceeded. In addition, the proposed action includes an energy efficiency performance target, which has been set at 15 percent below Title 24 CCR energy-conservation standards. Therefore, the proposed action would not have a cumulatively considerable contribution to potentially significant cumulative impacts on natural gas supplies and cumulative impacts associated with the proposed action would *not be significant*.

Telecommunications services are provided on demand, and service providers expand their distribution systems as needed to accommodate growth. Cumulative projects would increase demands for these services, but would be accommodated by any one of a number of providers in the San Francisco area. Therefore, no significant cumulative impacts on telecommunications would occur. Accordingly, telecommunications demands associated with the proposed action would be accommodated by these providers and demands would not exceed supply. Therefore, the proposed action would not have a cumulatively considerable contribution to potentially significant cumulative impacts on telecommunication services and cumulative impacts associated with the proposed action would *not be significant*.

5.3.11 Public Services

The ROI for the analysis of cumulative impacts associated with public services is the City of San Francisco. Past and present development in the city is described in Section 3.11, Public Services, representing the baseline conditions for evaluation of cumulative impacts. Reasonably foreseeable future development forecasts are based on projections of future growth and consider projects undergoing the entitlement process. The City of San Francisco provides public services within the city's boundaries.

Development of cumulative projects within the City of San Francisco would result in increased population and employment-generating uses, and associated increased demands for public services (e.g. police protection, fire and emergency medical services, schools, and libraries). The Planning Department routinely prepares projections for the purposes of analyzing impacts of plans and projects undergoing the environmental review process. The Planning Department recently completed such projections, capturing citywide growth expectations by 2030. The projections also considered existing conditions and other major projects currently in various stages of the entitlement process, including Executive Park, Visitacion Valley, Hunters View, Treasure Island, Park Merced projects, and the proposed action. Development projections estimate an increase of 61,814 households, 133,359 persons, and 195,010 jobs from 2005 to 2030.

5.3.11.1 Factor 1: Police Protection

Proposed changes in residential and non-residential development levels and land use intensity at the project site would occur over a 20-year period and would, over time, increase the need for police protection services. In particular, based on existing call levels to other commercial and retail centers in the city, the proposed action would likely result in an increased number of similar calls for service. Increases in the Bayview station staff to respond to demands from new development would be expected to occur throughout the development period, with the addition of new housing units and new non-residential building space and their occupancy.

Demand for increased staffing, in and of itself, would not constitute a significant environmental impact. The need for increased staffing, however, could lead to the need for expanded or replacement facilities. As part of the proposed action, up to 50,000 gft² (4,645 gm²) would be designated for community-serving uses. Construction activities associated with public facilities, which could include a police station, are considered part of the proposed action. Therefore, the proposed action would not have a cumulatively considerable contribution to potentially significant cumulative impacts on police services and cumulative impacts associated with the proposed action would *not be significant*.

5.3.11.2 Factor 2: Fire and Emergency Medical Services

Development of cumulative projects within the City of San Francisco would result in increased population and employment-generating uses, and associated demands for fire and emergency medical services. This increase in demand would potentially affect response times, requiring the construction of new facilities.

All cumulative projects would be built to *San Francisco Fire Code* standards, which would minimize demands on fire protection services. All development, including high-rise residential buildings would be reviewed by the SFFD to ensure structures are designed in compliance with the *San Francisco Fire Code*, minimizing the potential for fire-related emergencies and reducing the demand for fire protection services at the project site. In addition, the proposed action would extend the existing AWSS (high pressure water system for fire protection purposes) and construct a loop system within the project site.

New or physically altered fire or emergency medical facilities could be required in order to maintain acceptable levels of service under cumulative development. Given the density of proposed development and the distance from the nearest fire station, response times to the project site would not be acceptable, and a fire station would be needed at a site that would offer more rapid response to the project site. Construction of a new SFFD station on the project site would allow the SFFD to maintain acceptable response times for fire protection and emergency medical services. Construction activities associated with public facilities, which could include a fire station, are considered part of the proposed action. Therefore, the proposed action would not have a cumulatively considerable contribution to potentially significant cumulative impacts on fire and emergency medical services and cumulative impacts associated with the proposed action would *not be significant*.

5.3.11.3 Factor 3: Schools

Development of cumulative projects within the city would result in increased population and employment-generating uses, which would result in an associated increase in the number of students to be served by the SFUSD. Over the past several years, the student population has declined and some schools have been closed. The SFUSD is concentrating its efforts on replacing older schools and modernizing other facilities. The SFUSD collects school impact fees, which are used to offset impacts associated with enrollment growth (e.g., new residential development). The SFUSD collects these fees for all

construction and building permits issued within the city. Developer fee revenues are used, in conjunction with other SFUSD funds, to support efforts to complete capital improvement projects. According to *Government Code* Section 65996, the development fees authorized by SB 50 are deemed to be "...full and complete school facilities mitigation." Therefore, the proposed action would not have a cumulatively considerable contribution to cumulative impacts on SFUSD schools, and cumulative impacts associated with the proposed action would *not be significant*.

5.3.11.4 Factor 4: Libraries

Development of reasonably foreseeable future projects within the city, in conjunction with past and present development, would increase resident population as well as generate new employment, which could increase demands on public libraries. The SFPL Strategic Plan is based, in part, on population projections for buildout of the General Plan, which includes the development anticipated at the project site. Cumulative projects (past, present, and reasonably foreseeable) that are within the identified population projections have been considered during development of the Strategic Plan. Therefore, it is not anticipated that cumulative development would result in a significant cumulative impact to library services. Residential and non-residential development associated with the proposed action would increase demands for local library services in the Bayview neighborhood. The new SFPL branches, all of which would be completed prior to buildout of the proposed action, would accommodate associated increased demands. No additional library facilities would be required. However, space within the project site would also be dedicated to the provision of library services to supplement the expanded Bayview branch library. As a result, the proposed action would not make a cumulatively considerable contribution to potentially significant cumulative impacts on library resources and the cumulative impact associated with the proposed action would *not be significant*.

5.3.12 Cultural Resources

The cumulative analysis for impacts on historical, archaeological, and paleontological resources considers a broad regional system of which these resources are a part. The cumulative context for the historic resources (buildings/structures) is the San Francisco Peninsula, which contains both San Francisco and San Mateo counties where common patterns of historic-era settlement have occurred. The cumulative context for archaeological resources is the northern portion of the San Francisco Peninsula where prehistoric archaeological sites, Chinese Shrimp Camps, and maritime activities were concentrated. The cumulative context for paleontological resources is the Quaternary deposits of the bayside portions of the San Francisco Bay Area and Franciscan Complex bedrock throughout the Bay Area.

5.3.12.1 Factor 1: Historical Resources (Buildings and Structures)

Under the proposed action, all contributing elements of the National Register-eligible *Hunters Point Commercial Drydock Historic District* as well as the individually-listed Drydock 4 would be retained and rehabilitated using the *Secretary of the Interior Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings*. Therefore, no significant impacts from rehabilitation and reuse of historic buildings and structures would occur. Urban development that has occurred over the past several decades along the San Francisco Peninsula, specifically along the bay with regards to marine/port type resources, has resulted in the demolition and alteration of significant historical resources, and it is reasonable to assume that present and future development activities, such as those listed in Table 5.2-1, will continue to result in impacts on significant historical resources. However, the proposed action would not contribute to this ongoing impact. Therefore, the proposed action's contribution to potentially cumulative impacts would *not be significant*, as it would not contribute to a loss of these valuable historic resources. No mitigation measures are proposed.

5.3.12.2 Factor 2: Archaeological Resources

Archaeological resources, (e.g., pre-historic shellmounds [CA-SFR-11, CA-SFR-12, CA-SFR-13, CA-SFR-14], Chinese Shrimp Camps, or maritime sites) may be present within the project site covered by existing development, and these would remain buried and undisturbed unless and until the site is redeveloped. Although the likelihood of encountering intact deposits is relatively low due to historic and modern construction activities, the proposed action may impact one or more of these resources during construction.

Past urban development that has occurred along the San Francisco Peninsula has damaged or destroyed archaeological resources, and it is reasonable to assume that present and future development activities will continue to result in significant impacts on archaeological resources. Other present and future projects that include ground disturbance from construction activities, such as those listed in Table 5.2-1, could also significantly impact archaeological resources. For this reason, the cumulative effects of development along the peninsula and bay to archaeological resources are considered significant. However, with implementation of Mitigation Measure 1 (archaeological resources), project construction would not result in significant archaeological resource impacts, such that the proposed action's contribution to potentially cumulative impacts on cultural resources would *not be significant*. No additional mitigation measures are proposed.

5.3.12.3 Factor 3: Paleontological Resources

Urban development that has occurred over the past several decades in Quaternary deposits of the bayside portions of the San Francisco Bay Area and Franciscan Complex bedrock, located throughout the Bay Area, has damaged paleontologically sensitive rock and sediment formations with the resultant loss of paleontological resources. Federal, state, and local laws protect paleontological resources in many instances, but protection is not always feasible, particularly when preservation in place would impede implementation of proposed development. For this reason, the cumulative effects of development in Quaternary deposits and Franciscan Complex bedrock on paleontological resources are considered significant.

In recent years, NEPA has required that development projects identify the potential for paleontological resources and mitigate those impacts. Consequently, many development projects in the recent past have not, and many development projects in the present and future, such as those listed in Table 5.2-1, would not contribute to a significant adverse cumulative paleontological resource impact. Similarly, with implementation of Mitigation Measure 2 (paleontological resources) project construction would not result in significant paleontological resource impacts, such that the proposed action's contribution to potentially cumulative impacts would *not be significant*, as it would not contribute to a loss of these valuable resources. No additional mitigation measures are proposed.

5.3.13 Biological Resources

The cumulative analysis evaluates potential additive effects of other projects to existing biological resources, consisting of plant and wildlife species and habitats (terrestrial and aquatic) and federally listed threatened and endangered plant and wildlife species and habitats in the vicinity of the project site, when added to those from the proposed action. The cumulative context for biological resources is similar to that described in Section 3.13, Biological Resources, for existing conditions because the home ranges of many of the sensitive species, except for sensitive plant communities and submerged aquatic vegetation, often are larger than project sites. Cumulative analyses for biological resources discussed in this section include those within an approximate five-mile (8,047 m) radius of the project site, which generally includes the projects identified in Figure 5.2-1.

5.3.13.1 Terrestrial Resources

5.3.13.1.1 Factor 1: Habitat Modification

The upland portion of the project site is developed and contains minimal areas of natural biological habitat. No federally listed threatened or endangered plants were observed during any of the focused botanical or rare plant surveys at the project site in 2007 or 2008. Similarly, most of the cumulative projects would involve redevelopment of previously-developed areas. For those projects that may remove or modify open lands (e.g., Project #10), the significance of habitat modification would depend primarily on the current condition of the project site and its suitability as habitat, the timing of ground disturbance, and amount of land permanently lost to development. Project #10 would develop 23 ac (9.3 ha) of land. If other nearby projects develop open lands or modify existing habitat, it can be expected that some displaced species may move to the habitat that would be restored on the project site and other open lands in the area. While the proposed action is expected to result in a net gain in wildlife habitat, native plant communities, and other open space, overall, the cumulative projects are expected to largely retain the present urban characteristics, and *no significant cumulative modifications* of natural habitat are anticipated.

5.3.13.1.2 Factor 2: Sensitive Communities and Wildlife

The proposed action and most of the other cumulative projects are not expected to adversely affect plant communities or local wildlife species that are adapted to urban conditions. Species tolerant of urban conditions can usually adapt to changes as long as they have reliable access to food, water, shelter and others of their species. The development of HPS Phase I residences (project # 3) may have the greatest effects on the abundance and diversity of wildlife species at the project site because it would occur at the juncture between the project site and the mainland, where migration of terrestrial species to and from HPS could occur. A portion of the upland area would remain undeveloped and it would be restored with native vegetation for project #9, the EcoCenter at Heron's Head Park, the various Blue Greenway Projects (#12), and on Candlestick Point (#2), as well as other urban parks where wildlife, especially bird species, could potentially travel to and from Hunters Point. The Yosemite Slough Restoration Project (#16) that will occur adjacent to the project site would provide two new islands that would likely be used by roosting and foraging birds and transitional and upland areas to buffer sensitive habitats. As remediation activities continue, however, it would remain a mostly unattractive area for wildlife until the open spaces are restored following development of HPS. Consequently, considering that foreseeable cumulative projects would not involve substantial changes in natural habitats, as would also be the case for HPS, the proposed action's contributions to cumulative effects to sensitive communities and wildlife would *not be significant*.

5.3.13.1.3 Factor 3: Wetlands

Approximately 0.20 ac (0.08 ha) of seasonal freshwater wetlands would be permanently lost or temporarily disturbed for the proposed action (Section 4.13, Biological Resources). The exact area of jurisdictional and other Waters of the U.S. that may be affected by the cumulative projects is not known because many are still in the planning phases. However, under federal law, there would be no net loss of wetlands and, therefore, it is expected that the total wetland habitat in the vicinity would remain the same or increase with implementation of mitigation measures for all the development projects. Consequently, *no significant cumulative impacts* are anticipated.

5.3.13.1.4 Factor 4: Movement/Migration

As part of the proposed action, the residential tower heights would range from 240 to 350 ft (73.2 to 107 m), and the stadium would be up to 156 ft (47.6 m) in height, with the top of the light towers at 192 feet

(58.2 m). The maximum heights of other proposed buildings and projects within the cumulative effects area are not known. However, in accordance with city planning and other codes and general land uses in the current area, it can be assumed that other structures would be similar or lower in height. Being at the edge of an urban area that currently includes a large stadium, the birds that have historically migrated through the region are familiar with the patterns of human land uses and have adapted to those tall structures and reflective surfaces already present. Thus, it is unlikely that any of the cumulative projects would impact the normal corridor used for bird migration, and cumulative impacts would *not be significant*.

5.3.13.2 Aquatic Resources

5.3.13.2.1 Factor 1: Habitat Modification

Even though the project site is located in designated critical habitat (San Francisco Bay) and could be visited infrequently by migrating salmon, steelhead, and green sturgeon, the project site is in an area considered to be highly urbanized and is unlikely to support appropriate critical habitat for any federally or state-listed threatened or endangered fish species. Therefore, based on the low probability of occurrence of sensitive fish species in the project site area, small area of habitat loss compared to the entire bay, and net increase in open water habitat, impacts would *not be significant*. Because impacts would not be significant, no mitigation is proposed. The DoN coordinated with and obtained technical assistance from NMFS in making this determination (NMFS 2011 – RJB contact report). Similarly, it is unlikely that any of the cumulative projects with in-water construction elements, including the project site, would adversely impact critical habitat for sensitive fish species. Therefore, cumulative impacts would *not be significant*.

5.3.13.2.2 Factor 2: Sensitive Communities and Wildlife

As described in Section 4.13, Biological Resources, impacts to aquatic biological resources associated with the proposed action would not be significant. Similarly, the overall function of sensitive communities and habitats such as EFH would not be significantly altered. This is because EFH species would be able to move away from temporary construction activities and may shift foraging locations during the relatively short-term recovery period of benthic species that would be disturbed by construction or maintenance operations. Mitigation measures, including BMPs recommended by NMFS during informal consultation, would be implemented so that the project would not result in significant impacts to sensitive species or habitats. The Yosemite Slough Restoration Project (#16) would provide new nursery areas for fish and benthic organisms, as well as two new islands totaling approximately 2 ac (0.81 ha) that would likely be used by roosting and foraging birds. This project also would involve removing upland fill on over 11 ac (4.4 ha) to re-establish tidal flats and marsh by planting native vegetation that could be used by foraging birds. The Yosemite Slough bridge has the potential to impact less than 0.01 ac (0.004 ha) of proposed vegetated wetlands associated with the Yosemite Slough Restoration Project as a result of bridge fill (0.0003 ac [0.0001 ha]) or shading (0.007 ac [0.003 ha]). In addition, approximately 0.21 ac (0.08 ha) of newly restored wetlands and aquatic habitats would be temporarily impacted during bridge construction. If the restoration preceded the proposed action, Mitigation 2 would serve to minimize or avoid loss of wetland function. Impacts to slough waters and associated aquatic organisms would be minimized during bridge construction based on implementation of Mitigation 3, BMPs specified in the project SWPPP, and other measures as specified in the Section 404/10 permit and 401 Water Quality Certification. Therefore, cumulative impacts to wetlands or other waters would *not be significant*.

Due to the temporary or localized scale of impacts from in-water construction activities associated with the proposed action and cumulative projects, the proposed action's contribution to cumulative impacts to EFH species and habitats would *not be significant*.

One federally listed avian species (California least tern) and a recently delisted species (California brown pelican) were determined to have a potential to occur at the project site. Though none have been observed on the project site, the potential for least terns to forage in the area exists and brown pelicans currently roost on the site. Implementation of the proposed action was determined to have no significant effects (Section 4.13, Biological Resources). Further, the proposed action would not be expected to contribute to significant cumulative impacts to these species since potential impacts from cumulative projects would have similar effects that would *not be significant*.

5.3.13.2.3 Factor 3: Wetlands

Construction activities during the proposed project and cumulative projects could impact existing wetlands and other habitats. Construction activities would likely cause temporary and localized impacts to tidal salt marshes, nontidal salt marshes, freshwater wetlands, and bay habitat. Permanent loss of wetlands or jurisdictional waters (bay habitat) from any of these projects would be mitigated according to the degree of impact. The Yosemite Slough Restoration Project (#16) would increase the tidally influenced wetlands adjacent to the project site by over 11 ac (4.4 ha). Since it is unlikely that any of the potential cumulative projects would permanently remove wetland habitat, cumulative impacts to wetlands would *not be significant*.

The only reported occurrence of eelgrass within the project site is on the north shore, east of the northern end of Earl St. This eelgrass bed extends from the end of Earl St to the pier that forms Drydock 5. No eelgrass beds occur where the marina improvements or the Yosemite Slough bridge would be constructed. There is a potential that cumulative projects would have similar or lower levels of impacts to eelgrass, if any, but these would not represent significant cumulative impacts in the project region.

5.3.13.2.4 Factor 4: Movement/Migration

During the proposed project and all foreseeable future projects, the movement of any native resident or migratory fish or wildlife species populations would not be significantly affected. In addition, native resident or migratory wildlife corridors would not change or be impeded. Therefore, *no significant cumulative impacts* would occur to movement and/or migration of aquatic resources.

5.4 Conclusions

Implementing the DoN disposal action, as essentially a transfer of title, would not contribute to any direct cumulative impacts to any of the resources analyzed in this document. Therefore, the discussion of cumulative impacts for each resource does not include further analysis of DoN disposal. Relevant significant and unmitigable, significant and mitigable, and not significant cumulative impacts associated with HPS reuse were analyzed.

Table 5.4-1 summarizes potential significant cumulative impacts and mitigation measures of the proposed action. Measures that can be taken to reduce impacts to a level below significant are suggested, as appropriate. Mitigation for impacts associated with the reuse of HPS would not be the responsibility of the DoN.

Cumulative effects are also addressed in Section 6.4, Environmental Justice. Unavoidable, significant cumulative transportation and noise impacts listed in the environmental justice analysis, related to the reuse of HPS, would also represent cumulative disproportionate effects on minority and low-income populations. These impacts are presented in Table 5.4-1.

Table 5.4-1. Summary of Cumulative Impacts of the Proposed Action

Resource Category	Impact Determination	Mitigation Measure	Impacts after Mitigation
Transportation, Traffic, and Circulation	Construction Vehicle Traffic and Roadway Impacts (Factor 1): Cumulatively <i>significant and unavoidable</i> . Project-related contributions to cumulative traffic impacts would be <i>significant</i> .	No mitigation beyond the proposed action mitigation.	Cumulatively <i>significant and unavoidable</i> .
	Increase Traffic Volumes-Transportation Demand Impacts - Operations (Factor 2): Cumulatively <i>significant and unavoidable</i> . Project-related contributions to cumulative traffic impacts during project, stadium football games and secondary weekday events would be <i>significant</i> .	No mitigation beyond the proposed action mitigation.	Cumulatively <i>significant and unavoidable</i> .
	Increase Traffic Volumes-Intersection Traffic Impacts - Operations (Factor 2): Cumulatively <i>significant and unavoidable</i> . Project-related contributions to cumulative traffic impacts at three intersections for the project as well as during stadium football games and secondary weekday events would be <i>significant</i> .	No mitigation beyond the proposed action mitigation.	Cumulatively <i>significant and unavoidable</i> .
	Increase Traffic Volumes-Freeway Ramp Impacts - Operations (Factor 2): Implementation of the proposed action would result in <i>significant</i> impacts at six freeway on- and off-ramp locations causing the ramp junctions to deteriorate from acceptable LOS D or better to LOS E or F conditions; or from LOS E to LOS F conditions and contribute cumulatively <i>significant</i> traffic increase.	No mitigation beyond the proposed action mitigation.	Cumulatively <i>significant and unavoidable</i> .
Air Quality	Net Increase of Criteria Pollutants in Non-Attainment Area - Construction (Factor 1): Cumulatively <i>significant and unavoidable</i> for regional ozone. Project daily emissions during operations would exceed the BAAQMD daily emissions thresholds for NO _x . A project dust control plan (DCP) would be implemented. The project region is not expected to attain the national and/or state ambient air quality standards for ozone and PM ₁₀ for several years in the future. Therefore, the contribution of proposed construction emissions to future air quality would produce <i>significant</i> cumulative impacts to regional ozone and PM ₁₀ levels.	No feasible mitigation measures identified beyond proposed environmental controls.	Cumulatively <i>significant and unavoidable</i> .
	Exposure of Sensitive Receptors to Substantial Pollutant Concentrations - Construction (Factor 2): <i>No significant</i> contribution to cumulative impacts.	No mitigation beyond proposed environmental controls.	<i>No significant</i> contribution to cumulative impacts.
	Net Increase of Criteria Pollutants in Non-Attainment Area - Operations (Factor 1): Cumulatively <i>significant and unavoidable</i> for regional ozone, PM ₁₀ and PM _{2.5} . Project daily emissions from operations would exceed the daily significance emissions thresholds for ROG, NO _x , PM ₁₀ , and PM _{2.5} . Therefore, the contribution of proposed operational emissions to future air quality would produce <i>significant</i> cumulative impacts to regional ozone and PM ₁₀ levels.	No feasible mitigation measures identified.	Cumulatively <i>significant and unavoidable</i> .
	Exposure of Sensitive Receptors to Substantial Pollutant Concentrations - Operations (Factor 2): <i>No significant</i> contribution to cumulative impacts.	No mitigation beyond the proposed project control measures.	<i>No significant</i> contribution to cumulative impacts.

Table 5.4-1. Summary of Cumulative Impacts of the Proposed Action

<i>Resource Category</i>	<i>Impact Determination</i>	<i>Mitigation Measure</i>	<i>Impacts after Mitigation</i>
GHG	<i>No significant</i> contribution to cumulative impacts.	No mitigation proposed.	<i>No significant</i> contribution to cumulative impacts.
Noise	Exposure of Persons to Excessive Construction Traffic Noise Levels (Factor 3): Cumulatively <i>significant and unavoidable</i> . If other projects are simultaneously in operation, truck traffic associated with multiple construction projects occurring at the same time could result in cumulative noise impacts related to simultaneous construction activities in close proximity to one another. Noise impacts would be temporary only during the combined construction period.	No mitigation beyond the proposed action mitigation.	Cumulatively <i>significant and unavoidable</i> .
	Exposure of Persons to Excessive Noise Levels (Factor 4): Cumulatively <i>significant and unavoidable</i> . Like the project alone, these activities would be expected to cause a substantial permanent increase in ambient noise levels above 70 dBA Ldn in existing and future residential areas.	No mitigation beyond the proposed action mitigation.	Cumulatively <i>significant and unavoidable</i> .
Land Use	<i>No significant</i> contribution to cumulative impacts.	No mitigation proposed.	<i>No significant</i> contribution to cumulative impacts.
Recreation	<i>No significant</i> contribution to cumulative impact.	No mitigation proposed.	<i>No significant</i> contribution to cumulative impacts.
Visual Resources and Aesthetics	<i>No significant</i> contribution to cumulative impacts.	No mitigation proposed.	<i>No significant</i> contribution to cumulative impacts.
Socioeconomics	<i>No significant</i> contribution to cumulative impacts	No mitigation proposed.	<i>No significant</i> contribution to cumulative impacts.
Hazards and Hazardous Substances	<i>No significant</i> contribution to cumulative impacts.	No mitigation required.	<i>No significant</i> contribution to cumulative impacts.
Geology and Soils	<i>No significant</i> contribution to cumulative impacts.	No mitigation proposed.	<i>No significant</i> contribution to cumulative impacts.
Water Resources	<i>No significant</i> contribution to cumulative impacts.	No mitigation proposed.	<i>No significant</i> contribution to cumulative impacts.

Table 5.4-1. Summary of Cumulative Impacts of the Proposed Action

Resource Category	Impact Determination	Mitigation Measure	Impacts after Mitigation
Utilities	No significant contribution to cumulative impacts.	No mitigation proposed.	No significant contribution to cumulative impacts.
Public Services	No significant contribution to cumulative impacts.	No mitigation proposed.	No significant contribution to cumulative impacts.
Cultural Resources	Archaeological Resources (Factor 2): The cumulative effects of development along the peninsula and bay to archaeological resources, which could have important research value, would be <i>significant</i> .	Mitigation 1: Archaeological Testing, Monitoring, and Mitigation Program.	No significant contribution to cumulative impacts.
	Paleontological Resources (Factor 3): The cumulative effects of development in Quaternary deposits and Franciscan Complex bedrock on paleontological resources would be <i>significant</i> .	Mitigation 2: Paleontological Resources Monitoring and Mitigation Program.	No significant contribution to cumulative impacts.
Biological Resources	No significant contribution to cumulative impacts.	No mitigation beyond the proposed action mitigation.	No significant contribution to cumulative impacts.
Environmental Justice*	Transportation, Traffic, and Circulation (Factor 1): Cumulative environmental justice effects associated with unavoidable significant, cumulative construction vehicle traffic and roadway impacts are considered <i>significant</i> because there would be a disproportionate effect on minority and low-income populations.	No mitigation beyond the proposed action mitigation.	Cumulatively <i>significant and unavoidable</i> .
	Transportation, Traffic, and Circulation (Factor 2): Cumulative environmental justice effects associated with unavoidable significant, cumulative operations increase in traffic volumes are considered <i>significant</i> because there would be a disproportionate effect on minority and low-income populations.	No mitigation beyond the proposed action mitigation.	Cumulatively <i>significant and unavoidable</i> .
	Transportation, Traffic, and Circulation (Factor 3): Cumulative environmental justice effects associated with unavoidable significant, cumulative transit impacts are considered <i>significant</i> because there would be a disproportionate effect on minority and low-income populations.	No mitigation beyond the proposed action mitigation.	Cumulatively <i>significant and unavoidable</i> .
	Noise (Factor 6): Cumulative environmental effects as unavoidable significant, cumulative increases in operations noise levels are considered <i>significant</i> because there would be disproportionate effects on minority and low-income populations.	No mitigation beyond the proposed action mitigation.	Cumulatively <i>significant and unavoidable</i> .
<i>Note:</i> * The Environmental Justice analysis is provided in Section 6.4, Environmental Justice.			